

ELECTRICITY RESTRUCTURING: THE ONTARIO EXPERIENCE

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I. THE REFORM PROCESS

Over the last decade or so, a number of jurisdictions throughout the developed and developing world have embarked upon major

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competitively oriented restructurings of their electricity industries.¹ Ontario has recently joined this list. Historically, Ontario Hydro has been the largest state-owned enterprise in Canada, having been created by the government of Ontario in 1906 initially to construct and operate a provincial transmission grid which would deliver power from privately owned hydro-electric generators to various municipally owned distribution systems. Ontario Hydro quickly broadened its vision to embrace a province-wide transmission grid and the progressive acquisition of most privately owned generating facilities in the province, as well as the construction of massive new generating facilities of its own. Ontario Hydro currently generates about 90% of the electric power sold in the province, about 60% of which is generated by nuclear facilities built in the 1970s and 1980s. Throughout its history, Ontario Hydro has occupied a unique and in many respects dominating political and economic influence in the province.² It has rarely been far from the public eye, and major cost over-runs in system expansion precipitated the first of many commissions or like inquiries as early as 1920. By 1923, debts incurred on behalf of Ontario Hydro amounted to one-half of the entire provincial debt. Despite frequent public inquiries over the years into aspects of its operations, the basic vertically integrated, public monopoly structure of the industry that emerged in its first 20 years of operations has remained intact until very recently. The current Ontario government has now committed itself to wholesale and retail competition in electricity by the year 2000 and has restructured Ontario Hydro into two state-owned successor companies constituted under the Ontario Business Corporations Act.³ One of these will own the high voltage transmission grid and the other will own the generating facilities subject to

1. For reviews of the comparative experience, see OECD Report on Regulatory Reform, "The Electricity Sector" (Paris, 1997), vol. 1; Sally Hunt and Graham Shuttleworth, *Competition and Choice in Electricity* (N.Y., John Wiley & Sons, 1996); Paul Joskow, "Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector" (1997), J. of Economic Perspectives 120 and Larry Ruff, "Competitive Electricity Markets: Why They Are Working and How To Improve Them" (NERA, San Francisco, May 16, 1999).
2. See Neil Freeman, *The Politics of Power: Ontario Hydro and Its Government 1906-1995* (Toronto, University of Toronto Press, 1996) and Ron Daniels and Michael Trebilcock, "The Future of Ontario Hydro: A Review of Structural and Regulatory Options" in Ron Daniels, ed., *Ontario Hydro at the Millennium: Has Monopoly's Moment Passed?* (Montreal, McGill-Queens Press, 1996).
3. R.S.O. 1990, c. B.16.

commitments to transfer effective control of these facilities to private competitors so as to reduce Ontario Hydro's market share to 35% of price setting plant output within 3 1/2 years of market opening and 35% of all generating output sold in the province within 10 years. Significant rationalization of the almost 300 municipally owned local distribution utilities (LDCs or MEUs) in Ontario through amalgamation or privatization is anticipated (and is already occurring, albeit slowly).

What set of factors led to this dramatic change in policy? Over the period 1991-1993, at a time of severe recession in the province, Ontario Hydro's customers faced average rate increases approaching 30%, which provoked intense public outcries throughout the province. Prior to the recent restructuring, Ontario Hydro's debt, which the provincial government has guaranteed, amounted to about \$35 billion, or about 30% of total provincial indebtedness. In 1993, the corporation incurred a net loss after restructuring charges of over \$3.6 billion — the largest corporate loss in Canadian history. Restructuring charges related to severance and redundancy costs; write-downs related to assets recorded at values in excess of market values and plant closure costs. In 1993, Ontario Hydro reduced its full-time workforce by 24% from 29,600 to 22,600. In 1998, Ontario Hydro reported another write-down of assets of over \$6 billion as a prelude to restructuring. In the current restructuring, the government estimates that following restructuring, Ontario Hydro (and the provincial government) will face about \$20 billion in stranded debt and contingent liabilities that future operating revenues will be unable to service. Currently, eight of Ontario Hydro's 20 nuclear plants are out of service on account of reliability problems.

With the benefit of hindsight, Ontario Hydro's difficulties can be attributed to: (1) serious over-estimation of future demand; (2) over-expansion of capacity and related borrowing with respect to its nuclear facilities in the 1970s and 1980s (in part a federal-provincial industrial strategy designed to promote the Canadian-built CANDU reactor); (3) substantial cost over-runs and disappointing operating performance of a number of these facilities; (4) declining prices for substitute sources of energy, particularly natural gas, and to a lesser extent oil. In addition, technological innovation in generation has undermined traditional assumptions about minimum efficient scale in electricity generation. Combined cycle gas turbines

that entail a fraction of the capital costs of existing generating facilities now hold out immediate prospects of power generation at significantly lower average total cost than that of established generating technology (along with dramatically lower environmental externalities). In addition, much more localized power generation technology is rapidly developing, such as wind farms, fuel cells, micro gas generators, photo-voltaic solar cells, etc. Much of this new technology can be installed by end-users to serve their own power needs and in some cases also to supply power to other end-users through the local distribution system.⁴ Clearly, this concatenation of factors substantially undermined Ontario Hydro's political and public credibility and the government policies that maintained the vertically integrated public monopoly paradigm for almost a century.

As the crisis with Ontario Hydro deepened in the early 1990s, the newly elected Progressive Conservative government in late 1995 appointed a Task Force (commonly referred to as the Macdonald Task Force) with a mandate to explore options for a more competitively structured Ontario electricity industry. The Task Force held public consultations and meetings across the province, commissioned research studies from experts and completed a unanimous report within six months of commencing its deliberations which contained a number of detailed recommendations and options for moving to a more competitively structured electricity industry in Ontario.⁵ The Task Force was comprised of a former federal Minister of Finance, Defence, and Energy as chairman, a consulting engineer, the CEO of a major electrical product manufacturing company, an economist recently retired from an investment bank, a former provincial Minister of Treasury, Municipal Affairs, and Energy, a former municipal mayor and environmentalist, and a professor of Economics. Following release of the Task Force report, the government of Ontario spent a year preparing a White Paper⁶ against the backdrop of the Task Force report, in consultation with a wide range of stakeholders, setting out some basic parameters for restructuring the industry with the central policy objective being the

4. See e.g., Daniels and Trebilcock, "The Future of Ontario Hydro", *ibid.*, and Advisory Committee to the Ontario Minister of Environment and Energy (the "Macdonald Task Force" or "Task Force"), *A Framework for Competition* (1996).

5. Macdonald Task Force, *A Framework for Competition*, *ibid.*

6. White Paper, *Direction for Change: Charting a Course for Competitive Electricity and Jobs in Ontario* (Ministry of Energy, November 1997).

introduction of both wholesale and retail competition by the year 2000. Following release of the White Paper, the Ontario government appointed the Market Design Committee with a mandate to design the detailed market rules for the introduction of wholesale competition in the province and to make detailed recommendations to the government and the Ontario Energy Board (the industry regulator) on the implementation of retail competition. The two authors of this article were, respectively, Research Director and Chairman of the Market Design Committee. Legislation providing for the restructuring of the Ontario electricity industry was enacted by the Ontario legislature in the fall of 1998, without major partisan conflict.⁷

The Market Design Committee ("MDC" or "the Committee") met for the first time on February 13, 1998, and for the last time on January 18, 1999. During its one-year mandate, the Committee completed a considerable amount of work on the foundations for Ontario's new electricity market consistent with the policy objectives and directions set out in the government's White Paper. Specifically the MDC delivered to the government:

- four quarterly reports, totalling almost 500 pages of analysis and recommendations;
- over 300 pages of wholesale market rules;
- over 300 pages of research and advice to the Ontario Energy Board (OEB) relating to the design of the retail market;
- three self-standing reports from other technical panels and their subpanels;
- an agreement with Ontario Power Generation Incorporated (OPGI) on market power mitigation in the generation sector, including a detailed proposal to implement it;
- a proposed Governance and Structure By-Law for the Independent Electricity Market Operator (IMO); and
- a draft Operational Control Agreement between the IMO and the transmission grid owner, Ontario Hydro Services Company Incorporated (OHSCI).

The Committee's work was completed on time and within budget (\$10.5 million).

The MDC was composed of 14 members, who were chosen by the Minister of Energy, Science and Technology to represent a broad

7. Electricity Act, 1998, S.O. 1998, c. 15, Sch. A.

cross-section of interests in the electricity industry. It included representatives of the transmission grid, Ontario Hydro's generation division, local distribution companies, independent power producers, industrial, commercial and residential consumers, environmentalists, and the natural gas industry. Where appropriate, members were expected to consult with their constituencies. The Committee had a non-voting executive comprised of a Chair (R. Daniels), two Vice-chairs (D. Dewees and J. Grant), and a Director of Research (M. Trebilcock). Following a competition overseen by a process consultant, the executive retained a leading international consulting firm with expertise in many aspects of electricity restructuring including first-hand experience with restructuring in many other jurisdictions.

The Committee met 39 times in full-day sessions. There was an almost perfect attendance record. Members also attended a number of workshops and participated on the technical panels and subpanels that operated from mid-September to early December 1998.

A special weekend conference of international experts was organized by the Committee in the spring of 1998 in Toronto. The conference provided members and the broader public with an opportunity to interact with leading utility executives and regulators from a number of electricity jurisdictions that are undergoing restructuring including Norway, the U.K., Alberta, Australia, New Zealand, Argentina and several U.S. electricity jurisdictions.

At one of the first meetings, the Committee defined and agreed upon six criteria that would be used in evaluating proposals. The criteria were not used in a mechanical or rigorous way, but were often invoked to focus members' attention on the real trade-offs that had to be made. The criteria were as follows: (1) efficiency; (2) fairness; (3) reliability; (4) transparency; (5) robustness; and (6) enforceability.

Committee decisions were made by "substantial consensus", which normally meant at least 10 of the 14 votes were in favour. Almost all issues were resolved with at least this degree of consensus — indeed, most were endorsed unanimously.

The Committee met in plenary session for the most contentious issues. Starting in the second quarter, it also met in subcommittee format for more focused discussion of particular areas, such as wholesale, retail, and T&D (transmission and distribution). Members' expert advisors were permitted to attend subcommittee sessions and to participate freely in the discussions.

Officials from the Ontario Energy Board and what was then Central Market Operations (CMO), Ontario Hydro (now the Independent Market Operator) also participated as expert analysts and advisors. CMO staff played an especially important role on the technical panels and subpanels and made numerous presentations to the MDC. Staff from the Ministries of Finance and Energy, Science and Technology attended MDC meetings regularly as observers. The committee benefited from presentations by the federal Competition Bureau, the OEB, the Ministry of Energy, Science and Technology and the Ministry of Finance and its external advisors.

The Committee sketched out a “high-level” design for the market in its first two interim reports. It then established a number of technical panels and subpanels to assist with the development of more detailed rules in the third and fourth quarters. The panels and subpanels focused on specific issues or areas of interest. In total, there were six panels and 20 subpanels involving more than 100 people, most of whom were “seconded” to the market design project by a host of sponsoring organizations and companies spanning all parts of the market and all parts of Ontario.

The panels and subpanels contributed by conducting research and developing recommendations on specific issues, consistent with the Committee’s evaluative criteria and high-level design. After debate by the full MDC, panel recommendations relating to the wholesale market rules went to a rules drafting team for translation into legal text, while those relating to the retail market and certain aspects of transmission were accepted for transmittal to the OEB.

In addition to drawing in a large number of experts, the Committee sought to maintain a transparent process through the publication of comprehensive interim reports and the maintenance of an Internet website. Key papers and minutes were posted on the website, and stakeholder responses to this material were circulated to MDC members.

The Committee’s recommendations took a number of forms:

- advice to the government regarding legislation (prior to passage of the Electricity Act, 1998) and advice which may influence future regulations;
- recommendations incorporated directly into the wholesale market rules that have now been approved in principle by the Minister; and

- advice to the OEB, which has statutory responsibility for deciding the matters in question.

II. THE MARKET DESIGN

We summarize below some of the key features of the market that the MDC designed. It is obviously not possible to provide a detailed summary of all the Committee's work, given the number and complexity of the issues dealt with.

1. The Independent Electricity Market Operator

One of the MDC's first tasks was to recommend a governance structure for the new IMO organization that had been proposed in the Government's White Paper to manage the wholesale spot market and perform the dispatch function. The MDC had to spell out in detail the full range of functions that the IMO would need to perform. Among other things, this task involved defining the relationships among the IMO, the OEB and the transmission owners.

The MDC recommended a hybrid structure for the IMO Board, consisting of five independent directors (which the government subsequently increased to six), nine stakeholder directors, and the IMO's chief executive officer. It also recommended a distribution of stakeholder directors by sector (broadly similar to the composition of the MDC itself), a process for appointing directors and the chair, voting rules for the board, a structure of decision-making panels for the corporation, and many other details.⁸ The governance recommendations were relied on extensively in the drafting of Bill 35, the Electricity Act, 1998, which was introduced in the Legislature on June 9, 1998. With the passage of the Bill (on October 30, 1998), the IMO has now been established. Subsequently, the MDC developed a detailed Governance and Structure By-law for the IMO. The by-law spells out critical details of how the corporation will operate.⁹ The draft by-law will be reviewed, possibly amended, and approved by the IMO board prior to being approved by the Minister.

The MDC did considerable work in the final quarter on principles for the IMO tariff. The MDC's recommendation was that the IMO's costs for administering the market should be recovered through a

8. First Interim Report of MDC, March 31, 1998.

9. Final Report of MDC, January 29, 1999, c. 5.

modest registration or licence fee, plus a simple charge to all buyers based on the amount of energy they purchase.

The MDC recommended that the IMO should have day-to-day operational control of the transmission network through negotiated contracts with the transmission owners. In the model proposed, the IMO has clear and unambiguous responsibility for determining system capabilities as well as the real-time dispatch of generation and loads. This approach ensures non-discriminatory access to transmission and provides for efficient and reliable operation of the network. Transmission owners manage their assets and receive a regulated tariff. This approach was adopted in the Electricity Act, 1998.¹⁰

The operating agreement between the IMO and transmission owners must deal with a number of issues including the duration of the contract, the specific assets to be included and their characteristics, provisions regarding planned outages of equipment, provisions regarding emergencies, provisions regarding liability for damages and provisions relating to the schedule of payments from the IMO to the owners. The CMO and Ontario Hydro Services Company Incorporated have negotiated a draft operating agreement.¹¹ The agreement was developed pursuant to principles enunciated earlier by the MDC, and is likely to become the model for similar agreements between the IMO and other transmission owners in the province. This area of the MDC's work required it to focus, as well, on the responsibilities of the IMO, the OEB and the transmission companies in relation to system expansion. The MDC's recommendations specify the process by which transmission investment decisions would be made in the short to medium term. The IMO's role is to provide long-term forecasts about system requirements and to assess the security and reliability implications of various competing proposals. The OEB considers the costs and benefits of potential transmission expansions and provides plan approval. Its assessment will include potential competing investments in generation, if such proposals are forthcoming.¹²

2. Market Power Mitigation

When the electricity market opens in November 2000, Ontario Power Generation Incorporated will likely control about 90% of

10. Section 26(2) of the Electricity Act, 1998 provides for certain exemptions from the requirement to provide non-discriminatory access.

11. Final Report of MDC, c. 4 (Exhibit "A").

12. Second Interim Report of MDC, June 30, 1998, c. 7; Third Interim Report of MDC, October 8, 1998, c. 2.

domestic generation capacity. In an unregulated market, where there are by definition no price controls, OPGI would be able to push up the price to consumers and perhaps adopt strategies to effectively prevent new competitive generation companies from becoming established in the province. The MDC strongly favoured an *ex ante* "structural" solution to this market power problem.

Accepting that immediate divestiture was not an available option, given the position taken by the government in its White Paper that beyond creating two successor corporations to Ontario Hydro no further reorganization of Ontario Hydro's assets was presently contemplated, the MDC advanced a three-part plan in its *Second Quarterly Report* involving vesting contracts to control monopolistic pricing, "de-control" of Ontario Hydro's price-setting plants, and OEB oversight of the targets as part of its more general responsibility for monitoring the structural evolution of the market.¹³ Extensive discussions were held with Ontario Hydro over the summer of 1998, resulting in significant refinements to this initial plan. The framework agreement reached with Ontario Hydro was endorsed unanimously by the MDC membership in September 1998.¹⁴ The government approved the framework in November 1998, and gave the MDC and Ontario Hydro a mandate to complete the details of the proposals.¹⁵

The MDC recommended a price/revenue cap that works over a transition period to prevent OPGI from exercising its market power to bid up prices. Briefly, an average annual cap of 3.8 cents per kilowatt hour would apply on 90% of OPGI's estimated domestic energy sales. If the market price is higher than this, OPGI would receive only 3.8 cents and the difference would be rebated by the IMO to all Ontario customers. Other generators would be paid whatever the market price happens to be (or the bilateral price that they had agreed to if they had entered into a bilateral contract). This arrangement removes most of the incentive for OPGI to exercise its market power through "pricing up".

Second, the MDC recommended that OPGI be required to transfer effective control of output so as to reduce its effective control of the price-setting (*i.e.* marginal) plants (mostly fossil) in the Ontario market to 35% within 42 months of market opening, and its share of

13. Second Interim Report of MDC, c. 2.

14. Third Interim Report of MDC, c. 1.

15. Final Report of MDC, c. 2.

the overall Ontario market to 35% within 10 years of market opening. The agreement with Ontario Hydro on these market share reduction targets was an historic moment for the electricity industry in Ontario in moving from monopoly to competition.

OPGI will have flexibility in determining how to meet its de-control targets. The MDC favoured asset sales and long-term leases, but noted that other techniques may also be possible. The essential point is to transfer the ability to influence price from OPGI to some other party. It is worth reiterating that the de-control numbers are "must meet" targets. Indeed, the MDC expressed the strong desire and hope that these targets can be met well within the specified time frames.

Third, complementing the de-control plan, the MDC also recommended that Ontario Hydro Services Company Incorporated (the transmission grid) make a "best efforts" commitment to increase inter-tie capacity with neighbouring jurisdictions by 50% within three years of market opening.

The fourth major element of the market power mitigation strategy is regular reviews by the OEB. The MDC recommended several OEB reviews, the first of which will occur at 42 months after market opening and will assess OPGI's success in meeting the initial de-control target on the marginal plants. The government has committed itself to this process by already issuing to the OEB formal directives and requests to undertake these reviews against the detailed targets stipulated in the MDC's Market Power Mitigation recommendations.

In addition, draft elements of a memorandum of understanding setting out the respective monitoring and enforcement responsibilities of the Market Surveillance Panel of the IMO, the OEB, and the federal Competition Bureau with respect to market abuses were tentatively agreed to by the MDC, the OEB and the Bureau subject to further refinements. This will be designed to minimize institutional overlaps and maximize regulatory complementarities.

3. The Wholesale Market Design

The central task given to the MDC was to design detailed rules for the Ontario wholesale electricity market. An initial, difficult challenge was to determine which items should go into the rules and which should be left to licenses, codes, or other instruments.

Broadly speaking, the MDC drafted rules that address the following issues: who is allowed to participate in the market and under what conditions; what participants are allowed to do and what they are prohibited from doing; how they make bids and offers; what kind of products there are; how prices get calculated; how bills are calculated and settled; how information is provided and used; and many other matters.¹⁶

In developing the rules, the MDC relied to a considerable extent on the rules documents of the Australian State of Victoria, as well as the rules of the England and Wales system. It also paid considerable attention to the type of rules that exist, or are likely to be implemented, in neighbouring electricity jurisdictions such as New York and PJM (the Pennsylvania, New Jersey, Maryland system). The MDC work proceeded in logical, step-wise fashion from "high-level" design principles through to the production of over 300 pages of detailed rules for the wholesale market.

One of its early decisions was that the Ontario market should have a hybrid structure. It should consist of a voluntary "pool" (*i.e.* a spot market, supplemented by financial contracts for differences), but should also permit physical bilateral contracting among market participants subject to the equivalent treatment of bilateral and spot market traders and to fair and reasonable allocation of the costs of settlement systems.

Physical bilateral contracts are agreements between individual buyers and sellers of electricity that, having informed the IMO, are netted out of the IMO's settlement process. In the case of a *financial* bilateral contract, the full amount passes through the spot market and is settled with the IMO; the two parties normally settle between themselves for the difference between their contracted price and the spot price. In the MDC recommendations, the parties to a physical bilateral contract, who must be licensed market participants, will inform the IMO in the predispatch process of the amount of energy they have scheduled between them and the locations at which it will be injected and withdrawn from the grid. Each site must also independently specify 'increments and decrements', in effect telling the IMO that if the market price in the dispatch reaches specific levels, they would be prepared to add to, or subtract from, the

16. See Second Interim Report of MDC, c. 3; Final Report of MDC, c. 3, and vol. 2 (Draft Market Rules).

scheduled injections or withdrawals. Any deviations from the scheduled amounts would be settled with the IMO at the market price. The selling participant must inform the IMO of the amount(s) to be netted out of the IMO's settlement process, identifying the specific withdrawal locations and quantities.

Market participants expressed a clear and strong preference for a model that permits physical bilaterals. The MDC recommended a hybrid market, based on the principle that traders should have maximum flexibility to structure commercial transactions in whatever manner they regard as best. How much of their business they transact through the spot market and how much through physical bilaterals is entirely up to them. As noted, however, the MDC did recommend two important limitations on the use of physical bilaterals, one to ensure equal treatment of bilateral and spot traders, and one to ensure that the costs of settling physical bilaterals at the retail level are shared fairly.

It also recommended that the IMO should administer a voluntary, day-ahead forward market for purely financial contracts, in addition to the real-time (pre-dispatch) market. It concluded that such a market could be run at minimal cost, and could provide a useful hedging mechanism for market participants.

The MDC discussed the issue of generation capacity at considerable length. In a competitive market, no profit-maximizing generator will want to hold idle or under-performing capacity. This creates concerns that short-term capacity shortfalls could occur. The MDC recommended that expected shortfalls in capacity be addressed through a market in a new type of capacity reserve, which the IMO could activate as and when necessary. The principle is that the IMO should have the ability to intervene if an appropriate level of investment is not forthcoming, provided the mechanism used reflects market-based principles and is not unduly intrusive. The IMO will, of course, be disseminating information on the long-term market outlook. Generators and transmission owners can use this information to plan their investments. Ultimately, good information and correct price signals are the keys for ensuring the timely expansion of the system.

The MDC's market design includes a bid-based market for certain ancillary services that are needed to ensure system reliability, notably regulation and operating reserves. This recommendation illustrates a key point about the market design project: the "competitive

market" is necessarily much broader than just a market in commodity electricity.

From a technical point of view, there are many challenges in running multiple, integrated markets in a manner that is fair and efficient and ensures reliability. The market clearing logic the MDC recommended uses a joint optimization procedure to handle this problem. In the coming months, the market rules will need to be adjusted to include regulation in the optimization procedure. The market rules also accommodate the provision of ancillary services to the IMO through competitively sourced contracts and must-run contracts when local supply and reliability are an issue.

One of the MDC's key recommendations regarding the wholesale market is that there should be a locationally uniform price for electricity for the first 18 months of the market, but that, thereafter, congestion pricing should be introduced, initially for wholesale market participants and later, with OEB approval, for all retail end-use customers.

When congestion occurs on a section of the transmission network, higher-cost generation has to be substituted for the lower-cost generation that would otherwise be used. For the first 18 months, the cost of this "redispatch" will be spread across all customers and a uniform price will be maintained. Under congestion pricing, energy prices would differ from place to place whenever congestion exists, reflecting the real-time marginal cost of supplying energy at each point on the network.

The MDC strongly supported the principle of congestion pricing. The point of introducing a market is to produce price signals that lead to socially desirable decisions. Pricing for congestion ensures more accurate price signals. Customers in an area experiencing persistent congestion get a signal to alter their consumption level and pattern; generators get a signal as to where they should build and transmission owners and the regulator get a signal about where line improvements or expansions are most urgent. In short, pricing for congestion is essential to secure economically rational investment decisions.

4. The Environment

The MDC's terms of reference required it to consider appropriate environmental protection measures in the design of the electricity market. In the MDC's view, an air emissions cap and trade program

should be launched at the same time as the electricity market is opened to competition.¹⁷ Public acceptance of the electricity restructuring initiative is tied intimately to the adoption of measures to control power plant emissions and to otherwise protect and improve the environment.

It also recommended that the market rules should allow green power to be advertised and marketed to customers, subject to development of a mechanism for verifying green power claims and associated provisions in retailer licences. It also recommended that all sellers of electricity to end-use customers provide information on the generation source and the pollution emissions associated with that electricity. These recommendations are based on a desire to ensure opportunities for environmentally friendly generation without compromising consumer protection. The MDC debated at length the desirability of imposing minimum renewable portfolio standards on generators but in the end did not recommend such a requirement.

5. Transmission and Distribution

The MDC recommended four classes of transmission service for inclusion in the market rules.¹⁸ The principal class is basic network service, which would be paid by all customers in Ontario. It concluded that exports and wheel-through transactions should not be charged in respect of the fixed costs of the transmission system. However, the parties to such transactions would be required, like all other bilateral traders, to pay any redispatch costs occasioned by their transactions, plus line losses and a pro rata share of the IMO costs. This recommendation has implications for Ontario's relationships with neighbouring control areas, particularly in regard to the treatment of wheel-throughs. The MDC recognized the need to consider issues of reciprocity in the implementation of this proposal.

A significant policy challenge is posed by new relatively small-scale generators that are built for self-supply or to supply the local distribution company. On the one hand, such investments should not be discouraged since new generation will be needed in the future and investments in smaller scale generation are often environmentally preferred. On the other hand, investments that would

17. Second Interim Report of MDC, c. 5; Final Report of MDC, c. 7.

18. Third Interim Report of MDC, c. 2; Final Report of MDC, c. 4.

not otherwise be undertaken but are undertaken solely to avoid transmission charges should not be encouraged. The economic signals are clearly not correct if investors are building new generation with an all-in energy cost that is higher than the price of energy obtainable from the grid. To deal with this issue of "uneconomic bypass", the MDC proposed that transmission be charged on a gross load basis, which means that market participants who install new embedded generation after a defined date would pay for transmission on the basis of their demand inclusive of the amount supplied by the new generation. This bypass issue is very important. Tolerating incorrect prices and unfair cost shifting in the initial market design could lead, in the long run, to resource misallocations that are no less serious than those of the old monopoly regime.

Traditionally, investments in generation and transmission were planned and implemented on an integrated basis by Ontario Hydro. With the opening of the market, future generation investments will be undertaken on a decentralized basis by competing firms. This makes it necessary to rethink the process by which investments in transmission will be made and how generation and transmission expansions will be coordinated in a competitive market.

The MDC recommended that transmission investments continue to be centrally planned during the initial years of the market, with a major analytical and assessment role for the IMO and oversight by the OEB. The costs of new investments would be rolled into the costs to be recovered through the transmission tariff. However, the MDC contemplated a need to move to a regime where transmission investments are market-driven. As noted above, congestion pricing is a prerequisite for such an entrepreneurial approach. An entrepreneurial approach also requires acceptance of the idea that the beneficiaries of a transmission expansion should pay for it and have rights with regard to its future use.

The MDC also dealt with a large number of technical issues leading to rules for outage co-ordination and the calculation and apportionment of line losses.

With regard to distribution, it addressed the separation of transmission and distribution functions, and the separation of the distribution wires business from the competitive retailing function, reflecting the government's position in its White Paper that LDCs should be required to form separate retail affiliates to undertake competitive activities, leaving the natural monopoly distribution function with the LDCs.

6. Retail Competition

In its White Paper, the government announced its intention to introduce full retail competition at the same time as wholesale competition is introduced. This objective is designed to ensure that every consumer in the province, irrespective of size or location, immediately experiences the benefits of industry restructuring.

The OEB has responsibility for most of the key decisions that will shape the nature of the retail electricity market, pursuant to the Electricity Act, 1998. Given the MDC's terms of reference and the need for compatibility between the wholesale and retail markets, the MDC undertook to provide the OEB with a substantial volume of research and advice about the retail market.¹⁹

The MDC's key retail initiative was to require local distribution companies to pass through the wholesale spot market price to end-use consumers. This is critical to ensuring that the long-term price reductions expected from introducing competition at the wholesale level flow through to customers, including those who choose to remain on default supply (*i.e.* do not elect supply from another retailer). If the benefits of reform are not fully passed through, then the restructuring will have failed in one of its key objectives.

The MDC recommended that default supply for those who stay with their traditional supplier be provided on the basis of a smoothed (averaged) spot market price, with true-ups on a defined schedule. The smoothing methodology and time period would be the same for all default suppliers in the province.

By averaging over multiple billing periods, the smoothed spot option has the advantage of mitigating the cash flow impact of market price volatility on consumers. But, at the same time, it maintains a clear connection to the spot price, giving customers a reason to think about energy conservation and a benchmark against which they can judge some of the supply options that competitive retailers in their area may offer.

The pass through of the spot price is critical to the exercise of genuine customer choice at the retail level. Distributor licences should require the distributor, at a customer's request, to send the customer's spot-priced bill to a competitive retailer named by the customer. The retailer would then pay the distributor's bill, and

19. Second Interim Report of MDC, c. 4; Third Interim Report of MDC, c. 3; Final Report of MDC, c. 6; Retail Technical Panel, vol. 4 of Final Report of MDC.

settle up with the customer on the basis agreed between the two of them. The bill, which reflects the customer's usage and the weighted hourly spot price, is the foundation on which customers and retailers can negotiate competitive supply contracts. Using the information on the bill, they can settle between themselves according to whatever terms and conditions they have agreed upon. For example, a consumer seeking strong protection against future price increases could negotiate a fixed-price contract with a competitive retailer. A customer who prefers no price averaging at all could negotiate simply to pay the actual spot price over the billing period. Such contracts are easily written and settled, given the initial bill. The customers are able to exercise choice and select the combination of price and risk that they are most comfortable with. In addition, competitive retailers may offer other value-added services that would not otherwise be available. The MDC's recommendations allow for alternative billing options, such that the customer could interact exclusively with the retailer, exclusively with the distributor, or with the former for energy and the latter for wires charges. These are refinements that increase market flexibility at minimal cost beyond that of customer education. The MDC also developed a number of recommendations related to the customer transfer process.

The Electricity Act, 1998 permits default supply and competitive services to be provided by the same corporate entity. Some of the MDC members believed that it makes good business sense to organize their affairs this way. Others were concerned about the incremental regulatory burden that will likely be involved in ensuring that the bundling of these activities in a single entity does not result in significant discriminatory or anti-competitive behaviour. The MDC's recommendations addressed the risks to the market of two key types of anti-competitive behaviour: cross-subsidization of competitive businesses by monopoly businesses and preferential access by affiliated competitive businesses to default customer information. The MDC considered at length the question of how default customers are served if the local distributors provide default supply through their retail affiliate or a third party that provides competitive electricity services. It was concerned that transfer of customer data to an affiliate or a third party could unduly advantage the affiliate or third party, thereby discouraging the entry of new competitive retailers and effectively denying consumers the real choice the government has promised them. This was one of the very few issues on which the MDC was unable to achieve substantial consensus.

One of the more technical issues addressed on the retail side concerned the retail settlements system and specifically how customers' hourly consumption will be estimated, given that few customers will initially have interval (hourly) meters. An estimation technique is needed because bills will be computed using hourly spot market prices. The MDC decided in favour of the net system load shape. The net system load shape is basically the hourly profile that is left when the hourly consumption of all interval metered customers is subtracted from the distributor's hourly purchases from the IMO. Importantly, competitive retailers will not be permitted to compete by offering alternative profiles.

Over the longer term, advances in metering technology will be an important factor affecting the depth of the retail market. The MDC recommended that the retail metering market should be opened to competition for customers above 50-kw consumption in the first year, with the OEB to determine within three years whether further unbundling would be of benefit to small volume customers, which is likely largely to turn on innovations and declining costs in metering technology.

The Retail Technical Panel advised that, for practical reasons and under current federal law, metering would have to be provided through either the distributor or a retailer. It would not be possible, at least in the period immediately ahead, to have metering companies directly approaching retail customers. However, it will be a significant step in the right direction if distributors begin to contract out significant amounts of their metering work to competitive suppliers.

As in the wholesale market context, many issues around confidentiality and access to data were explored. While recognizing that a robust retail market depends on significant data being available to competitive retailers, the MDC firmly favoured consumer protection and privacy. The success of the market will depend in large part on the existence of conservative procedures that minimize the risks of customer data being transferred without clear and explicit customer authorization. Similarly, there should be strict controls to prevent the unauthorized transfer of customers from one business entity to another. Consumers should always have the right to access their basic information such as the records on their meter reads or their payment history. While this is generally the case now, the policy should be enshrined by the OEB through licences to ensure that competitive retailers are covered. Another key recommendation

was that no entity be able to use basic consumer information for secondary purposes unless the consumer explicitly agrees in writing to such use.

Consumer protection goes hand in hand with consumer education. A great deal of work needs to be done to ensure that consumers are ready for the commencement of retail competition in November 2000. Consumers need to be informed of how the new system will work and of their rights and responsibilities. The Retail Technical Panel provided an extensive list of the kinds of information that customers will need in order to understand and evaluate their options.²⁰ Among other things, the MDC recommended that the OEB be responsible for ensuring that educational information is available to consumers on an ongoing basis. Distributors, as a condition of licence, would be required to distribute consumer education materials issued by the OEB or the Ministry of Energy, Science and Technology.

III. PROVISIONAL LESSONS FROM THE ONTARIO EXPERIENCE

In terms of provisional lessons that might be drawn for electricity restructuring initiatives from the Ontario experience to date, including in particular the extensive deliberations that occurred within the MDC around central issues of contention and from reviews undertaken by or on behalf of the MDC of experience in other jurisdictions relating to these issues, we identify the following short list of key design issues that are likely to prove difficult to resolve in any electricity restructuring but which are also likely to prove key determinants of the success of efforts to create a competitive electricity industry.²¹

1. Management of the Market

It is a truism to state that markets, at least markets as complex as network markets for electricity, rarely exist in a state of nature and typically require a sophisticated supporting infrastructure that defines and allocates property rights to various resources and provides for their enforcement and transferability. These entitlements

20. Volume 4 of Final Report of MDC.

21. Much of the following discussion has been influenced by a recent highly insightful and illuminating paper by Larry Ruff (Senior Economic Consultant to the MDC), "Competitive Electricity Markets: Why They are Working and How to Improve Them", *supra*, footnote 1.

extend well beyond commodity electricity to various ancillary services and reserves and transmission rights. Under the traditional vertically integrated monopoly model, in contrast to competitive markets in these resources, little attention had to be paid to these issues as they were addressed internally through various forms of command-and-control or hierarchical decision-making — a kind of central planning model — often subject to some form of external regulatory oversight. The complexity and detail of both the market rules to be administered by the IMO and regulatory licence conditions to be administered by the Ontario Energy Board in order to induce the emergence of an efficient, competitive market are striking and indeed daunting.

With respect to the role of the IMO in managing the wholesale market, threshold issues of some contention that the MDC was required to address related to both the functions and governance of the IMO (in other jurisdictions often referred to as the Independent System Operator (ISO)). Two core functions will be performed by the IMO, both of which were subject to vigorous debate within the MDC: (a) operating a wholesale spot market and (b) performing the dispatch function. Arguments were made to the MDC by various market intermediaries that these functions should be separated and that short-term trading should be left to private markets and private contracting. However, the MDC was persuaded that the dispatch function could not be performed efficiently without the IMO also managing the short-term physical spot market, given the need to coordinate real-time operation of the system with contractual commitments typically made in advance of real time operating decisions. California's efforts to separate the dispatch function from the operation of short-term spot markets has proven problematic, and recent proposals by the electricity regulator in Britain to dispense with an integrated wholesale power pool have proven highly contentious. It should be added that the fact that the IMO is to operate an integrated wholesale power pool (spot market) with its dispatch function does not preclude other short-term trading arrangements outside of the pool, including financial transactions such as contracts for differences and physical bilaterals. However, the integrated spot market should provide an efficient set of reference prices for these other transactions and if it is operating efficiently it should probably limit the scope or demand for extensive collateral short-term trading arrangements.

Another point of contention that the MDC was required to address related to the IMO dispatch function. In order to manage efficiently the physical operation of the power system and the complex network externalities that power systems entail, the IMO must have significant authority over the day-to-day physical operations of the entire system, including in particular the transmission grid. This led the MDC to recommend that the IMO negotiate an operating agreement with the transmission grid owners that would specify respective realms of responsibility over the transmission system and related compensation and liability arrangements. This was a decision that the successor corporation to Ontario Hydro's transmission grid initially strongly resisted, although eventually a mutually satisfactory draft operating agreement between the IMO and Ontario Hydro Services Company Incorporated was negotiated under the auspices of the MDC.

A final core set of issues relating to the management of the wholesale market entailed the resolution of a variety of governance issues relating to the IMO. One possible governance model would be a kind of co-operative or stakeholder model, where various constituencies would elect or appoint representatives to the board of the IMO and its key committees. Another model would contemplate a completely independent board, presumably appointed by government. In the end, the MDC recommended a blend of these two models with key constituencies electing their nominees to the board of the IMO and its key committees, and the Minister appointing a significant minority of independent directors.²² Whether this intermediate governance model will prove effective is a matter on which judgment at this point would be premature, although in many respects it resembles the model of the MDC itself, which proved reasonably effective in designing the key features of a competitive electricity market in Ontario.

2. Transmission Congestion

In most relatively self-contained vertically integrated monopoly electricity systems, incumbents have typically reported that issues of transmission congestion are of minor significance. They have

22. See James Baker, Bernard Tenenbaum, and Fiona Woolf, "Governance and Regulation of Power Pools and System Operators: An International Comparison" (World Bank Discussion Paper, September 1997).

been dealt with through internal planning and operational processes. However, experience from other jurisdictions that have undertaken competitively oriented electricity restructurings suggests that in more decentralized competitive environments entailing investment and production decisions by a multitude of actors on both the supply and demand sides of the market, transmission congestion can rapidly become a serious problem.²³ Short of giving the IMO a large command-and-control responsibility for resolving these problems, which in fundamental respects is incompatible with the development of competitive markets, there is no alternative but to move to some form of locational pricing, such as zonal or nodal pricing. This is likely to prove a highly sensitive political issue (as it has in other utility sectors that have been deregulated such as telecommunications), as it renders explicit a variety of cross-subsidies that were largely hidden in the operations and pricing structures of vertically integrated electricity monopolies. In the case of Ontario, the Ontario government in its White Paper committed itself to maintaining (uniform) electricity prices, posing a major challenge for the MDC in formulating viable solutions to potential problems of transmission congestion. These issues engaged extensive discussion within the MDC and with the Ministry of Energy, Science and Technology. In the end, the MDC recommended a phased implementation approach to locational pricing with uniform transmission prices for a short period after market opening, then locational pricing on either a nodal or zonal basis for wholesale consumers, and then locational pricing for all consumers, including retail consumers, subject to further review by the Ontario Energy Board. In order to cushion the effects of locational pricing on consumers in remote areas, the government committed itself to maintaining its existing Rural Rate Assistance Programme of direct subsidies to existing groups of rural consumers but without any necessary commitment to providing such subsidies to future residents in these areas.

3. Investment in Generation Capacity

A persistent concern in jurisdictions that have undertaken competitively oriented electricity restructuring is whether competitive electricity markets will attract adequate investment in generation capacity, in particular peaking and reserve capacity that may only

23. Ruff, *supra*, footnote 1, at pp. 23-27.

need to be deployed episodically (*e.g.* after failure of a generating unit or transmission line). Energy prices accurately reflecting such effects would have to be determined every few seconds (at every location, in principle) and would have to increase to many thousands of times normal levels during critical seconds.²⁴ Hourly energy prices by definition cannot provide price signals concerning events within the hour and tend to be below the average of the correct instantaneous prices over the hour, particularly during critical hours when peak capacity is needed. The ability of a load to take power from the grid without a prior contract with a generator in these circumstances creates a potential network externality that may lead to lack of voltage support, brown-outs, or at the limit system failure. Even if it were possible to solve the problem of generating instantaneous prices, political resistance to very high price spikes during moments of critical shortages leading to concerns of “gouging” or costly or disruptive load shedding may make it infeasible to rely on commodity price signals alone to resolve the capacity problem. As Ruff notes,²⁵ experience with competitive electricity systems has buried the bogeyman that nobody will invest in power plants without long-term contracts. Systems based on spot markets with no long-term contracts have seen large amounts of new generation investment (including Chile, Argentina, Peru, and England and Wales). However, in other systems (*e.g.* Alberta and Victoria), inadequate generating capacity, in particular peaking capacity, has proven a problem.

One response to this problem is that the IMO could impose installed capacity requirements where market participants are required to provide or pay for more generation capacity and more peaking capacity in particular than is commercially justified based on the hourly energy prices alone. This could be done, for example, by imposing an annual capacity requirement on each retailer equal to that retailer’s projected peak demand over the upcoming year plus a margin reflecting uncertainty about demand and generation availability, implying that retailers bidding for generation capacity and contracts to meet their capacity requirements will provide additional income to generators beyond hourly energy prices. Alternatively, the IMO can institute a capacity market in which it will pay generators for maintaining operating reserves that can be called on

24. *Ibid.*, at p. 28.

25. *Ibid.*, at p. 27.

quickly to deal with supply shortfalls. These capacity payments would take the form of an hourly energy price "adder". When there is plenty of capacity relative to the demand, the price of operating reserve will be small or zero, but when capacity becomes tighter, these payments will need to be increased to induce investments in additional capacity. The MDC recommended that the IMO be vested with the authority to institute a capacity market if it determines that capacity, in particular peaking capacity, has become too tight. In this event, the market would determine a combination of an hourly energy price and an hourly capacity price that clears each hour.

4. Market Power in the Generation Segment

In competitively oriented electricity restructurings that begin (as they typically do) with an incumbent vertically integrated monopoly, most jurisdictions have encountered serious market power problems in their generation segments during the transition period to a competitively structured industry.²⁶ Even in jurisdictions like England and Wales, where breakup and privatization of the existing generating plants of the incumbent state-owned monopolist were undertaken at the outset of the restructuring exercise, market power problems have persisted despite further divestitures required by the regulator and have led to the imposition of temporary price caps by the regulator.²⁷ In Ontario, this is a particularly serious problem given that the successor corporation to Ontario Hydro's generation facilities, OPGI, currently accounts for about 90% of electricity supplied to the Ontario market, and given the technical constraints on inter-tie capacity with neighbouring jurisdictions that limit the amount of electricity that can be supplied by these jurisdictions at present to about 25% of Ontario demand.

Most of the MDC members strongly favoured *ex ante* structural solutions to this problem, but the government in its White Paper took the position that no further reorganization of Ontario Hydro's assets, beyond creating the two successor corporations, was contemplated at this time, thus ruling out more radical and straightforward

26. See Michael Trebilcock and Michal Gal, "Market Power in Electricity Industry Restructurings" (1999), 22 *World Competition* 119; and Ronald Binz and Mark Frankena, "Addressing Market Power: The Next Step in Electricity Restructuring", Policy Paper, Competition Policy Institute (Washington, DC, 1998).

27. See John Kwoka, "Transforming Power: Lessons From British Electricity Restructuring" (1997), *Regulation* (Summer) 47.

structural solutions involving breakup, divestiture, and privatization for the time being. These kinds of structural options are, of course, matters of high politics within the province. Ontario Hydro's workforce is highly unionized and the Power Workers Union early in the current government's tenure ran high profile media campaigns decrying radical structural options. In addition, many Canadian nationalists are vehemently opposed to so-called "heritage assets" (such as Niagara Falls) falling into foreign hands, while many other citizens are concerned that private operators of Ontario Hydro's fleet of nuclear power plants may have stronger economic incentives to chisel on appropriate investments in maintenance, safety, waste disposal and decommissioning (although Ontario Hydro's recent record in operating these plants has perhaps assuaged these concerns).

The MDC spent a large amount of time wrestling with these issues. Part way through its mandate, it sought and obtained from the government authority to embark upon a set of negotiations with Ontario Hydro around certain key elements in a market power mitigation strategy that would entail price constraints on Ontario Hydro in the short-run, pending achievement of certain medium and longer term targets in terms of transferring effective control through one mechanism or another to third parties of substantial shares of its generating output required to service Ontario demand. These negotiations were protracted, complex, and contentious, rendered more difficult by various trade-offs confronting the government. These included a desire to minimize Ontario Hydro's stranded costs and hence the need for a substantial stranded debt charge (in effect a tax) to cover these costs, given the government's general political commitment to tax reduction in the province. Hence there was a desire to capitalize the successor corporations to Ontario Hydro with as much debt as they could carry, which in turn requires higher assured revenue streams, which are likely to be inconsistent with achieving competitive and less predictable electricity prices. In turn, many independent power producers were critical of efforts by the MDC to constrain Ontario Hydro's prices to below monopoly levels in the short-run through price caps on the grounds that these constrained prices would render new independent investment in generating capacity economically less feasible than being able to price at or just below Ontario Hydro's monopoly pricing umbrella. On the other hand, industrial, commercial, and residential consumers were

inclined to view solutions to the market power problems short of radical *ex ante* structural solutions as temporizing with the problem.

An alternative solution may have been to set a higher price cap (*e.g.*, 4.5 rather than 3.8 cents per kw/h), to eliminate the estimated 0.6 cent stranding tax (the Competition Transition Charge), and to load up OPGI with a higher debt burden reflecting a higher expected revenue stream. However, several difficulties emerged with this option. First, a price cap is not a price guarantee and if OPGI could not in fact realize an average price of 4.5 cents per kw/h (which MDC and OPGI's modelling exercises suggested doubts about), the government as its shareholder could face the prospect of a major corporate financial crisis. Second, even if OPGI could exercise sufficient market power to realize 4.5 cents per kw/h (and was capitalized accordingly), it would have severe disincentives to implement structural measures that would be likely to undermine its future ability to maintain this price level. Third, to rely on green-field entry as an effective source of competitive discipline on OPGI's prices, given the lags involved in major new investments and OPGI's high market share, would leave in place an uncompetitive market for an extended future period. Finally, lack of adequate generating capacity has not been a problem in Ontario: indeed, many of Ontario Hydro's financial problems are attributable to over-investment in system capacity, subject to recent questions about the reliability of a number of its nuclear generating plants. Thus, transferring effective control of substantial portions of its existing generating facilities to potential competitors as quickly as economically and politically feasible is a more effective structural solution. Allowing OPGI to retain the proceeds from disposition and to acquire assets elsewhere would be an important inducement to move quickly in this direction.

Despite these cross-cutting factors and interests, the MDC members unanimously agreed (with greater or lesser enthusiasm) to the package of proposals described earlier in this article which were reduced to a detailed formal agreement between the MDC and Ontario Hydro by the end of the MDC's mandate, endorsed by the Minister and embodied in a detailed directive and request by the Minister to the Ontario Energy Board to oversee the attainment by OPGI of the stipulated de-control targets. How effective these proposals will prove in mitigating OPGI's market power remains to be seen, although it is abundantly clear that the success or failure of the competitive electricity market in Ontario largely turns on their efficacy. We personally would prefer to see the early privatization

of OPGI through a broadly held public offering (much as in the case of recent privatization of the Canadian National Railroad), subject to an accelerated form of the market power mitigation constraints described above. It will become increasingly inappropriate in a competitive Ontario market and in expanding into other markets by exports or acquisitions of generating facilities for OPGI to be either constrained or assisted by state ownership.

5. Retail Competition

Ensuring the benefits of effective retail competition, especially for small volume residential consumers, has proven a more daunting challenge than ensuring effective wholesale competition in most jurisdictions that have undertaken competitively oriented electricity restructuring.²⁸ Partly this is a function of the high cost of the sophisticated (interval) metering and complex settlement and reconciliation systems usually thought to be necessary to allow retail competition. Partly it is a function of the relative size of transaction and switching costs for both retailers and consumers of small volumes of electricity. Partly it is a function of the political imperative in many jurisdictions of retaining a captive consumer base that can bear (disproportionately) stranding costs. Where wholesale competition has been introduced, the largest industrial customers usually have had sufficient political influence, credible commercial options and technical capabilities that they are able to obtain access to electricity at essentially the wholesale price. Medium size industrial and commercial consumers usually get access to such prices somewhat later, and small retail consumers much later again.

In Ontario, the government in its White Paper committed itself to introducing wholesale and full retail competition simultaneously when the market opens in November 2000. Thus, the challenge for the MDC (and subsequently the OEB) has been to devise a regime that will ensure effective retail competition, even for small customers, immediately when the wholesale market opens. This objective largely precluded establishing as preconditions the installation of sophisticated interval metering devices in all residential homes or establishing complex settlement and reconciliation procedures between retailers and local distribution companies. In order to ensure that all retail consumers immediately have access to wholesale

28. See Ruff, *supra*, footnote 1, at pp. 33-39.

prices, the MDC recommended that LDCs be required to pass through to all retail customers electricity at wholesale prices, plus a small administrative charge to cover billing, metering and bad debt costs. Retail prices will, in effect, be the spot prices established in the power pool and will be subject to greater volatility than retail consumers have previously experienced. Hence, the MDC contemplated some form of smoothed wholesale spot price pass-through, although even short-term smoothing will leave consumers exposed to more price volatility than in the past. The MDC's proposals contemplate that independent retailers or the competitive retailing affiliates of LDCs would be able to compete for retail customers by offering different contractual terms and other value-added retail services. In the event of a retail customer entering into a contract with an independent retailer or the competitive retailing affiliate of an LDC, the LDC would simply redirect, at the customer's direction, the latter's spot price bill to the retailer for payment, while the retailer would settle up with the customer on whatever terms have been contractually agreed to. These proposals preclude LDCs leveraging their market power in the wires business (which would remain subject to performance-based regulation by the OEB) into the electricity retailing segment by charging monopoly mark-ups on the commodity itself, or alternatively requiring detailed regulation of retail commodity prices by the OEB.

These proposals engendered significant opposition from the LDCs (MEUs) in two respects. First, they would have preferred to offer fixed price contracts, as the default supply option, to retail customers. Second, a number of LDCs wish to maintain the option of assigning to their competitive retail affiliates default supply customers and providing the wholesale spot price pass-through default supply option through these affiliates. While the MDC, by substantial consensus, rejected the first proposal, it was unable to reach agreement on whether LDCs should be permitted to meet default supply obligations through their competitive retail affiliates and this issue is currently before the Ontario Energy Board for resolution. On the first proposal, most of the MDC members thought it inappropriate and antithetical to effective retail competition that LDCs, through their wires companies, should be assuming pricing risks by entering into fixed price contracts that may prove to be at variance with prevailing wholesale prices and imputing the cost of bearing these risks to their monopoly wires business. As to the second proposal, while if adopted it would clearly increase the value of

these affiliates of LDCs by assigning to them initially a large retail customer base and hence increasing the market value and perhaps saleability of these retail affiliates, a number of MDC members were concerned that this would provide these affiliates of the LDCs with preferential access to consumers and consumer information relative to independent retailers and exacerbate market-power problems in the retail segment of the market. Independent retailers, while sharing this latter concern, appear to be opposed to the wholesale spot price default supply option, in that it leaves very few incentives for retail consumers to search out better retail options elsewhere, given that it seems unlikely that independent retailers can systematically beat the wholesale spot price, limiting independent retailers to providing contractual offerings designed to reduce price risk or volatility for retail consumers, plus other value-added services such as various energy conservation mechanisms.

Thus, despite the MDC's efforts to formulate a relatively simple, "fast start" form of retail competition for small volume consumers, important features of the MDC's proposals remain contested, and will require resolution by the OEB in the near future before the market opens.

6. The Reform Process

The reform process itself in Ontario holds out potentially interesting and useful lessons for major public policy reforms in reflecting on the relationship between ideas, interests and institutions in the policy process.²⁹ First, it appears to be the case that often a major crisis is required in order to undermine public confidence in existing policies and institutional arrangements and create a receptiveness to major policy alternatives. Second, while a crisis presents opportunities for new ideas about new or old issues, it also presents dangers of precipitate or ill-considered action that may simply exacerbate the underlying causes of the crisis. Third, new ideas, without the support of political interests, are unlikely to make much political headway, so that ideally the reform process requires a judicious and delicate balancing of new ideas and effective political interests, including interests (such as demand-side interests) that

29. See Michael Trebilcock and Ron Daniels, "Journeys Across the Institutional Divides: Reinterpreting the Reinventing Government Movement", Working Paper, University of Toronto Law School, 1999.

may have been marginalized in pre-existing institutional arrangements. The composition of the MDC with 14 stakeholder representatives and an independent executive and a major international lead consulting firm retained by the executive reflected an attempt to strike this balance. Despite pessimistic prognostications by the business press on the appointment of the MDC that it would “die the death of a 1,000 cuts” through impasses on all important decisions, this in most cases proved not to be the case, and indeed the bottom-up design of the competitive electricity market attracted much less public rancour and divisiveness than the government’s top-down efforts to restructure municipal government in Toronto and school boards and hospitals throughout Ontario. The lesson here may be that within a broad (but not aphoristic) policy mandate established by government (*e.g.* wholesale and retail competition by the year 2000), the detailed design of policy instruments for realizing this broad objective may well, in many cases, most productively be remitted to a combination of representatives of affected stakeholder groups and independent analysts with the objectivity, detachment and credibility to promote new ideas for resolving new or old issues with a recommendatory relationship to government that remains ultimately accountable for the reform process. This process is a form of regulatory negotiation (“reg neg”), as recent U.S. administrative law literature refers to it,³⁰ in contrast to legislative or command-and-control policy-making. While there are obvious dangers with regulatory negotiation, such as excessive influence by well-resourced interests, exclusion of relevant interests and analytical perspectives from the process, unprincipled or policy-incoherent compromises and lack of transparency, we believe that these dangers can be minimized and that the process has many offsetting virtues. Fourth, beyond the initial reform process, the design of ongoing institutions for implementing and adapting the proposed reforms (in this case, in particular the IMO) requires a similarly judicious and delicate balancing of interests and ideas in the composition of the governance structures and design of the decision rules for these institutions if regulatory impasses are to be avoided and the potential for both ongoing stakeholder confidence and policy innovation is to be maximized.

These are the lessons that we draw to this juncture from the Ontario experience with electricity restructuring. We emphasize

30. See Twenty-eighth Annual Administrative Law Issue (1997), 46 Duke L.J. 1255-1473.

that these lessons are necessarily tentative and are really in the nature of a progress report. While plans for the advent of wholesale and retail competition in Ontario in the year 2000 appear to be proceeding relatively smoothly and on schedule, real-life markets have a habit of yielding unpredictable surprises — some pleasant and some unpleasant — so that firm conclusions on how well Ontario has managed the transition from monopoly to competition in electricity must necessarily await the accumulation of a worthwhile body of hard evidence from real, not paper, markets. Nevertheless, we remain cautiously optimistic.

We close this review of the Ontario experience to date with electricity restructuring with one final and abiding thought from our involvement in the restructuring process: an immense amount of effort and human and other resources is required to design the ground rules and institutional infrastructure for competitive markets in network industries as physically and technologically complex as electricity. Contrasting the complexities, inefficiencies and distortions of regulated industries with the simplicity and efficiency of state-of-nature competitive markets (as some economists are wont to do) completely obscures this basic truth. As Professor William Hogan of Harvard University (an internationally acknowledged economic expert on electricity restructuring) remarked at the Toronto Conference referred to above, *not* regulating electricity prices requires an extraordinary commitment of effort that may be comparable to the amount of effort required to regulate prices (although hopefully more productively directed).