



Straw-Plan for the Evolution of the Ontario Market Design

Issue 1.0

This document sets out a straw-plan for the future evolution of the Ontario market design to provide a focus for discussions amongst market participants and other stakeholders

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1. Introduction

1.1 Purpose

This straw-plan for market evolution sets out a proposed approach to future enhancements and changes to the Ontario electricity market. In doing so it provides a focus for consultation and discussion with *market participants* and other stakeholders. The straw-plan is a living document that sets a course for future evolution but is also flexible enough to adapt to changing circumstances. The *IMO's* approach is to fully stakeholder the straw-plan for market evolution to ensure that the needs and desires of *market participants* and other stakeholders are known and considered. Stakeholder views are one factor among many that will determine the ultimate changes to the Ontario market design.

The straw-plan articulates a reasonable and achievable future that considers all relevant factors. In addition to the views of *market participants* and other stakeholders, other relevant factors include the availability of resources, US developments, *reliability* agreements, as well as the current economic outlook. The straw-plan provides the basis for a more detailed plan that will provide *market participants* and other stakeholders with an advance indication of major changes, planned or contemplated, to the Ontario market design.

In order to prepare a detailed plan for market evolution this straw-plan sets out a key objective, the key enhancements and changes needed to achieve the objective, and other changes that also need to be addressed. Establishing a key objective provides a means of prioritising market evolution activities in a consistent and logical manner. Articulating a key objective does not mean that all other objectives are foregone, they are also factored into the straw-plan for market evolution.

In developing this straw plan, it was recognised that FERC's issuance of its Notice of Proposed Rule Making (NOPR) for standardised power *market rules* (FERC Docket No. RM01-12-000) and expected subsequent order can have a significant impact on the evolution of the markets in Canada. This is largely due to the fact that while FERC has no jurisdiction over the electricity markets outside of the U.S., the bulk of the trade in electricity in Canada occurs with the U.S. Given the timing of the NOPR's release it has not been possible to incorporate a discussion of the potential implications for the evolution of the Ontario market in this document. This discussion will occur through the consultations on this straw plan and the will be part of the forthcoming detailed plan for market evolution. Some preliminary commentary and references to the NOPR are, however, provided within the text of this document. It needs to be recognised that FERC's NOPR and subsequent order will not cover all aspects of wholesale market design and that moving to a standardised market design in the U.S. will take some time to fully implement. Regardless, evolution of the Ontario electricity market cannot stand still and will need to continue to address pressing issues within the market during this period of change and consolidation to our south.

1.2 Scope

The straw-plan for market evolution deals solely with the *IMO-administered markets* under the jurisdiction of the *IMO*. Enhancements and changes to the design of the *IMO-administered markets* can, and in some instances does, have an impact on the other sectors of the competitive electricity marketplace and need to be carefully considered as well. Most notable are impacts on the *retail* sector and on the scheduling of transactions with neighbouring jurisdictions.

1.3 Who should use this document?

This document has been produced to provide a focus for consultation with both internal and external stakeholders and to inform *market participants* and other stakeholders about the future evolution of the Ontario market design.

1.4 Conventions

The standard conventions followed for this document are as follows:

- Terms and acronyms used in this document that are italicised have the meanings ascribed thereto in Chapter 11 of the “*Market Rules*”;
- Double quotation marks are used to indicate titles of legislation, publications, forms and other documents.

– End of Section –

2. Background

Ontario successfully launched a new competitive electricity marketplace on May 1, 2002. The design of the market is based largely on that recommended by the Market Design Committee in 1999. Efforts were taken during the development process to ensure that the design was complete and robust and this design established a sound foundation for a competitive wholesale electricity market in Ontario. It was always recognised that not every issue was, or should be, addressed at the outset and that the development of competitive markets in electricity must continue to evolve. It has also been recognised that a number of important aspects of the market design need to be developed further and, more significantly, new features introduced into the Ontario market.

A plan for market evolution is necessary to ensure an orderly evolution of the market and to ensure that the benefits and costs of implementing enhancements and changes are known and discussed. A common vision of the future, to guide and provide a rationale for the evolution of the Ontario market design, must achieve a substantial consensus amongst *market participants* and other stakeholders.

The vision that underlies a number of the fundamental elements of the current market design and is still valid for the future direction of the electricity market is that it:

- Be fully unbundled,
- Have few barriers to entry or exit,
- Not allow the exercise of market power,
- Be transparent and liquid,
- Have timely and accurate price signals, and
- Promote competition.

2.1 Goals of the enhancements and changes identified in the straw-plan

The goals of the enhancements and changes identified in the straw-plan for market evolution are to: provide more choices and improved services to all *market participants*; reduce electricity prices by lowering transaction costs; improve *reliability*; and to provide certainty of change for greater investor confidence to facilitate investments. These are the very same goals recognised by FERC in its working paper on the Standard Market Design¹ and are typically the goals of restructured electricity markets world-wide.

In its working paper, and current NOPR, FERC indicated that a Standard Market Design must be flexible, be able to evolve over time to correct any design flaws, and be able to adopt best practices.

¹ Working Paper on Standardized Transmission Service and Wholesale Electric Market Design, issued March 15, 2002 - Federal Energy Regulatory Commission.

In a similar fashion this straw-plan strives to provide such flexibility and to adopt best practices that have developed both in Ontario and elsewhere.

2.2 Past consultations

Consultation on the evolution of Ontario's competitive electricity market has been underway for some time now. On December 20, 2002 the *IMO* initiated a consultation with all *market participants* and industry stakeholders on market evolution priorities for the medium and long term. The consultation was initiated with the publication of an *IMO* staff paper entitled: "Setting Priorities for the Evolution of the Market Design" (Setting Priorities Document). In that paper the *IMO* indicated that we (collectively) need to develop a draft multi-year work-plan for managing the issues over the medium term. This 'straw' work-plan would set broad objectives, outline the work to be done, define milestones, and suggest some tentative timelines for starting and completing the main tasks.

On January 22, 2002, the *IMO* hosted the stakeholder workshop on market evolution priorities. One hundred and twelve *market participants* and other stakeholders attended the workshop and provided numerous comments. The *IMO* was seeking insight into their priorities for future market development.

Market participants and other stakeholders prioritised nine issues identified by the *IMO* for discussion purposes in the Setting Priorities Document. The *IMO* prepared and published a report on the input received from *market participants* in the paper entitled: "Participant Priorities for Future Market Evolution" (Participant Priorities Document). *Market Participants* and other stakeholders ranked the top four issues as follows:

- Locational Marginal Pricing
- The *Energy Forward Market*
- The *Capacity Reserve Market*
- Encouraging Dispatchability and *Demand Side Responsiveness*

Several additional issues were raised as high priority issues by *market participants*, and other stakeholders, which included:

- Harmonisation with US markets
- *Inertie rights*

During the January 22, 2002 consultation several *Market Participants* and stakeholders recommended that a plan, with objectives, be put forward against which the different issues could be measured. This straw-plan is a step in the process to develop such a plan.

During the January consultation attendees indicated that there was a need to gain experience with the current market design before making decisions on future evolution. At the time of the consultation the opening of the market was three months in the future. An important aspect of moving forward, identified during the consultation, was providing certainty of change by establishing a timeline for the evolution of the Ontario market. Some *market participants* and stakeholders also requested that a cost/benefit analysis of the issues be provided to aid in setting the path for future evolution. In addition they stated that there was also a need for an inclusive consultation process, with more channels for consultation, that will focus on the issues (e.g. determination of LMP zones).

Market participants and other stakeholders suggested the following objectives for market evolution, which all align with the key objective of this straw-plan discussed below:

- Enhancing *reliability* (*security* and *adequacy*)
- Increasing liquidity, efficiency and competitiveness (including *retail* market)
- Improving price signals
- Increasing *demand* side responsiveness
- Ensuring regional parity

The evolution of the Ontario market design is affected by a number of factors in addition to the views and opinions expressed by *market participants* and other stakeholders. Amongst the other factors is the availability of both monetary and human resources that can be budgeted for implementing market evolution plans. In addition the developments in neighbouring markets and the *IMO's* membership in *reliability* authorities affect the evolution of our market. A fuller discussion of the factors influencing the evolution of the Ontario market design can be found in the *IMO's* earlier document "Setting Priorities for the Evolution of the Market Design".

– End of Section –

3. The Objective for Market Evolution

The *IMO*, *market participants* and other stakeholders have now had several months of market operations to contemplate the future evolution of the Ontario market design. While more time (and learning) is undoubtedly required for the dynamics in the *IMO-administered markets* to fully resolve, early experience with the open market has highlighted the need to move forward with the implementation of certain enhancements and changes to the Ontario market design.

A significant concern that has been expressed is the uncertainty and volatility of real time prices. Many *market participants* need to take actions and make decisions well in advance of real time operations so that they are properly positioned during real time *dispatch*. *Demand side market participants*, in particular, are experiencing difficulty in responding to *market price* signals and there is a need for signals that (more) accurately predict real time operations and *settlements*. In addition, increasing *demand* and expectations of tight reserves necessitate that the future market evolution focuses on ensuring *reliability*.

Another significant issue that has arisen with the open market is the trade of electricity between markets in different jurisdictions and with different market designs. All markets rely on electricity flowing into and out of their grid. The ability to transact electricity across seams is impacted by the timing of market operations in each jurisdiction and the degree of uncertainty associated with transactions within each market. The nature of, and protocols around, each trade can be confounded by a lack of price and operational predictability. While FERC is attempting to address this within their proposal for a standard market design in the U.S., it can continue to be a problem between identically designed markets that are operated separately.

The *IMO* after considering *market participant* and other stakeholder feedback, engaging in internal discussions, and considering the other factors affecting market evolution as discussed above, is proposing a key objective that seeks to respond to the concerns and experience expressed in the foregoing paragraphs. The proposed key objective for future market evolution is to improve price and operation predictability while ensuring *reliability*. This objective seeks to achieve market signals that better align with and support real time prices and operations and provide *market participants* with more assured operation.

Focusing on improving predictability and *reliability* has several merits:

- it will provide greater price and *dispatch* certainty,
- it will improve market signals (by improving liquidity, efficiency and transparency),
- it is consistent with, and complimentary to, the current market design and features,
- it allows for better alignment with developing regional markets in the U.S., and
- it will facilitate the development of a futures market.

It also builds upon much of the current *real-time market* design, such as: five-minute pricing, joint optimisation of *energy* and *operating reserve*, and the participation of load in real time *dispatch* - many of which are also features that would be required under FERC's Standard Market Design.

As stated in the Introduction, the identification of a key objective does not eliminate or preclude the consideration or achievement of other objectives but provides a means of prioritising market evolution activities in a logical manner that adhere to the guiding design principles developed by the Market Design Committee (MDC) and endorsed (with minor changes) by the *IMO Board*. The seven design principles are efficiency, fairness, *reliability*, transparency, robustness, enforceability, and practicality. For a discussion of how these guiding principles affect market evolution please refer to the Setting Priorities Document.

At the inaugural meeting of the Market Advisory Council on August 13, 2002 a survey of Council members will be taken to determine whether members agree with the key objective proposed in this document as a basis for prioritising market evolution activities.

– End of Section –

4. The Future Ontario Market Design

Applying the above key objective to Ontario's current competitive electricity market design, and to the priorities identified at the January 22, 2002 consultation and elsewhere, a straw-plan for market evolution can be fashioned.

The following describes the straw-plan at a high level. The straw-plan is intended to be a living document that will change over time. The enhancements and changes to the market design being put forth for consultation purposes have yet to be decided. As well, details of the enhancements and changes suggested here are yet to be determined and may change depending on the feedback received from *market participants* and stakeholders, and on the various other factors influencing market evolution identified previously. The priority of these enhancements and changes may also be modified as the process of market evolution goes forward.

4.1 Key enhancements and changes

The straw-plan proposes to evolve the market to a future where the key objective of providing predictable prices and predictable operations as well as ensuring *reliability* is achieved. In order to achieve this outcome several enhancements and changes are required to the current market design. The following sections provide a brief description of the enhancements and changes proposed for consideration in this straw-plan. The enhancements and changes are not presented in any particular order except that they are divided into two categories. The first category consists of the 'key' enhancements and changes that are seen as integral to achieving the key objective for market evolution. The second category of 'other' enhancements and changes are seen as being necessary from either a market or an operations perspective and are supportive of, rather than integral to, the achievement of the key objective as stated in this document.

4.1.1 Day-ahead market (two-settlement/commitment)

There is a developing consensus among *market participants* and other stakeholders in Ontario that some form of day-ahead market is necessary to achieve price and operational stability and predictability. Relying solely on a *real-time market* (single *settlement*) is seen as too risky and the California debacle is often cited as an example despite single *settlement* systems working successfully elsewhere (e.g. Australia and New Zealand). Establishment of a day-ahead market effectively allows the *real-time market* to become a balancing market.

Statements made during the January 22, 2002 consultation² that a day-ahead (two-settlement) market would allow price discovery and provide hedging opportunities support these views. In addition, *market participants* and stakeholders said that a day-ahead market would provide market discipline removing the need to control bidding behaviour via *market rules* as well as provide operating stability. These views are also supported in FERC's proposed Standard Market Design.

² Please refer to the Participant Priorities Document for a more comprehensive review of these comments.

The need for a formal day ahead market operated by the independent market operator may be due to the North American context of multiple jurisdictions and the need to effect transactions between and across multiple markets. The Norwegian experience supports this argument as all electricity is traded through a day-ahead market with a real time balancing mechanism implemented by the system operator. The reason a single *settlement*, real time, market functions in Australia and New Zealand may be due to the fact that they do not have multiple *interconnections* with multiple jurisdictions.

Access to a day-ahead market provides price stability and will lessen volatility. It is well recognised that the amount of price and volume uncertainty, as well as volatility, changes with time. When you are a long way from the real time market the amount of uncertainty is large. This uncertainty, the ability to accurately predict real time price and volume, decreases as you approach real time. As information about real time becomes more accurate price and volume become more certain. Price and volume volatility (in the market), on the other hand, is small when you are a long time away and increases as one approaches the real time market. Volatility in price and volume starts out low because one deals with averages and probabilities, but once into the real time market the impact of random equipment events (failures and the like) causes the volatility in price and volume to increase. Typically, the product of volatility and uncertainty achieves a minimum day-ahead.

The existence of a day-ahead market can also provide a sound basis from which a futures market can develop and base its *settlement* upon because of the above-described characteristic of the electricity market. The ability of the futures market to converge to the spot market is facilitated by the existence of a day-ahead market. The existence of a day-ahead market allows participants to transact physical quantities in advance of real time and to use the *real-time market* as a balancing market. The alternative of convergence into the *real-time market* alone brings too much volatility into the pricing mechanisms making it a less desirable hedging instrument.

FERC has advocated a day-ahead market in its standard market design. Given that Ontario's *interconnections* and electricity trade is predominantly with the US, Ontario's *market participants* will have to interface with abutting markets that have day-ahead markets.

Key design elements for consideration are:

- Financial binding *dispatch*
- Price points consistent with RT (At present that would mean 1 Ontario and many intertie points and when/if LMP is adopted, many price points within Ontario as well.)
- Flexibility to accommodate “hubs” if desired that allows for net *settlement* into *real-time markets*
- Unit commitment functionality to improve supply certainty
- Flexibility for alignment/interaction with evolving markets
- *Bid/offer* commitments

Other considerations are:

- should the implementation of a day-ahead market be afforded a higher priority than bringing in temporal optimisation;
- how should timing be influenced by developments in New York and the MISO;

4.1.2 Better optimisation over time

Better optimisation over the day and hours would provide *market participants* with more assured and predictable *dispatch* and operating instructions. Currently the Ontario market is dispatched on a myopic five-minute basis where *energy* and *operating reserve* are co-optimised. Optimisation of *bid/offered* resources over the hour (over hours in the in the case of a day-ahead market) time would replace the myopic *dispatch* currently used.

The Ontario electricity market, designed after similar markets in New Zealand and Australia, relies on *market participants*, reacting to price signals, to achieve optimal commitment and *dispatch* of resources. Operating experience with Ontario's market so far, however, suggests that the lack of temporal optimisation in the market *dispatch* process may be the cause of difficulties in the scheduling and *dispatch* of *energy* limited and fast ramping resources within the hour and in the advance commitment of slow starting resources. These difficulties have caused an increased need for the *IMO* to take actions to constrain on, and to constrain off, plants to address the *reliability* of the *IMO-controlled grid*. Differences in the mix of supply resources (*energy* limited peaking resources versus slow loading versus interconnected sales/purchases) and the creation of separate arrangements for a few individual resources have been cited as some of the reasons that the New Zealand and Australian markets have not had similar experiences.

In North America, the market designs in PJM and New York, often cited as the "successful markets" in the U.S., have processes and software that not only optimise the *dispatch* of resource *offers/bids* over time, but also optimise the commitment of resources as well. To achieve the latter, the markets allow the submission of multi-part *offers/bids* to allow the market operator to *dispatch* resources with the lowest total costs.

Key design elements for consideration are:

- optimisation period (intervals, hours, days, etc) – resource management enhancing *reliability* and participant fuel management
- *dispatch* smoothing or reduction in cycling *dispatch* instructions – to minimise unnecessary *dispatches* that would otherwise cause increased maintenance due to excessive movement of resources
- ramp rate effects on price³ – market clearing price to reflect the value of load following as it is not acquired as a separate *ancillary service* in the market

4.1.3 Forward/futures market

A forward/futures market would provide additional tools for participants to hedge price risk and provide the market with greater long-term price discovery. A survey on forward markets, conducted during the January 22, 2002 consultation, found that 84% of respondents saw a need in their business for the purchase or sale of longer-term (weekly, monthly, etc.) energy forward instruments. A forward/futures market need not necessarily be a part of the *IMO-administered market*, however, certain revisions to *Market Rules* can make these more effective vehicles for all *market participants*.

Key design elements for consideration are:

³ This is linked to the reduction of 12x ramping period currently included in the calculation of the uniform market clearing price.

- removal of price volatility in the underlying *energy market* through the establishment of a two-*settlement* system, i.e. a physical day-ahead and balancing markets (see 4.1.1 above)
- introduction of Locational Marginal Pricing in Ontario - to enable forwards and futures to focus on a base *energy* contract reflective of the underlying value of the commodity at a designated hub, and handle delivery risk (congestion) through basis contracts (see 4.1.6 below)
- credit harmonisation of *physical markets* (day-ahead, real-time) with forward markets, so that participants do not need to post prudentials for each market, and so that net positions in all markets are accounted for in calculating the quantity of *prudential support*
- greater integration of the Ontario and U.S. markets (e.g. similar day-ahead market as NY, removal of border prices not related to Ontario or NY *energy* prices)

4.1.4 **Dispatchable load and demand side responsiveness**

It is widely understood that, if competitive electricity markets are to work effectively, the market needs to be two-sided – load as well as supply must be responsive to price. Increasing *dispatchable load* and *demand* side responsiveness will help to ensure *reliability* by allowing loads to benefit from non-consumption during periods of tight supply. In addition, participation by the *demand* side is integral to effectiveness of any day-ahead market that is to provide stable and predictable prices. While the *IMO-administered market* has been designed to allow full participation by the *demand* side at the wholesale level, there is very little capability at the present time for residential and small business *consumers* in the Ontario market to express their price responsiveness. This is largely a reflection of the absence of appropriate forms of metering, pricing information and *settlement* information.

A number of the issues that are creating barriers to greater *demand* side responsiveness at both the wholesale and *retail* level would be addressed by the other enhancements and changes contemplated in the straw-plan. These include elements such as the day-ahead market, better optimisation over time, a forward/futures market, and better aligning *pre-dispatch schedules* and prices with *real-time dispatch* schedules and prices.

A key challenge is to make it easier or more attractive for large commercial and industrial customers to become dispatchable by the *IMO* and thereby automatically responsive on a five-minute basis. A further challenge is to find ways to encourage price responsiveness among those wholesale *market participants* who elect not to become dispatchable. Some loads may not be able to respond to five-minute or even hourly signals, but may nevertheless be able to shift their production schedules to shave peak loads, etc. Enhancements to the market need to foster the development of and participation in such initiatives by *market participants* and loads in general.

This element of the straw plan has the greatest potential for interaction with the *retail* sector of the market and with the activities of the *OEB*. The specifics around this aspect of the straw plan still require further development. To aid in the review and discussion of the plan, a number of potential enhancements are identified below.

Key design elements for consideration are:

- *meter* enhancement programs

- incentive programs for dispatchability
- improved infrastructure to better permit mixed *facilities, dispatchable* and *non-dispatchable load*, behind the same *meter*
- allow Local Distribution Companies (LDC's) to *offer retail* load into *Operating Reserve* market
- others may include reduced compliance targets or *dispatch* targets (e.g. hourly or 15 minute load *dispatch* instead of 5- minute) for loads

4.1.5 Better align *pre-dispatch* and *dispatch*

An integral part of the *IMO's* responsibility involves providing market signals to participants. One of the principal means of providing this information is via the *pre-dispatch* scheduling process. A *pre-dispatch schedule* and prices that correlates well with real time operations and prices is an essential tool for decision making. Ensuring a strong correlation will allow *market participants* to respond appropriately to accurate and reliable information; this will provide price predictability and improve the *reliability* of the *IMO-controlled grid*.

Experience to date has been that under certain circumstances, the correlation of the *pre-dispatch schedules* and prices to those in real time can be poor. This has resulted in *non-dispatchable loads* taking actions that while seemingly appropriate under the *pre-dispatch* signals, are determined to be uneconomic after the fact and in the *hourly uplift* charge becoming much higher than expected during such times.

The situation might be improved by either providing enhanced *pre-dispatch* information or changing specifics of the calculation of the *pre-dispatch schedules* and prices. Determination of the best course of action is the subject of an ongoing examination into the situation. The actions ultimately recommended may either compliment other enhancements or changes in the market design or be of a magnitude significant enough so as to compete with the time and resources required by them.

4.1.6 Locational marginal pricing

Moving towards locational marginal pricing (LMP) will provide *market participants* with economically correct price signals to drive appropriate production, consumption and investment. In addition, the implementation of LMP is integral for facilitating economically beneficial *demand* side responsiveness and can provide a means for consumers and suppliers to manage price risk.

This fact is recognised in FERC's proposed Standard Market Design. Specifically, FERC noted that the adoption of market-based locational marginal pricing will send "proper price signals to encourage short-term efficiency in the provision of *transmission service* as well as wholesale *energy*, and to encourage long-term efficiency in the development of transmission, generation and *demand* response infrastructure."

The locational pricing of *energy* takes two main forms. Nodal pricing entails publishing and using the *energy* price at each and every node on the system. FERC has proposed a nodal LMP approach.

Under nodal LMP there could potentially be a separate *energy* price at each and every *delivery point* that is registered in the *IMO-administered markets*. The resultant *energy* price would reflect the incremental cost of delivering a unit of *energy* at that point. In other words, the cost of congestion and possibly losses would be incorporated right into the price of *energy*. Zonal pricing entails publishing and using prices that are averaged over a set of contiguous nodes, assuming a definition of zones that are economically and electrically significant.

The *IMO* is obliged to review prices currently being calculated at the nodes within the *dispatch* software of the *IMO-administered markets* and to make recommendations within a year of market opening on timing and form of LMP. Whether Ontario will or will not move towards a form of locational marginal pricing has not yet been decided. It has, however, been included for the purposes of this straw plan.

Any introduction of locational marginal pricing in Ontario would also involve a significant expansion of the Financial *Transmission Rights*⁴ market. Financial *Transmission Rights* are the means by which participants are able to hedge the price differences, which represent the cost of transmitting electricity between nodes.

Key design elements for consideration are:

- nodal/zonal/uniform decisions
- expansion of Financial *Transmission Rights* market and the question of allocation of rights, e.g. grand-fathering for internal loads
- timing and manner of implementation, e.g., test regions or full implementation

4.1.7 More integrated interchange scheduling

Creating a more integrated interchange scheduling approach will significantly improve price and operational predictability. Today, much of the disparity in price and schedules between *pre-dispatch* and real-time operations is a consequence of the interchange scheduling protocols. Many *market participants* have noted the large uplift amounts related to the *Import Offer Guarantee* which is, in part, a result of non-integrated *interchange scheduling*.

An important area of on-going activity has been and continues to be improvement of the rules and processes related to *intertie* transactions. There are many technical *intertie* issues that need to be considered. One is the potential introduction of shorter scheduling intervals (e.g. 15/30-minute *intertie* scheduling). A move to 15-minute scheduling as an example would facilitate trade by giving *market participants* greater flexibility to maximise the benefits of a liquid market. Other *intertie* issues include improving the procedures for electronic scheduling and tagging, addressing unique gaming possibilities, and revising the rules related to the operation of *radial interties*. Improving the scheduling process to make it easier for accurate and efficient *market participant* and ISO information exchange would benefit the entire market.

Many of these issues are a part of ongoing co-ordination efforts the *IMO* has with its neighbouring market operators, such as with ISO-NE, NYISO and with MISO. They are included in this straw plan for completeness as the enhancements and changes that may arise out of these co-ordination efforts will compete for resources with the other elements of this plan.

⁴ These are equivalent to the Congestion Revenue Rights referred to by FERC in its proposed Standard Market Design.

Key design elements for consideration are:

- move to 15 minute scheduling intervals for interchange transactions
- participation in the Open Scheduling System that will provide participants with “one-stop shopping” scheduling mechanisms for transactions between, through or out of neighbouring markets
- develop inter-Control Area ramp management techniques to facilitate cross-boundary trading and reduce transaction *curtailments*
- participate in ACE Diversity Interchange Pilot Project and augment efforts to implement on a permanent basis
- participate in Reserve Sharing Pilot Program and augment and augment efforts to implement on a permanent basis
- establish information sharing protocols for monitoring “failed” cross-boundary transactions and to address potential gaming opportunities
- Revision of rules related to operation of radial ties

4.1.8 Rational alignment with U.S. markets

During the January 22, 2002 consultation, the alignment of the Ontario market with adjacent U.S. markets was raised as an important issue for consideration as part of the future market evolution. This issue has been elevated by FERC's issuance of its NOPR on a proposed Standard Market Design that will serve to harmonise the electricity markets in the U.S.

There are many benefits in having common *market rules* and designs for participants and *consumers*, including: better informed *market participants*, more efficient and liquid markets, increased competition, and facilitation of trade through consistent products. Harmonisation allows *consumers* in all regions to maximise market efficiencies (and deficiencies).

Ensuring compatibility with US markets is the critical factor in achieving more integrated *interchange schedules* and is an important factor in the development of a day-ahead market. In addition the development of a forwards/futures market will necessarily have to consider US participants in the Ontario market. Moving towards the implementation of locational marginal pricing will also affect, and be affected by, the developments in US markets. In addition, developing a capability for the export of *Ancillary Services* will require co-ordination with all of our neighbouring jurisdictions including the US.

The key question is the manner in which this compatibility will be achieved. Ontario can chose to align its market design only to the extent necessary to ensure compatibility, or can align to the point of in fact adopting common rules and acquiring (or providing) the same software as neighbouring market operators entities in the U.S. Deciding on this question will depend on the nature of the final rule from FERC and the development plans of neighbouring markets. For this reason the *IMO* continues to participate in co-ordination activities and discussions with the NYISO, ISO-NE and MISO.

Until such time as a more rational alignment is achieved, it will be necessary for the *IMO* to work with its neighbouring ISOs to minimise if not eliminate the seams related barriers and inefficiencies that have been identified so far. Doing so is essential, as despite FERC's move to standardise the

wholesale electricity market design in the U.S., seems will continue to exist between separately operated markets.

Key design elements for consideration are:

- promote greater alignment between the *IMO's* Financial *Transmission Rights* and NE/NY's Transmission Congestion Contracts
- pursue alignment of the *IMO* practices to the requirements of neighbouring Regional Transmission Operators (RTOs) and of the neighbouring RTO practices to the *IMO's* requirements in order to provide *market participants* with seamlessly integrated services between Ontario, New England and New York and Michigan.
- work to eliminate “border charges” for exports from U.S. or Canadian suppliers in order to facilitate improved competition over a larger region.
- Work to align:
 - market information technical standards
 - information confidentiality practices
 - publishing market information
 - service tariff designs
 - market design and rules
 - business practices
 - standards of conduct
 - resource *adequacy* mechanisms

4.2 Other enhancements and changes

As noted above, the following are seen as being necessary ‘other’ enhancements and changes from either a market or an operations perspective. They are in most instances supportive of, rather than integral to, the achievement of the key objective as stated in this document. They may, however, compete with the time and resources available to undertake the key enhancements and changes identified above and as such are included here for completeness. In many cases efforts associated with these ‘other’ enhancements are well underway.

4.2.1 Unwind last minute amendments

As part of managing the newly opened market the *IMO* implemented measures that were quick solutions to enable the market to function in keeping with its design principles. As we move forward these measures need to be re-assessed to determine if a more permanent, or better, solution exists to address the concern that they were created to address.

Key elements for consideration:

- reduction in the 12x ramp period currently used in the determination of the *real-time market* schedule (may be contingent on implementation of a day-ahead market and /or better optimisation over time)
- automated consideration of non-market *operating reserve* resources such as 3% or 5% voltage reduction when there is insufficient market based resources of *operating reserve* available
- improve calculation of transmission losses in the determination of *dispatch* schedules

4.2.2 Export of *ancillary services* (e.g. *Operating Reserve*)

Not only are there the natural benefits of being able to trade all commodities freely between markets and not just *energy* across the *inerties* there is a strong desire by *market participants* to do so. The merits include the price discipline associated with competition, regional benefits and increased *reliability* associated with additional availability, more access to market solutions for *reliability* requirements. The fact that certain ancillary products can not readily be traded between neighbouring markets is a shortfall with many of the existing markets and has been raised in a number forums. For example, many of the operating markets in the Northeast do not enable the purchase of *operating reserve* by (or sale to) external *market participants*. Activities are underway or contemplated in regard to this under the banner of more integrated interchange scheduling (see section 4.1.7).

Key design elements for consideration are:

- Export of *Operating Reserve*
- *Automatic Generation Control* from external resources
- Import of Synchronised *Operating Reserve* via *radial inerties*

4.2.3 Transmission operation and investment

Transmission expansion is an important part of the future market evolution. During the January 22 consultation several *market participants* raised this issue as an area of priority. Transmission issues interrelate with and will be supported by many of the enhancements and changes considered in this straw-plan. For example, the interaction of locational marginal pricing and the transmission grid will certainly impact the incentives and signals regarding potential future transmission expansion. Part of the straw-plan's key objective is ensuring *reliability* and this is intimately connected to having sufficient and adequate transmission. FERC has noted, in its proposal for a standard market design, that while the adoption of LMP is designed to provide a mechanism for allocating transmission capacity to those who value it most, it will also encourage the efficient provision of *transmission service*. In addition, FERC noted that LMP would encourage the development of needed transmission expansion and improvements.

There is also a need to balance generation investment, *demand* side response programs and transmission expansion when addressing congestion issues. To address these issues FERC has proposed the implementation of procedures for planning and oversight of transmission infrastructure in addition to *market rules* that support *reliability*. Specifically, market participants in the U.S. will be required to participate in a regional process to identify needed new infrastructure to promote long-run *reliability*.

As electricity markets develop and evolve so to do the transmission investments models. It will become increasingly important that the Ontario market and its evolution have the ability accommodate new approaches to investments in transmission such as "merchant transmission". One alternative to the current "regulated rate" model is one where merchant transmission investors are allowed to bear the financial risk for the development and in return receive a non-regulated rate for its use. Alternatively, the entity that pays for new transmission facilities that add transfer capability could either receive the revenues from the sale of financial transmission rights associated with the new transfer capability or receive the rights themselves as has been proposed in FERC's NOPR.

4.2.4 Interface with *retail* market

An additional issue that will need to be addressed in the plan for market evolution is the interface between the wholesale and *retail* market. Ensuring that prices and operations are predictable requires the ability of *demand* side participants (including *retail demand*) to be able to respond to market signals and receive incentives for that response. In this regard it will be incumbent on the *IMO*, *market participants*, and other stakeholders to engage the *OEB* in discussions surrounding further integration of the wholesale and *retail* markets.

– End of Section –

5. Priorities Amongst the Enhancements and Changes

It is critical that any major enhancements to the market be aligned with a clear and realistic ‘vision’ of how we collectively – *market participants*, stakeholders, and the *IMO* – see the Ontario market evolving. In the previous section, we identified the key enhancements and changes to be included in the straw-plan for market evolution. In this section, a sequencing of these changes is proposed reflecting relative priorities and interrelationships amongst the identified enhancements and changes in order to make resource allocation decisions.

The key enhancements and changes considered in this straw-plan are a reflection of the priorities indicated by *market participants* and other stakeholders during the January 22, 2002 consultation. They include three of the top four priorities selected by stakeholders, and all of the enhancements and changes support the key objective of providing price and operation predictability and ensuring *reliability*. The key objective also aligns with the desires of *market participants* and other stakeholders as indicated in section 2.2, Past Consultations, that reviewed the suggested objectives for future market evolution articulated during the January consultation, which included improved price signals and ensuring *reliability*.

The lack of inclusion of a *capacity reserve market*, or an enhancement that would achieve the same results, does not mean that the *IMO* has completely abandoned this type of initiative. As has been indicated previously the input of *market participants* and other stakeholders is one of many factors that have influenced the development of this straw-plan. In particular there is ongoing debate in the U.S. on whether an Installed Capacity (ICAP) market is required. While FERC's proposed Standard Market Design includes a resource adequacy requirement similar in purpose to what is called "installed capacity" it does not include either specific rules for a tradable capacity product or for a centralized market to provide such adequacy. Further, the ICAP markets that currently exist in some U.S. markets have been criticised as having a number of flaws leading to binding floor and ceiling prices and to market power and market manipulation by participants. This has led to ongoing requirements for adjustments to such markets. As the markets without ICAP continue to attract generation investment, some critics view ICAP revenues as a windfall to owners of existing capacity that is not linked to new plant construction. It has been argued by some that the same objectives can be met via *reliability* products and the provision of *ancillary services*.

Several other enhancements and changes that were discussed at the January consultation are also not included in this straw-plan. Moving to real time bidding, the capability of ‘full assignment’ of Physical Bilateral Contracts, and the introduction of markets in *Ancillary Services* are not part of this straw-plan. *Market participants* and other stakeholders, during the January consultation, gave these items a relatively lower priority.

The straw-plan gives priority to the key enhancements and changes discussed in section 4.1 (day-ahead market, optimisation over time, forward/futures market, *dispatchable load* and *demand* side responsiveness, better align *pre-dispatch* and *dispatch*, locational marginal pricing, interchange scheduling, and alignment with US markets). These key enhancements and changes directly support the key objective of focusing on price and operation predictability and ensuring *reliability*. Most of the other enhancements and changes discussed in section 4.2 (unwinding last minute amendments,

export of *Ancillary Services*, and interface with *retail* markets) are generally afforded a lesser priority. Albeit some may need to proceed in advance the larger key enhancements by virtue of their importance or immediate benefit to the market.

In the Setting Priorities Document the *IMO* proposed criteria for ranking issues presented at the January consultation that can also be used to determine the priorities of the enhancements and changes considered in this straw-plan. Using the seven guiding principles developed by the Market Development Committee and endorsed by the *IMO Board* was one method. Another suggested method was to prioritise the issues according to broad policy objectives focusing on pricing, investment, and external trade among others. A third suggested approach focused on screening the potential enhancements and changes based on their relative costs and benefits. These methods were meant to be instructive of a methodology and not to provide an exclusive mode of prioritisation. *Market participants* and stakeholders must bring their own unique perspectives to this exercise.

Council members will be asked during the August 13, 2002 Council meeting to assist in this regard by completing a survey indicating whether they agree with the enhancements and changes considered in this straw-plan and whether others should be included.

– End of Section –

6. Implementation and Change Management of the Enhancements and Changes

Implementing the enhancements and changes considered in this straw-plan for market evolution will impact *market participants* and the overall operation of the market. To minimise the disruption to *market participant* systems and processes that such changes can have, the *IMO* has established, in consultation with *market participants*, a process to assess the impact of changes and to manage implementation activities. This process is designed to ensure an orderly implementation of change to the Ontario wholesale market and to ensure that all aspects of the implementation of the design remain consistent with each other. The process is presented in Market Manual 2: Market Administration, Part 2.13: Change and Baseline Management, available on the *IMO* Web site:

http://www.theimo.com/imoweb/pubs/marketAdmin/ma_Change_Baseline_Mgt.pdf

An important component of change management is the method of implementation. The *IMO* has adopted a discrete timetable approach for implementation of market system changes. This process has been rolled-out to *market participants* and operationalised by a Baseline Calendar and by a software Release calendar (both calendars are available on the *IMO* Web site). At regular intervals (about 3 months apart), the *IMO* releases changes to market systems and documentation. In advance of these releases, the *IMO* informs *market participants* of pending market system changes and invites them to provide feedback to the *IMO* regarding the design and timing of implementation.

It should be recognised that some of the major enhancements discussed in this straw plan may require a more structured implementation schedule than otherwise provided in the change and baseline management process. Due to the significance of the enhancements, testing and implementation schedules to verify functionality and systems, could be developed similar to those leading up to the *IMO administered market's* May 1st commencement. This is consistent with the approach adopted in the US Northeast as evidenced in the timetables proposed under the joint efforts of New York and New England to establish a Northeast RTO. Similar implementation approaches and timelines are also being proposed in the ongoing Single Market Design work of the Midwest ISO, Southern Power Pool and PJM Interconnection.

– End of Section –

7. Costs and Time to Implement

As a number of key details of the individual enhancements contained in this straw plan are not yet decided, it is not possible at this point in time to provide any meaningful estimates of the cost or of lead times required to implement. The resolution of these design details and the development of the associated cost and lead time estimates will be the focus of the next stage of development of the plan for evolution of the Ontario market design.

Not only will cost and lead time estimates for changes to the IMO's systems and procedures be needed, but similar estimates for changes to *market participant's* systems and procedures will be required. These estimates will be solicited from *market participants* through the Concept Development Phase of the Change and Baseline Management Procedure. Some of the key considerations that will need to be addressed and factored into the plan are:

1. It is recognised that enhancements and changes to the market design will at times be competing with other activities and initiatives for time and resources. Trade-offs may be required. It will also be necessary to ensure that appropriate co-ordination between the IMO's systems and procedures and *market participant* systems and procedures can be achieved.
2. Cost allocation may be an issue for certain enhancements and changes. Will all *market participants* bear a proportionate cost or will certain *market participants* bear what may be considered a disproportionate share of the cost for implementation of a particular enhancement or change?

– End of Section –

8. Next Steps

As noted at the outset, the purpose of the straw-plan is to provide a basis for consultation on the future evolution of Ontario's competitive wholesale electricity market. As such, The *IMO* is now requesting feedback and input from *market participants* and other stakeholders regarding this straw-plan for market evolution. Prior to the August 13, 2002 Council meeting surveys will be provided to Council members as a method of obtaining feedback.

The straw-plan for market evolution will continue to be stakeholdered through the representative bodies already in place (Market Advisory Council, *IMO Board*, *Technical Panel*, and Technical Advisory Teams) to obtain input and direction regarding the plan for market evolution. As part of this process the straw-plan will be posted publicly on the *IMO's* web-site along with an invitation for comments. Substantial comments and submissions received will also be posted on the *IMO's* Web site.

The next step in the process will be the development of a more detailed work plan for market evolution that will take into consideration all the factors affecting market evolution including the feedback received from *market participants* and other stakeholders. The detailed work plan for market evolution will provide a basis for business planning by the *IMO* and *market participants* by specifying enhancement and change details and timelines for their implementation. The detailed work plan will help to co-ordinate enhancement and change efforts by both the *IMO* and *market participants* and it will provide a basis for ongoing discussion with *market participants* and stakeholders.

This will be an ongoing process. As the Market Evolution work-plan is refined the *IMO* will continue to engage *Market Participants* and other stakeholders in discussions on the various issues and continue to seek their feedback.

– **End of Section** –

References

Document Name	Document ID
Market Rules	MPD_RUL_0002
Setting Priorities for the Evolution of Market Design	IMO_TOR_0002
Participant Priorities for Future Market development	IMO_REP_0055
Market Manual 2: Market Administration, Part 2.13: Change and Baseline Management	IMO_PRO_0039

– **End of Document** –