

## How Will Ontario's Electricity Market Ensure Resource Adequacy?

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June 27, 2003

Every electricity system, whether fully regulated or market-based, depends upon a coherent set of mutually supportive policies, structures and rules to ensure long-run resource adequacy and reasonable prices. For a variety of reasons, however, not all of the policies, structures and rules envisioned for Ontario's market are present today. Moreover, recent decisions by the Ontario Government to suspend customer choice and freeze retail prices call into question whether some of these essential elements will emerge in the foreseeable future. It therefore seems prudent to examine the requirements for ensuring resource adequacy to determine whether Ontario should implement additional measures to ensure that the Province meets its goals for the electricity sector.

While there is no immediate threat to near-term reliability of the Ontario electricity system<sup>1</sup> and supplies appear to be adequate for perhaps the next few years, it takes several years to plan, permit, and construct new generation resources and bring them on line. Investments in the additional resources that may be needed by 2008 or sooner will be driven by the investment climate and incentives that are in place today and over the next year or two, as well as investor perceptions about the future. Thus, this is the appropriate time for Ontario to reexamine its policies, structures and rules and ask whether they are mutually supportive and collectively sufficient to meet the Province's long-term electricity needs.

In our view, the current policies affecting investments in Ontario's electricity sector are not sufficient or sustainable. In theory it would be possible to implement one or more alternative frameworks for maintaining resource adequacy, each with its own set of complementary features. At this time, however, Ontario does not seem to have a sufficient set for *any* framework. That is, Ontario has neither the set of resource adequacy components needed for a sustainable market-based regime nor the set of components needed by a mixed market/regulated regime. Sooner or later, these deficiencies will lead to inadequate levels of supplies, with corresponding high prices and risks for system reliability. If there were major supply contingencies, such as the simultaneous loss of (or failure to restart) nuclear units or sustained adverse hydro conditions, problems could occur much sooner. Now is the time to address these issues, before they lead to serious problems.

In this paper, we examine the current policy framework and explain why we believe it is not sustainable. We describe the issues that are frustrating adequate investments and that must be solved, no matter what else Ontario does. We then describe and evaluate alternative paths that Ontario could take to ensure resource adequacy, while retaining

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<sup>1</sup> This assumes that the proposed restart of various nuclear units occurs within a reasonable period and there are no major weather or plant outage contingencies.

essential aspects of a market-based approach. Finally, we discuss the strategic policy decisions that Ontario must make to help any path it chooses become successful.

## **Background**

Several years ago, and in line with similar developments in parts of North America, the Ontario Government embarked on a program to transform its electricity industry from a lightly regulated monopolistic regime dominated by the government-owned Ontario Hydro to a market-based structure driven by competition. The vision was articulated in a 1998 Government “White Paper” and fleshed out between 1998 and 1999 by the Market Design Committee (MDC), a “blue ribbon” advisory group of industry leaders and stakeholders nominated by the Government to develop and recommend a set of electricity market rules and compatible regulatory policies. Much of today’s electricity structure is defined by this vision and the MDC’s recommended market rules, along with complementary policies developed and implemented by the Ontario Energy Board (OEB). However, this framework has not been fully implemented and remains incomplete.

Under the Government’s vision and the rules developed by the MDC and OEB, the Ontario market would be based on competition between generators and other energy suppliers, with private generation companies making an increasing share of the investment decisions about future supplies. These decisions would be driven largely by market forces rather than by Ontario Hydro planning or government edict. There were several essential features of this structure:

- Ontario Hydro would be broken up into separate companies for generation, transmission and distribution. The dominance of Hydro’s generation fleet would be diluted over time by possible divestitures and private investments, while the potential for market power during this transition would be checked by a “vesting” contract (the Market Power Mitigation Agreement or MPMA) ensuring that market prices received by Ontario Power Generation (OPG) above a specified level would be clawed back by a government entity and made available for refunds to consumers. New entry by independent generation companies would be encouraged.
- At the “wholesale” level, there would be an Independent Market Operator (IMO) responsible for operating the transmission grid, using a competitive bid-based dispatch and other means to ensure reliable operations at the lowest as-bid cost at all times. Market participants would, through offers to sell and bids to purchase energy, use this dispatch as an open “spot market” to buy and sell energy and to support bilateral transactions between buyers and sellers.
- At the “retail” level, Ontario consumers would be allowed to choose between alternative, competitive energy suppliers. Neither Ontario Hydro nor local distribution companies would have the responsibility to procure supplies on consumers’ behalf.

- While consumers could always buy energy from the IMO-coordinated spot market to serve all of their electricity demands,<sup>2</sup> it was expected that consumers would gradually enter into contracts of varying lengths with competitive suppliers to cover most if not all of their energy needs, while using the spot market to cover any differences between their actual needs and their contract entitlements. As in other markets, these contracts would provide stable prices for consumers, thus shielding them from the risks of volatile spot prices.<sup>3</sup> Equally important, the contracts would provide stable prices for generation suppliers, reducing their risks and providing predictable revenues to support long-run investment decisions.
- The combination of (1) open and efficiently priced spot markets coordinated by the IMO, (2) the right of consumers to choose suppliers, and (3) the incentives for consumers and suppliers to contract for long-run price stability would provide the mechanisms that would induce adequate levels of investment in new supplies and stimulate appropriate demand-side options, thus assuring short-run system reliability and long-run supply adequacy at competitive prices.
- Finally, the MDC understood that for market prices to provide the appropriate incentives for adequate resource investments, the IMO's spot prices should be allowed to reflect actual supply and demand conditions. This meant that during conditions of shortages or near shortages, IMO spot market prices for energy and operating reserves would be allowed to rise to very high market-clearing levels defined by the willingness of some consumers to pay high prices not to be involuntarily curtailed. Expectations of these occasional high price levels would then be sufficient to elicit appropriate supply additions and demand-side responses without any further "resource adequacy requirement" (RAR).

If these mechanisms were implemented and worked as intended, no other explicit RAR would be necessary. However, if the elements needed to make these mechanisms work were not put in place, or if the mechanisms were thought to be failing to elicit sufficient supplies and demand-side responses, then the market rules included the framework for an explicit "capacity reserve market" that could be developed and implemented, once triggered by the IMO Board. To help inform policy makers about whether the

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<sup>2</sup> Larger customers with appropriate metering and other qualifications could be allowed to buy and sell directly through the IMO's spot market; smaller customers would effectively purchase energy through the IMO spot market by paying average spot prices passed through to them by their local distribution companies.

<sup>3</sup> The intended framework did not anticipate that most consumers would remain subject to spot prices for the bulk of their energy needs. Rather, consumers subject to spot price pass through were expected to pursue contracts with competitive suppliers. Once substantially contracted, consumers would face greatly reduced risks from spot price volatility. Spot prices could then rise and fall in response to short-run market conditions, providing appropriate price signals for suppliers and demand-side responses, but without significant unhedged risks to consumers or suppliers. The absence of such contracts, however, creates risks for both consumers and suppliers that must be addressed in one way or another.

mechanisms were working as intended, the IMO would have the responsibility to develop and publish long-run forecasts of expected supply and demand conditions and to warn public officials of any expected shortfalls.

Given this market-based approach, the ability of Ontario to ensure resource adequacy over time was thus dependent on a set of interrelated and mutually dependent policies, structures and rules, *all* of which needed to be in place and functioning properly to ensure long-run reliability and competitive prices. The MDC understood that if any of these critical features were missing or compromised or failed, Ontario could experience some concerns for system reliability, long-run adequacy and/or competitive prices, creating the need for further corrective mechanisms.

### **Missing or Compromised Elements in the Intended Framework**

While several essential elements of the intended market framework have been put in place and have been working for the past year, other critical features are either missing or have been compromised in ways that will tend to undermine the overall approach. The following factors appear particularly important, because they tend to discourage private sector resource investments, long-run contracting, or both. Furthermore, such discouragement will continue whether or not the IMO implements an explicit resource adequacy requirement. Thus, these factors should be addressed no matter what Ontario decides about a resource adequacy requirement. The factors that need to be addressed include:

- *OPG's continued market dominance discourages private competitive entry.* Efforts to divest or otherwise dilute the supply dominance possessed by Ontario Power Generation have not been implemented as recommended by the MDC. Moreover, the market's perception of the absence of a strong commitment to these goals creates substantial risks for independent competitors and remains a major deterrent to further private sector investment in new supplies. Even if Ontario were to implement an explicit resource adequacy requirement, it would probably be ineffective unless and until the Government addressed the reality and perception that Ontario Power Generation may be allowed to maintain a dominant position within the generation market.<sup>4</sup>
- *The Government's uncertain intentions with respect to supporting OPG create substantial market uncertainty that discourages private investment.* Private investment is deterred when that investment faces the risks of having to compete against government-subsidized entities. The Government's intentions in this area must be clarified in ways that ensure a level investment playing field.

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<sup>4</sup> It should be recalled that the MDC originally advocated a more aggressive commitment and timetable for diluting OPG's market dominance, in addition to market power price mitigation measures in the interim. The price mitigation measures imposed on OPG were meant to address the potential for prices above competitive levels, but they were never expected to address the investment risks for private supply investors created by OPG's overwhelming market dominance. Further significant steps to dilute that dominance were expected and believed to be essential to address the investment issue.

- *The Government's unexpected intervention in the retail market has further discouraged investments and exposed a critical shortcoming in the current Ontario market structure.* The Government's decision to suspend retail choice for smaller consumers has further eroded any prospects for contracting, although it is not clear how much contracting would have occurred for smaller consumers in any event. Most residential and small commercial customers became subject to "default supply" based solely on a pass through of average spot prices.<sup>5</sup> Now these and larger customers that consume up to 250,000 KWh/year are subject to fixed, and apparently subsidized rates below even average market prices. At a minimum, this has created uncertainties about whether the remaining large customer classes might also lose the right (or incentive) to contract. If the contract market is restricted, competing suppliers have fewer mechanisms to ensure revenue stability that reduces the risks of investments. Effective private investments are not likely to occur in the absence of a strong and stable contract market that investors perceive to be relatively immune from government intervention.
- *There is a critical missing element in the current Ontario market structure.* Without contracting and retail choice for smaller and medium consumers, Ontario has an incomplete market without active buyers for a large portion of Ontario's electricity demand. Markets cannot be efficient without active buyers. A central issue that must be addressed for the electricity sector has become, "who is the market buyer for these Ontario consumers?"
- *Private investments may be discouraged by the prospects of further intervention at the wholesale level.* The Government's intervention at the retail level raises the question of whether the Government might also intervene at the wholesale level in the event that spot market prices rose to levels deemed unacceptable. Ontario has a market power price mitigation mechanism in place to deal with prices received by OPG above a predefined level. However, the prospect that the Government might also intervene to suppress even competitive wholesale prices (such as legitimately higher prices during shortage conditions) that would be paid to competing private suppliers would strongly discourage further private investments. Government assurances that the market will be allowed to function are needed to address this source of investment uncertainty.
- *Even without further government intervention, Ontario's spot pricing rules probably cap spot prices below the competitive levels necessary to support*

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<sup>5</sup> The OEB adopted the spot price pass-through mechanism to support the MDC's original market framework. While some local distribution companies were willing to function as competitive retailers or active default suppliers, many LDCs did not want these roles and would have been hard pressed to perform the functions. OEB was also persuaded that it would have substantial regulatory burdens in overseeing the risks to consumers inherent in having all LDCs assigned the role of active resource providers for their non-contracting (default) customers.

*adequate investments.* Assuming that market power concerns have been addressed under the OPG price mitigation measures, spot prices should be allowed to rise to competitive levels during shortage and near-shortage conditions. Under current rules, however, energy and operating reserve prices have been capped at levels that are probably below competitive levels -- the levels that reflect the marginal value of energy and reserves during these conditions. Prices under such caps would therefore not support an adequate level of investment.<sup>6</sup>

## Central Policy Issues

Any mechanism to ensure electricity resource adequacy presupposes that several key policy issues have been resolved in one way or another. In conjunction with addressing the major uncertainties described above, at a minimum Ontario must decide:

- *Who is the market “buyer” for small electricity consumers? Are consumers expected to buy for themselves, to make their own choices and to take the risks of their own decisions? Or are these tasks and risks the responsibility of their LDC? If neither consumers nor their respective LDCs are willing or able to perform these functions, should one or more third parties be assigned the “default supplier” responsibility, and if so, who and how?*
- *Given Ontario’s decisions on the issue of market “buyer,” is Ontario prepared to allow prices to clear the spot market under shortage or near-shortage conditions? For example, if the solution to the market “buyer” issue resulted in consumers (or their default suppliers) having hedging contracts against spot price volatility for most of their energy needs, then spot price volatility and very high spot prices reflecting scarcity might not be a significant issue, because such prices would pose very little risk for consumers. If spot prices were then allowed to reflect shortage and near-shortage conditions, then an explicit resource adequacy requirement might be unnecessary, because market revenues – from spot sales of energy and reserves and contracts negotiated in anticipation of average spot prices – should be sufficient to encourage an adequate level of resource investment, on average.<sup>7</sup> On the other hand, if spot prices were not allowed to reflect these conditions, then Ontario would need some other mechanism – arguably some type*

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<sup>6</sup> By “adequate,” we mean a level of capacity that is economically efficient, given the marginal value of energy and operating reserves. This level is not necessarily the same as the level defined by the North American Electricity Reliability Council (NERC), such as the level necessary to assure adequacy with no greater than a one day in ten year probability of resource shortages. Such NERC levels are determined administratively and are not necessarily economically efficient.

<sup>7</sup> Note that this does not present a stark choice between exclusive reliance on spot prices and reliance on an RAR such as a capacity reserve market. Designs for successful “energy/reserve-only markets” are predicated on efficient spot prices, but they also include measures to encourage and facilitate adequate contracting to hedge exposure to spot prices and to provide revenue certainty for generation investors.

of RAR -- to provide the necessary revenues and incentives to encourage adequate resource investment levels.

- *Whether or not spot prices are allowed to reflect market condition during shortage and near-shortage conditions, Ontario may have additional policy objectives that create a need for an explicit resource adequacy requirement.* For example, Ontario may choose to pursue an economically efficient level of resource adequacy. However, Ontario could also decide that it wants a higher level of resource adequacy that provides greater assurance against the risks of major hydro swings, multiple outages of nuclear facilities, significant errors in demand and supply forecasts, higher NERC requirements or possible “boom and bust” cycles. Any of these goals could indicate a need for a higher level of reserves – and the requirement that consumers pay more to achieve that higher reserve level -- than might otherwise be economically efficient if these were not Ontario’s goals.
- *If an explicit resource adequacy requirement is needed, how should it be structured?* Given the policy decisions to the previous questions, an explicit RAR may or may not be needed. If an RAR is indicated, various design issues become relevant.<sup>8</sup>

### **Alternative Paths to Ensure Resource Adequacy**

Here we define three alternative paths that use some type of market mechanisms to ensure resource adequacy. Other paths, variations and combinations are conceivable, but these particular paths illustrate the basic policy choices facing Ontario. The three basic paths are:

*Path A: Complete the initial design and structures recommended by the MDC without an explicit RAR.*

*Path B: Create Load-Serving Entities and Assign a Resource Adequacy Requirement to these LSEs.*

*Path C: Have the IMO operate a centralized forward market to procure adequate resources and allocate the resource acquisition costs to loads.*

Again, we emphasize that the Ontario Government must address all of the threshold issues related to the uncertain investment climate not matter which path it chooses. None of these paths will be credible until that is done.

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<sup>8</sup> The IMO has prepared a draft feasibility assessment of several options for designing an RAR. See, “Ontario Long-Term Resource Adequacy Requirement Feasibility Assessment,” May 2003.

## **Path A: Complete the initial design and structures recommended by the MDC, without an explicit RAR**

Path A would continue to develop the elements of the initial design that assumed efficient (market-clearing) spot pricing for energy and ancillary services. The IMO would not trigger the capacity reserve market or otherwise develop an explicit capacity or resource adequacy requirement. For Path A to become credible, necessary improvements over the current design would include at least the following:

- *Ontario would need to resolve the issue of who the “buyer” would be for “small” consumers.*<sup>9</sup> Given Ontario and US experience, it seems unlikely that the majority of residential and small commercial customers would readily move to competitive retailers, even if subsidized for such choices.<sup>10</sup> To make Path A credible, however, government officials and policy makers would need assurance that small consumers would not be exposed to the risks of volatile spot prices for more than a small fraction of their energy requirements. If voluntary retail choice for these consumers is not a credible option, then at least in the interim one or more of the following options should be considered and implemented:
  - *Recognize that averaging of spot prices (through LDC billing) can be an effective device for performing the hedging functions of a contract.* If the need is to hedge spot price volatility over a short period, then price averaging over a month, three months or six months is equivalent to fixed-price contracts for the same periods. However, if spot price averaging periods longer than a month are considered, the Government should also develop and offer to smaller LDCs additional provincial support for accounting, billing and risk management services.<sup>11</sup>
  - *Consider mechanisms to allocate the default supply obligation to willing competitive retailers.* This device, implemented in some US regions, uses

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<sup>9</sup> “Large” consumers would be assumed to be capable of buying (and contracting) for themselves. They would be allowed unrestricted retail choice, including the choice of how much to rely on spot prices and how much to be hedged by contracts.

<sup>10</sup> It may be that retail choice for small consumers is not economically justified, because the transaction costs associated with “shopping” are greater than the potential savings. This is an empirical issue requiring more time for retail choice efforts to progress, and the jury is still out. In the meantime, we do not recommend that retail customers be subsidized as a means to encourage “switching” to competitive retail suppliers. Such subsidies are contentious and expose regulators to extreme pressures to tilt the competitive field in one direction or another. Once begun, subsidies are difficult to end, and they tend to distort the market choices in the meantime. They also cause policy confusion by creating the impression that high switching rates are indicators of market success and low switching rates are indicators of failure (and hence justify higher subsidies), when in fact switching rates may merely reflect the level and influence of the subsidies.

<sup>11</sup> Note that this deals with hedging spot price exposure through administrative fiat, rather than contracts. Hence it does not directly encourage (and may discourage) contracting to support resource development.

a competitive auction to choose competitive retailers who wish to perform the default supply functions for select “tranches” of retail consumers. For example, the state of New Jersey has auctioned its entire default supply responsibility to competitive retailers. The auction also defined the “market price” for default consumers. The LDCs no longer have the default supply obligation. To meet their supply obligations, winning retailers determine the mix of spot and contract supplies that matches their risk preferences, without significant regulatory oversight. Once default supply is covered, the regulator can define the conditions/restrictions under which smaller consumers may engage in retail choice.

- *Allow larger LDCs that are willing and capable to enter hedging contracts up to one year.* We recognize there are market risks to LDCs in performing these hedging functions and additional burdens on the OEB in overseeing LDC risk management practices. Consistent with MDC recommendations, we view this as a last resort. However, LDCs could be allowed to create affiliated competitive retailing entities, subject to the same rules as other retailers. OEB would then be charged with maintaining its affiliate rules to ensure that LDC customers were not at risk for, or required to subsidize, the affiliates’ retailing risks.
- *Ontario should assume that “large” consumers are capable of buying (and contracting) for themselves.* These consumers would be allowed unrestricted retail choice, including the choice of how much to rely on spot prices and how much to be hedged by contracts, but not allowed to return to the default service offered to small consumers. However, government policies would facilitate and encourage the application of real-time pricing (and appropriate interval metering) for such customers, so that their marginal usage decisions (and all needs not met by contracts) would face real-time spot prices (and day-ahead prices once that market is implemented). This would encourage contracting with suppliers. Equally important, it would stimulate efficient demand-side responses by those customers most able to respond to and impact spot prices. The importance of significant demand-side responses to real-time prices in defining efficient prices, avoiding shortages and mitigating market power cannot be emphasized often enough.
- *The IMO should improve its scarcity pricing rules for energy and operating reserves as the market improves.* The goal here would be to ensure that IMO spot prices reflected the marginal value of energy and reserves, especially during shortage and near-shortage conditions. It would be reasonable to develop a transition process for moving from today’s bid cap levels to pricing rules reflecting marginal value. The transition process would indicate how the pricing rules would be revised as Ontario made progress in implementing the other elements of this Path.<sup>12</sup>

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<sup>12</sup> These reforms would reinforce the notion that the IMO’s goal is to operate an efficient market in a non-discriminatory manner. The IMO should not be asked to operate its energy market as an agent for

- *The IMO should implement locational marginal pricing to help manage and price congestion.* This fundamental reform is the backbone of successfully operating markets in the US Northeast. More than any other factor, implementing LMP would facilitate better coordination and trading between the US and Ontario markets. LMP would improve the IMO’s real-time operations by aligning prices with dispatch, encouraging generators to follow the dispatch, while eliminating current opportunities and incentives for gaming congestion-related side payments. LMP would also provide better locational signals for new supply entry and for demand-side responses, encouraging the right responses at the right times and locations. We view this as the single most important reform the IMO could undertake at this time.

*The measures listed here for improving the current market design are worthwhile under any of the Paths.* Implementing LMP, moving to real-time pricing to encourage demand-side responses, improving spot pricing under shortage conditions and facilitating wholesale and retail contracting (at least for large customers) are all important under any the Paths described here. We regard each of these reforms as essential elements of an efficient electricity market design, irrespective of the approach used for resource adequacy. If all of these efforts were successful, alternative paths (B or C) would probably be unnecessary. Until then, however, additional measures to assure resource adequacy should be considered.

**Path B: Create Load-Serving Entities and Assign a Resource Adequacy Requirement to these LSEs.**

This Path would also require that the small/medium consumer “buyer” issue be resolved, but in a manner that resulted in creating “load-serving entities” (LSEs) responsible for serving all loads that are not participating in retail choice. The LSEs could be either the LDCs or competitive retailers chosen through some competitive process, as described in Path A.

The defining feature of this path is that the IMO would determine a resource adequacy requirement that each LSE would have to meet for its respective loads. The basic element would be an obligation on the part of each LSE to own, build or purchase sufficient resources to meet the capacity or reserve objectives set by the IMO.<sup>13</sup> The IMO could define the required product in different ways, such as installed capacity (ICAP), unforced capacity (UCAP), available capacity (ACAP) and so on. The LSE obligations would be enforced by a set of financial penalties defined by the IMO and imposed on LSEs that failed to meet the requirement and/or on resource providers that

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consumers, because that would encourage it to function as a cost-minimizing monopsonist. Such a role would deter private investments on the supply side.

<sup>13</sup> Some variations of this approach would require the IMO to operate a capacity auction in which uncommitted capacity could be sold to LSEs that had not otherwise met their RAR obligations. Versions of this approach are currently used in the PJM, New York and New England markets.

failed to offer their capacity to the IMO-coordinated markets as required. LSEs would be responsible for recovering the costs of meeting their RAR obligations from their respective customers.

Various forms of this approach have been used in the Northeastern US markets, with varying degrees of success. It is generally agreed that these approaches and their associated “capacity markets” are difficult to design and their “success” difficult to gauge. Design and implementation issues include: (1) the inability to define each LSE’s RAR obligation in advance if retail choice results in unpredictable changes in LSE load obligations; (2) a disconnect between the RAR capacity requirements and any assurance that the capacity will actually be available when it is most needed; (3) disputes over the correct deficiency penalties and over what period the penalties should apply in the event capacity resources are not provided; (4) opportunities for market power created by the fact that the RAR obligation periods are generally shorter than the time required for new entry; (5) inflexible (inelastic) demand for the RAR product, if defined without regard to costs; (6) disconnected capacity prices that can swing from very high levels (set by deficiency charges) to near zero when there is ample capacity; (7) resource targets unrelated to economic efficiency; (8) capacity “deliverability” issues associated with congested transmission; and (9) assignment of costs to loads based on forecasts but not actual consumption.

For Path B to become credible, each of the above issues must be addressed. US experience has seen a gradual evolution of such RAR/LSE approaches, and more recently, a fundamental reevaluation necessitated by the incompatibility of this approach with allowing retail choice and by the market power concerns created by inflexible demand and supply functions. To address these issues, US northeast markets are considering approaches similar to Path C.

**Path C: Have the IMO operate a centralized forward market to procure adequate resources and allocate the resource acquisition costs to LSEs and/or consumers**

Several (but not all) of the issues raised by the Path B capacity requirements used in the US can be addressed if the IMO plays a central role in procuring the capacity resources needed to meet the RAR. Path C would include the following features:

- The IMO would administer periodic (annual) auctions to procure capacity resources (or commitments to provide such resources). All eligible capacity providers (which in theory might include demand-side options) would participate in the auctions.<sup>14</sup>
- Each auction would be held for a future capacity product – such as capacity to be made available three years from the auction date – to allow offers from potential

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<sup>14</sup> This would require the IMO to determine eligibility rules and apply some tool to measure the capacity value that would be assumed for different types of resources, from wind to nuclear units.

new entrants, thus mitigating market power created by inelastic supply in the short run.

- Each auction would define the demand for the capacity product by reference to the costs of capacity, thus creating a “demand curve” for capacity and addressing the concerns over inelastic demand
- The auctions would define the prices paid for the acquired capacity to the capacity providers, once the capacity was made available in the operating period. The IMO would assess penalties for any failure to provide the capacity.
- IMO could structure its auction to address congestion/deliverability issues, such as by holding separate auctions for different regions or accounting for deliverability in an integrated auction.
- The IMO would allocate the capacity procurement costs to LSEs for each operating period, thus addressing the risks of assigning costs or obligations to LSEs before they (or the IMO) know their load obligations under retail choice.

We caution that this approach is still under development in the US and has not been tested in any other region, to our knowledge. Moreover, there are many implementation issues still to be addressed. We are not aware of any perfect approaches.

Path C does not technically require that LSE/buyers or default suppliers be designated for small consumers, but resolution of the buyer issue would still be desirable to minimize the exposure of small consumers to spot price volatility and to create sufficient counterparties for contracts. Because the IMO’s auction becomes the effective “buyer” of capacity for consumers, it might be sufficient under Path C to use spot price averaging methods to hedge these risks for small consumers, while avoiding the regulatory burdens of selecting and overseeing the default suppliers.

Finally, we repeat that other variations and combinations of these Paths could be created from these basic alternatives. For example, if Ontario chose Path A, it might also be prudent to develop all of the mechanisms and rules to implement Path C, but not trigger that approach at this time. Given the expected (but precarious) capacity surpluses in Ontario, additional time should be available to evaluate how well any choice is progressing. The important point is to understand what each path requires and to ensure that all of the essential elements of a chosen course are being implemented.

### **Additional Paths Based on Expanded Government Roles**

While we view basic Paths A, B and C as the most compatible with the original market structure, it would also be possible to construct paths that relied on a greater role for direct government involvement in ensuring resource adequacy. For example, a government entity other than the IMO could operate a capacity procurement mechanism,

such as an auction, and take responsibility for payments to capacity providers and allocating costs to consumers or taxpayers. This type of mechanism could be designed but only triggered in the event the IMO-coordinated markets failed to meet some predetermined threshold for “success.”<sup>15</sup> This is a variation of Patch C. The mechanism could also be focused on specific types of resources. It might ensure, for example, that Ontario develops a preferred level of renewable resources. Or it could be designed to provide additional capacity resources above the economically efficient levels, to satisfy other policy goals. In this case, the economically efficient level could be left to the IMO-coordinated markets to achieve, using the basic approaches described above.

While it may be possible to design measures carefully targeted to achieve specific policy goals, in general we would caution against more expanded roles for government if the principal goal is private, market-driven investment. Even a contingent role would create uncertainties for private investors and increase their risks. Any role that has the government providing preferential treatment to one set of investments runs the risk that it will discourage other private market-driven investments. Because all resources ultimately compete to serve the same load, private competitors would face risks that their own investments would become unprofitable, thus tending to discourage those investments. In the extreme, the government could become the only willing investor.

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<sup>15</sup> In our view, it is usually not possible to determine solely from a market’s first year of operation whether the market design has successfully provided sufficient incentives for generation development.