

**Ownership and Control  
in the Competitive Electricity System  
Proposed for Ontario**

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**Presented to  
The Harvard Electricity Policy Group  
John F. Kennedy School of Government  
Harvard University**

**at the  
Special Seminar on Public Sector Strategies  
in a Restructured Electricity Industry  
Nashville, Tennessee  
March 6, 1997**

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## The Ontario Electricity System Today

Ontario's electricity system ranks among the world's largest. With \$36 billion<sup>1</sup> in assets it is the second largest in North America and with an annual revenue of \$6.8 billion is Canada's seventh largest corporation. Primary energy production is 150 TWh from nuclear (65%), hydroelectric (25%) and fossil fueled plants (10%), most of which are coal fired. Installed capacity is 29,000 MW and a total of 3.8 million customers are supplied.

Structurally, the electricity supply system is dominated by Ontario Hydro which is a provincial crown corporation (i.e., publicly owned) responsible for the bulk supply system consisting of generation, transmission and interties to neighboring systems. Some 300 municipally owned distribution utilities purchase power from Ontario Hydro and serve almost 3 million of the province's 3.8 million end-users accounting for 75% of electrical energy use. The balance of end-use customers, located primarily in rural areas, are served by the Ontario Hydro Retail system which is the statutory supplier of last resort.

This basic structure was established in 1905 with the intent to deliver "power at cost" to municipalities throughout Ontario. With an objective of ensuring that all citizens in the province benefitted from the then newly developed generating resources at Niagara Falls, Ontario Hydro was originally conceived as a municipally owned transmission cooperative purchasing power from investor owned generating stations and selling it to its members at a single average "pooled" price. As demand outstripped supply during the First World War, Ontario Hydro began building its own generating stations and was eventually transformed into a provincially owned bulk supplier. The structure has

been widely used as a model for other systems including the pre-restructured systems in the UK, South Africa and New Zealand as well as the Tennessee Valley Authority.

Ontario's electricity system is presently very lightly regulated and in fact is considered "unregulated" by some. The statutory regulator is the Board of Directors of Ontario Hydro which is, in practice, appointed by the government of the day. Ontario Hydro establishes its own wholesale and retail rates and regulates the retail rates set by each of the municipal distribution utilities. Ontario Hydro's wholesale rates are reviewed by the Ontario Energy Board which has only an advisory mandate and in practice has had minimal impact on Ontario Hydro policy.

Ontario Hydro has a very high long term debt of about \$25 billion which represents a debt-equity ratio of some 90% and results in financial charges absorbing 43% of revenue. The average long run generation cost is 4.4¢/kWh and typical average retail prices are 6¢/kWh. The inherent technical quality of the system is indicated by the very low short run marginal production costs which average 1.2¢/kWh. In contrast to Ontario Hydro, the municipal utilities are essentially debt free. They typically markup the cost of wholesale power by 15% to cover their revenue needs. Neither Ontario Hydro nor the municipal utilities pay any dividend to their respective owners. Neither pay any income taxes or any significant amount of property taxes.

## The Need for Restructuring

The need for making some fundamental changes to the existing electricity supply system results from a number of factors. Over a period of several years in the early 1990s electricity rates increased faster than industry averages and in excess of the general inflation rate. This, coupled with a capacity surplus that resulted in the mothballing of some thermal

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<sup>1</sup> all prices in US currency

generating stations and very short operating times for the rest, created the prospect of a long period of poor revenue performance. At the same time the high debt burden and growing competitive pressures from on-site generation at major industries as well as the steady march toward competitive energy markets in the US indicated only a worsening cost/revenue picture. The overall result would be high electricity costs that would be a serious disadvantage to the basic competitiveness of the Ontario economy.

The Government of Ontario appointed the "Advisory Committee on Competition in Ontario's Electricity System" under the chairmanship of The Honourable Donald Macdonald to recommend changes to the structure and operations of the overall electricity system that would redress its financial problems and ensure that they did not reoccur. It was recognized at the outset that many study results and much experience already existed on electricity restructuring and the task of the Macdonald Committee was dominantly one of assembling a solution for the specific needs of Ontario using existing concepts. For this reason, the committee's recommendations have many things in common with initiatives already taken elsewhere in the world.

## **Restructuring Recommendations**

One of the key themes underlying the recommendations was to introduce competition to the maximum extent possible in order to minimize the need for regulation with its attendant burdens of time, cost and bureaucracy. Another key theme was to ensure that the recommendations were practical to implement from a political perspective.

The committee recommended that Ontario immediately establish a competitive electricity system at the wholesale level and then move to retail competition as soon as possible thereafter. Wholesale competition would be established by vertically unbundling Ontario Hydro's generation operations from its transmission system which would then be operated as a common carrier. The transmission system would, at least initially, remain publicly owned. The generating stations would be horizontally separated into competing entities. One entity would be responsible for all the nuclear plants and would remain in provincial ownership. The hydroelectric generating stations would be grouped by river system and all groups, except the Niagara Falls group, divested individually. The Niagara Falls generating stations would remain in provincial ownership. Fossil fueled generating

stations, including the mothballed plants, would be divested individually.

An Independent System Operator (ISO) would be established with responsibility for the dispatch of generation and the transmission grid as well as its long term planning. The ISO would work in conjunction with a separate Electricity Exchange (EEx) which would operate a spot market for electricity as well as markets for financial instruments, including futures. The ISO would be provincially owned and operated while the EEx would be member owned and operated. Contractual access to the common carrier grid would only be available to members of the EEx, many of whom would be brokers acting on behalf of nonmembers. The ISO would only dispatch generation selected in merit order according to bids made into the EEx spot market. Bilateral contracts for differences would be permissible and would not need to be declared, registered with EEx or made public in any way.

In conjunction with these changes to establish a wholesale market, it was recommended that the distribution sector be fully restructured. The thrust of distribution sector restructuring is to expand and amalgamate the existing municipal utilities so that they are fewer in number but together cover the entire province. In effect, the Ontario Hydro Retail system would be absorbed into the municipal structure. The details of this restructuring would be left to local initiative by the various municipalities and it is anticipated that some 40-50 distribution utilities would replace the 300 that presently exist. Ownership of individual distribution utilities would be left to local option with no limitation on retention in public ownership, full divestment, partial divestment, joint ventures, cross ownerships or further amalgamations.

In the second phase of restructuring, retail competition would be introduced by making the distribution systems common carriers. Each distribution utility would be split financially into a "wiresco" responsible for the physical distribution facilities and an "ensco" responsible for purchasing wholesale power and reselling it to end-use customers. The wiresco would operate as a regulated monopoly in a fixed franchise area while the ensco would be unregulated and in competition with other enscos. While the distribution system ensco would not be restricted to operating within the franchise area of its associated wiresco, it would be obligated to be the supplier of last resort within that franchise area. To offset the competitive disadvantage that may be involved in this obligation,

the captive ENSCO would have special privileges with respect to metering costs and, being the incumbent, would be in a preferential position in providing metering, meter reading, disconnect and connect services on a fee-for-service basis to other ENSCOs operating in the area.

## **Rationale for Ownership Recommendations**

It is important to recognize that the focus of the Macdonald Committee was on restructuring for competition and not on restructuring for ownership transfers, divestments or privatization. Ownership issues were a consideration only insofar as they affected the ability to have competition. Privatization was explicitly mentioned in the committee's terms of reference only with respect to the non-core business activities of Ontario Hydro. In this context, many of the recommendations with regard to ownership were not emphatic and in some cases left quite open.

The committee recognized that a competitive structure was entirely feasible in a completely publicly owned system, providing that a number of different "publics" were involved. Divestment of Ontario Hydro assets requires only that ownership pass from the Province and there would be nothing preventing municipal organizations from being the new owners. Notwithstanding this possibility of public-to-public divestment, it is anticipated that most ownership transfers will involve the private sector with the result that the terms "divestment" and "privatization" are often used interchangeably.

## **Ownership of Generating Assets**

The recommendation that nuclear generation facilities be retained in public hands recognized that the market would discount their value due to various risks, perceived and real. Ontario's nuclear generation is based on the CANDU technology, the main feature of which is the use of heavy water both as a moderator and as the primary heat transport medium. The federal government underwrites much of the cost of the support infrastructure for this unique technology which fact would clearly represent potential limitations and business exposures for private sector plant owners. As well, the requirements for decommissioning a nuclear station and for permanent spent fuel disposal have yet to be finalized and are therefore liabilities of unknown sizes. This is of lesser consequence to a public sector plant owner than a private sector owner since in the final analysis, the

government controls the cost of the liability when it establishes the requirements. Finally, there is a public perception in Ontario that the private sector is less concerned with responsible stewardship than is the public sector. This, coupled with the fact that the large write downs inevitable in selling off the stations would be perceived as giving away taxpayers' equity, would make privatization of nuclear assets very difficult politically. It was concluded that the best economic return from the sunk costs would be achieved by retaining the nuclear plants in public hands and running them as hard as possible.

The recommendation on retaining Niagara Falls in public hands was much less business-like and in fact has been characterized as "plain old politics". Bearing in mind that the entire electricity supply system in Ontario owes its roots to the public sentiment that the gifts of nature embodied in Niagara Falls should be used for the benefit of the people, it can be appreciated that there are very strong sentiments and emotions throughout the province that favor its continued public ownership. Commercial factors do not mitigate against this position since Niagara Falls is probably the premier hydroelectric generating site in North America, if not the world. It is not only large and endowed with very predictable and uniform hydrological patterns but is ideally located beside major load centers both domestic and export.

Since the nuclear plants and Niagara Falls together account for some 65% of the system's generating capacity and 75% of energy production, it seems clear that competition in the generation sector could only be achieved if the balance of the plants were divested from provincial ownership. At this point, it is important to recognize that the objective was not simply to create competition within Ontario but to properly position the Ontario electricity sector for competition in the continental marketplace. The very low short run marginal operating costs of Ontario generators, individually and in average, are expected to result in a large export market and the restructuring recommendations were framed to ensure that this potential was not diminished. It was considered important that a large proportion of generating resources remain in single ownership to ensure sufficient muscle for competition in the export market.

Some might question whether competition would occur among Ontario generators with the relatively low level of divestment proposed. In fact the system marginal price at present is set primarily by the plants recommended for divestment, leaving the

nuclear plants and Niagara Falls as price takers and not price setters. For the nuclear plants this results from their technical limitations which strongly favors baseload operation and for Niagara Falls it results from the fact that the plants are basically run-of-the-river stations with only limited storage and therefore limited ability to choose their operating schedules. Finally, there are the competitive pressures that would be exerted from outside the province over the interties to neighboring systems. The aggregate capacity of these interties is no more than 10% of installed generating capacity and much less under many operating conditions. Nonetheless, power imports will represent an important factor in the system marginal price under a wide range of operating circumstances.

### **Ownership of the Grid, ISO and EEx**

Turning to ownership of other system components after restructuring, the recommendation that the transmission grid remain initially in public hands is worthy of explanation. The greatest financial advantage would probably be gained from divesting the grid as soon as possible. This results from the fact that the grid is a strategic asset and would attract a premium price well above its book value. Offsetting this, and ultimately influencing the recommendations was the recognition that the grid was strategic not only from a business perspective but also from a technical perspective. Being the key integrating element that makes the system a system rather than a disparate collection of generators and loads, the operation of the grid is critical to the continued reliability and long range availability of supply to communities and businesses throughout the province. Recognizing also that the system has been planned, designed and operated since its inception in the context of central planning and command operation, care needs to be taken that the transition to a market driven operation relying on diffused authority can be technically accommodated. There will be greater confidence in the continued successful operation of the power supply system during the transition to competition if the uncertainties involved are not compounded by those associated with a simultaneous transition to a regulated private monopoly.

The recommendation that the commercial and technical aspects of system operation be divided between the ISO and EEx and that these organizations be separated from grid ownership and from each other is probably a unique aspect of the Ontario restructuring proposal. The ISO and

EEx together control the system and it is control, as distinct from ownership, that is the key to achieving competition. The desire to leave both a significant portion of generation and all of the transmission grid in provincial ownership, made it necessary to establish the ISO as an independent body. The alternative of leaving system control with the transmission grid owner would not result in the same degree of market transparency for sellers and buyers of electricity which would ultimately undermine the potential advantages offered by a competitive market.

The separation between the ISO and EEx was recommended to optimally accommodate the competing objectives of supply reliability with market-driven pricing. The ISO would be concerned with reliability which is dominantly a technical issue requiring both long and short term perspectives while the EEx would be concerned with financial issues which involve a dominantly short term business focus. Making them neighbors in separate houses will provide each with the opportunity to establish its own corporate culture optimized for its particular mission. The separation also forces any conflicts between technical and financial imperatives into public visibility where they are more likely to be resolved for the general good rather than being compromised by the internal politics of a single, probably schizophrenic, institution.

The ISO is entrusted with an important role of public stewardship and in public ownership would not only be able to discharge this responsibility straightforwardly, but could also undertake many duties that would otherwise have to be assigned to a regulator. It is critical that the ISO be completely independent and separate from the other publicly owned entities in the electricity sector. Whereas the publicly owned generators, transmission and distribution systems are all essentially business operations, the ISO has a higher calling. The EEx is seen as a body akin to a stock exchange and therefore could logically have similar ownership and regulatory arrangements. That is, the EEx would be member owned and regulated by a securities commission rather than a utility regulator.

### **Ownership of the Distribution Sector**

The Macdonald Committee recommended that the ownership of distribution systems be left open for local choice, recognizing that this would probably result in the distribution sector being dominated by municipal ownership. However, there is a growing trend for municipalities to contract out services and

many are facing difficulties financing the major spending programs that are necessary, so at least some municipal systems might move to some degree of private sector involvement and it was recommended that this should not be discouraged. The desire to transfer the present ownership of part of the distribution system from provincial hands so that the entire distribution sector would become municipally owned, responded to the fact that the present ownership split is fraught with conflicts and that the sector is dominantly municipally owned already.

### **Leveling the Playing Field**

The restructuring recommendations embody the need to level the playing field in two specific areas. Firstly, there is significant evidence of cross subsidization between the electricity sector and the government's general accounts under the present system. This is contrary to the dictates of foreign trade and undesirable from the perspective of both the competitors in the importing market and the owners of the exporting entity. Secondly, with the mixture of public and private ownership envisaged in the restructured electricity industry, true competition requires that both types of owner be on the same footing. Both issues can be addressed by changing the requirements for public companies in the electricity industry such that they pay their full burden of taxes and undertake borrowing on commercial terms.

The general principles recommended included the provision for publicly owned entities to pay both provincial and federal income taxes or, what is more likely in practice, grants-in-lieu of taxes of equivalent value. It has been suggested also that if grants-in-lieu are paid, the entire grant would be made to the Provincial Government, including the amount equivalent to federal income tax. This may prove a contentious issue but special taxation provisions are not unusual when public corporations are privatized in Canada and this recommendation is not out of line with previous practice and does not affect the federal/provincial balance of accounts with respect to provincial crown corporations.

There is also a serious discrepancy between property taxes paid to municipalities by investor owned utilities and publicly owned ones. Again, the recommendation is that public entities pay a grant-in-lieu equal to the full property tax burden. Present municipal taxation rules penalize hydroelectric generating stations with respect to thermal plants. It is recommended that this

inequity be removed by establishing a new assessment category for generating stations that does not consider the technology in use.

Finally, it is recommended that commercial rates for debt servicing be paid by publicly owned utilities. At present, such borrowing is guaranteed by the government which results in lower interest rates for the utility but a contingent liability, and hence ultimately lower bond ratings and higher borrowing costs, for the taxpayers in general. As well, with utility and government credit ratings essentially combined, far higher debt levels can be assumed by the utility than would be possible in private ownership. It would be preferable to subject all utilities, public and investor owned, to the discipline of a borrowing ceiling which the capital market inherently creates through the decline in investor confidence that results from rising debt.

### **The Impasse on Implementation**

At the time of writing, some eight months after release of the Macdonald Committee report, the Government has not adopted a policy with respect to electricity sector restructuring. The fundamental reason for this is that the general public has little interest in electricity policy and the Government is immersed in addressing high profile concerns such as unemployment, health care reform, education reform and local government restructuring not to mention deficit reduction and tax cutting. Meanwhile, considerable confusion is growing in the resulting policy vacuum.

The largely agnostic stance of the Macdonald Committee recommendations with respect to public versus private ownership appear to have created a measure of confusion in the minds of stakeholders.

The public at large is not averse to public ownership and any tentative concerns they might have had about privatization have been skillfully cultivated by the labor unions representing workers at the publicly owned utilities. In essence, the debate on the street and in government circles is revolving around ownership issues and privatization rather than addressing the more fundamentally significant issue of competitive restructuring.

Ambivalence to restructuring the electricity sector is also reinforced by the fact that the existing structure has undeniably served the province well for 80 of the last 90 years. It is proving to be difficult to communicate the fact that there has been a fundamental change in the world around us that,

among many other effects, has resulted in a marked decline in electricity load growth which will prevail into the foreseeable future. Public monopoly ownership has served well in years of expansion since it conveniently combined in a "one stop shop" the role of public stewardship with the ability to build and operate the necessary infrastructure. However, the existing structure lacks the checks and balances that would have allowed it to recognize and adapt to the new order. New generation capacity continued to be planned and built and the "cost-plus" operating environment put continued upward pressure on rates even as the supply surplus grew.

The public debate is also confused by Ontario Hydro's statements and actions. Information releases have implied that the problems of the last 10 years have already been successfully addressed through a massive reduction in staff levels and major internal reorganization. This, however, is at odds with the utility's long standing position that restructuring for competition is essential. While this interest in having a competitive electricity sector is apparently still alive in Ontario Hydro, the corporation has recently initiated an aggressive program to consolidate and expand its monopoly position in the province. This is justified on the grounds that ownership concentration is necessary for success in continental competition.

Finally, other stakeholders are sending mixed and sometimes suspect signals into the debate. The municipal utilities are split with different factions

pushing in diametrically opposed directions. With 300 such utilities, each with local political roots, any resulting confusion in the public mind or provincial government can be excused. Business groups, independent power producers and major industrial users of electricity have come out in support of all the essential features of the committee's recommendations but these same groups have been characterized, particularly by the municipal utilities, as having only self serving interests.

There is, however, a considerable level of ad hoc activity that has clearly been initiated in response to the Macdonald Committee's work and this activity is supportive of the recommendations. The internal restructuring of Ontario Hydro has already been mentioned. Specifically, this restructuring has begun the process of vertically unbundling generation from transmission and horizontally unbundling generation. It has also resulted in segregating the system dispatcher from the grid system. Many of the municipal utilities are cooperating on amalgamation studies and several have established alliances with natural gas and telecommunications utilities to exploit business convergence opportunities. Investigations are also underway to establish a municipally-owned cooperative to purchase power on the open market and act as the supplier to member utilities.

At the end of the day, however, further progress is stalled by a lack of direction from government policy because, whether publicly owned or investor owned and government regulated, a monopoly has limited ability to adapt through its own initiative alone.