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Report

Independent Electricity Market Operator

IMO Administered Markets Readiness Report

Report to MoEE April 24, 2002

Issue 3.2

This document provides an assessment of the readiness of the IMO Administered Market as of April 22, 2002

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Document Name	IMO Administered Markets Readiness Report
Issue	Issue 3.2
Reason for Issue	For Issue to MoEE
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1. Purpose of this document

This document is the third and final release of the IMO's report on the readiness of the IMO-Administered Markets. Version 1 of the report was delivered to the Ministry of Energy , Science and Technology on December 17, 2001, Version 2 on April 2, 2002.

Versions 1 and 2 contained a number of exceptions and a timetable for their resolution. This report provides a status update on each of the exceptions outstanding in Version 2 of the report.

The information contained within the document is provided to MoEE for use regarding the opening of both the retail and IMO-Administered electricity markets. It should be noted that one of the areas considered relates to participant readiness. In this case the IMO is assessing readiness on the basis of the completion by participants of the market entry process specified in the market rules. This process assures the IMO that the participants meet the prerequisite legal and commercial minimums and that they can interface with the IMO in the manner prescribed in the market rules and manuals. It is up to individual participants themselves to assure their own commercial and technical readiness to operate in the IMO-Administered Markets.

– End of Section –

2. Structure of this document

The remainder of this document is structured into the following sections:

- **Summary:** A summary of the entire document;
- **Market opening timelines constraints and assumptions:** A description of the necessary steps and timelines that precede an opening of the IMO-Administered markets.
- **IMO-Administered market opening conditions:** A description of the seven opening conditions that have been used to make the readiness assessment;
- **IMO testing:** Much of the IMO's assessment is based upon the results of the IMO's testing. This section provides an overview of the types of testing that the IMO has undertaken.
- **Status of exceptions:** This section deals with each of the exceptions to the market opening conditions that remained in the second release of the report. Where an exception is now removed this is noted. Where an exception remains the status and expected resolution timeframe are noted.

– End of Section –

3. Summary

Based on the assessment set out in this report the IMO remains confident that its systems and capabilities will support a market opening of May 1, 2002.

This assessment is based upon the following:

- IMO business process managers have indicated formally that they are able to support the processes in production.
- Viable contingency arrangements have been implemented to embrace all critical non-ready participant types.
- The number of participants who have completed ability testing, together with the applicable contingency arrangements, indicate a high level of participation.
- No item has been identified that poses an unacceptable level of risk to system reliability.
- Testing of systems has taken place over an extended period and has exercised the systems in many different ways (see section 6 for a high level description of the testing undertaken). This testing provides confidence that computer systems are sufficiently stable to support production operation.
- The legal documentation is in place.
- The latest eighteen month IMO assessment of system adequacy is considered to be acceptable.
- Coupled Operational Dry-Run (CODR) success criteria have been met to date (See Appendix A).

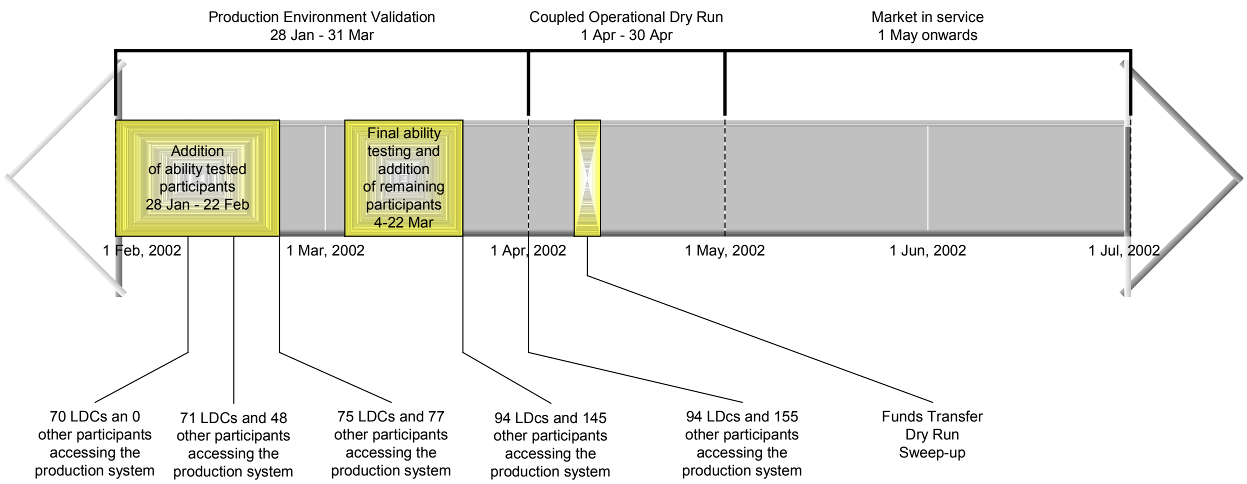
The early days of CODR indicated levels of price instability due, in the main, to ramp rate restrictions, price sensitivity in the face of Operating Reserve shortfall and the market learning curve. The IMO is taking a number of actions both of a permanent and temporary nature to address the issues and recent prices have generally been more stable. As indicated in the previous version of this report, CODR provides the most realistic opportunity to date to assess market operation, but two important unknowns will remain until the market is in service, the operation of the interties and real participant behaviour. Although any nascent market is likely to demonstrate some unexpected characteristics, the IMO believes that there is sufficient evidence of stability and learning to support the opening of the wholesale electricity market in Ontario.

– End of Section –

4. Market opening timelines, constraints and assumptions

Timeline

The diagram below shows the key timings relative to the May 1, 2002 market opening date:



The components of the above diagram are described below:

- **Production Environment Validation (PEV):** During this period participants have been added to the production environment in a progressive manner.

- **Coupled Operational Dry Run (CODR):** During this period the IMO-administered markets are operating in full with the exception that interchange schedules are limited and that settlement and funds transfer continues to be effected under the current arrangements.

- **Market in service:** Full operation of the IMO-Administered Markets.

- **Addition of ability tested participants:** Addition of participants who had already completed their ability testing to the Production Environment Validation activity. Access to PEV enabled participants to validate their data set-up and test their own systems using production metering and settlement data flows from the IMO.

- **Final ability testing and addition of remaining participants:** A final tranche of ability testing.

- **Funds Transfer Dry Run Sweep-up:** A re-run of the Funds Transfer Dry Run (FTDR) test for participants that were either not included last time or for the few participants who failed to complete the test successfully last time. The test involves the transfer of a nominal sum of money from participants to the IMO and back again to test that banking details are correctly established.

– End of Section –

5. IMO-Administered Market opening conditions

Seven conditions have been identified as necessary to be satisfied to allow the IMO-Administered Markets to open. These largely follow the six conditions reviewed with MoEE in July/August 1999, but include an additional item to cover system adequacy.

Each of the conditions is sub-divided into several "Areas of Demonstration" and each area is further sub-divided into a set of criteria.

The table below sets out the conditions and the areas of demonstration for each one.

<table>
<tr><th>Conditions</th><th>Areas of Demonstration</th></tr>
<tr><td>Condition 1 - IMO readiness: The IMO is able to meet its obligations as set out in the market rules for the IMO-Administered Markets.</td><td>IMO Readiness Checklist – enterprise wide sign-off by department & business process covering:
Market Assessment & Compliance
Finance
Legal and Corporate Affairs
Market Operations & Forecasts
Market Services
Information Technology and Infrastructure
Financial – prudentials, banking and insurance</td></tr>
<tr><td>Condition 2 - Participant readiness: All participants authorized by the IMO meet the prudential, technical, interface and training requirements of the IMO and have confirmed their readiness to commence participation in the IMO-Administered Markets.

Note: As at noon April 22, approximately 82% (by value) of prudentials have been lodged and the IMO is actively pursuing Participants whose responses are outstanding.</td><td>Conditional authorisation
Ability tests
Digital certificates
Emergency preparedness plan
Participation agreement
OEB licence
Prudential support
Facility information
Delivery point relationships
Meter registration
Emergency restoration plan
Connection agreement</td></tr>
</table>

Conditions	Areas of Demonstration
Condition 3 – Contingency arrangements: The IMO is able to operate and reliably settle the market even if some participants are not fully compliant with the market rules.	• Transitional IMO Market Rules • Process published • Complete data sets permit required settlements tool functionality
Condition 4 – Reliable operations: Continued reliable operation of the IMO-controlled grid is assured.	• Energy Management System (EMS) availability • Control Performance • Operating Reserve • Outage Scheduling • Communications • Ancillary Services • Operating security limits • Emergency preparedness • Load forecasts
Condition 5 – Market design: The IMO-Administered Markets are able to function in accordance with the market rules.	• Performance of IMO-Administered Markets "bid to bill"
Condition 6 – **Legal framework –** All IMO developed legal documents that govern the operation of the IMO-Administered Markets are complete.	• IMO Market Rules • IMO Market Manuals • IMO agreements
Condition 7 – System adequacy: The assessment by the IMO of system adequacy during the period of transition to the new market and initial operations.	• 18 month outlook

– End of Section –

6. IMO Testing

Much of the IMO's assessment is based, directly and indirectly, upon the results of the IMO's testing. In order to provide context for the remainder of the report this section provides an overview of the key testing that the IMO has undertaken.

System Integration Testing (SIT)	
Objective	Test that all systems inter-operate and that individual functions within each system perform as expected.
Nature of testing	A combination of scripted testing and ad-hoc tests
When undertaken	Performed each time a new release is received from software vendors
Participant involvement	None formally, though for certain interface tests participants were involved on an ad-hoc basis.
User Acceptance Testing (UAT)	
Objective	Test that all systems and user procedures are robust and meet the user requirements.
Nature of testing	Scripted testing with known results based upon the IMO's business processes
When undertaken	Performed after selected releases from software vendors
Participant involvement	None.
Structured Market Testing (SMT)	
Objective	Provide assurance to both the IMO and Market Participants that they are able to inter-operate and meet their obligations as defined in the Market Rules and Market Procedures.
Nature of testing	Scripted testing with known results based upon the market rules and procedures.
When undertaken	December, 2000 until May, 2001
Participant involvement	Selected group of key market participants.

Uncoupled Operational Dry-Run (UODR)	
Objective	To provide sufficient evidence that the market functions as envisaged and that the IMO and a sub-set of market participants are able to meet their obligations in the market on a sustained basis.
Nature of testing	Production simulation without dispatch and funds transfer. Certain pre-defined scenarios triggered to force specific events and circumstances
When undertaken	May and June, 2001.
Participant involvement	Selected group of key market participants
Performance testing	
Objective	To provide specific testing on system performance where other tests have either indicated some concerns or have not adequately exercised a system component at production loads.
Nature of testing	Stress test communication front end to participant interface to bids/offers/settlement data Stress test of Participant interface to metering data (simulation of 100 concurrent participants)
When undertaken	Staged, final tests and monitoring during January – March 2002.
Participant involvement	None
Fail Over, Fall Back and Fall Forward (FO/FB/FF)	
Objective	Build confidence that the IMO has the business processes, procedures, technical solutions and trained staff in place that address most likely system failure scenarios
Nature of testing	Scripted testing of FO/FB/FF scenarios
When undertaken	October, 2001 to April, 2002
Participant involvement	None.
Retail Feeds and Market Settlement support	
Objective	To provide production data feeds to LDCs and other participants over a sustained period of time in order to test the IMO's metering and settlement systems and processes in production and allow LDCs to fully test their settlement systems
Nature of testing	Non-scripted, simulation of production settlement operations
When undertaken	August until December, 2001
Participant involvement	42 LDCs and 3 non-LDC have participated in the tests

Sandbox	
Objective	Enable participants to test their interfaces with the IMO
Nature of testing	Non-scripted.
When undertaken	October 2001 until market in service
Participant involvement	Four dispatchable participants

Funds Transfer Dry Run (FTDR)	
Objective	To confirm bank account information for each participant and that the electronic funds transfer between the participants' banks and the IMO bank operate correctly including second layer PKI testing.
Nature of testing	Scripted tests
When undertaken	November 2001 and April 2002
Participant involvement	All participants were invited, 228 participated, over 90% completely successful.

Market Readiness Shadow Operations (MRSO)	
Objective	To operate the EMS/MIS systems in production mode with OPGI over a sustained period of time in order to test the IMO's scheduling and dispatch systems and processes and allow OPGI to test their automatic dispatch systems.
Nature of testing	Non- scripted, simulation of production operations
When undertaken	Phased with increasing functions brought on-line between October 2001and January 2002.
Participant involvement	OPGI

Production Environment Validation (PEV)	
Objective	To allow participants to validate their data set-up in the IMO's systems and access production metering and settlement data for an extended period.
Nature of testing	Progressive addition of all participants to the production environment. Those participants who had already passed ability testing were admitted first. Participants who had not completed ability tests by the start of PEV were admitted from March 4 onwards. The nature of testing was similar to that undertaken during retail feeds. PEV also allowed much of the type of testing conducted in MRSO to continue within the production environment.
When undertaken	January 28 to March 31, 2002
Participant involvement	All participants

Coupled Operational Dry-Run (CODR)	
Objective	Provide final evidence that the market functions as envisaged and that the IMO and all the day one participants are able to meet their obligations in the market on a sustained basis.
Nature of testing	Full production, without funds transfer and with some limitations to interchange schedules.
When undertaken	Commenced April 1, 2002 and completes on April 30, 2002.
Participant involvement	All participants who will be active in the market on the first day of trading.

– End of Section –

7. Status of exceptions

The following table lists all the exception items identified in version 2 of this report that was produced for MoEE on March 28, 2002. For each item the current status is identified and where the item remains an exception the expected resolution date is provided.

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
Condition 1 – IMO Readiness			
C1.6	Market operations and forecasts – process market contracts (see C6)	See C6	
C1.8	Market services – maintain and retire market participant. A co-ordinated, corporate-wide set of internal procedures to handle suspension, termination and withdrawal were being developed.	Procedures for suspension, termiantion and withdrawel of participants are in place.	Complete
C1.9	Market services – contingency trading arrangements. Contingency arrangements had been defined and established within the market rules. The final extent of their application was unknown.	Databases have been populated with contingency data and settlement statements are being produced against this data. Further revisions to the data may be made during CODR at the IMO's discretion.	Complete with exception of any changes that are determined as necessary during the remainder of CODR
C1.10	Market services – process revenue metered data. Manual workarounds were required due to issues with the tools.	Due to the extent of the manual intervention required additional staff will be required to sustain the process. These are currently being obtained.	May 1

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
C1.11	Market services – register meter service provider. Approved by IMO Board and awaiting participant signatures	The Meter Service Provider (MSP) agreement has been approved by the IMO Board. Responsibility now rests with participants to sign the agreement.	Complete from IMO perspective. Remaining participants must sign.
C1.12	Market services – publish notification. All reports were being produced for PEV or were near completion.	IMO procedures were completed as planned. All public reports have been created and will be available for market opening.	Complete
C1.14	Market services – commercial reconciliation for real time markets. Manual workarounds were required due to issues with the tools.	Due to the extent of the manual intervention required additional staff will be required to sustain the process. These are currently being obtained.	May 1
C1.15	Market services – process market rule changes. Rule making authority had not been passed to the IMO.	Rule making authority will not pass to IMO until market launch.	May 1
C1.16	Information Technology & Infrastructure – Testing of fail over, fall back and fall forward had not been fully completed.	Fail over, fall back and fall forward of the computer systems between the Clarkson and backup site has been successfully tested with the exception of the metering systems which will be tested during CODR. While successful, the testing raised some concerns over the duration of outages and the number of staff required. As a result work has been initiated to streamline the capability. The current capability is acceptable for initial market in service.	May 1 for testing of metering systems. Post market in service for further enhancements
Condition 2 – Participant Readiness			
C2.0	Status report	Refer to Appendix C.	May 1
Condition 3 – Contingency Arrangements			

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
C3.0	Ability to open the market with some non-ready participants	Contingency arrangements have been defined and established within the market rules, and have been implemented. The extent of their application is described in Appendix B.	May 1
Condition 4 – Reliable Operations			
As the ability to maintain reliable operations is a key factor of market readiness, the narrative included as Appendix D of version 2 of this report has been updated and included as Appendix D of this version.			
C4.2	Final verification of IMO's system operations function's ability to: • Achieve acceptable control performance; • Procure adequate operating reserve; • Communicate effectively with all participants; • Produce accurate forecasts.	Performance to date shows all criteria being met with the most significant issue during CODR relating to CPS2 performance described below. Refer to CODR success criteria in Appendix A. CPS2 performance is presently at 94.9%, as against success criteria of 94%. Although above the success criteria set, some recent degradation beyond expectations has been seen. Increased training of, and awareness by, all market participants, and the IMO, along with increased AGC margins in the new market is expected to alleviate this concern.	May 1
C4.4	Intertie scheduling - Until market opening, by law, only OPGI is allowed to hold title to imports and exports. As such the IMO processes surrounding intertie scheduling have not been extensively tested. During CODR, OPGI has agreed to undertake specific limited activities to allow the IMO to test its associated tools and procedures.	During CODR, limited activities have been undertaken to allow the IMO to test its associated tools and scheduling procedures. Testing of intertie scheduling with the anticipated volume of transactions will not be possible prior to market launch, however the limited testing during CODR indicates the processes function as expected.	May 1

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
Condition 5 – Market Design – performance of IMO-Administered markets "bid to bill"			
C5.2	Evidence from system performance testing of "bid to bill" performance in the following areas was not available from CODR at the last report.	Refer to CODR success criteria in Appendix A.	Complete
C5.3	Evidence from CODR of "bid to bill" performance was outstanding for all criterion at the last report.	All outstanding items have been measured as acceptable during CODR with the exception of MSP performance in respect of Meter Trouble Reports. This has recently improved and is expected to meet the acceptance criteria. Performance against this measure will be reviewed at the final MCTF meeting on April 24. Refer to the CODR success criteria in Appendix A.	April 24
Condition 6 – Legal framework			
C6.1	Ministerial approval of the in service market rules	The Minister has made all market rules up to and including those approved at the April 5, 2002 IMO Board meeting. The rules approved at the April 18, 2002 Board meeting have been transmitted to the Minister of Environment and Energy with a request that those rules be made by the Minister on an expedited basis. If, during the remainder of CODR, there is a need for additional market rule amendments, these amendments will be submitted to the Minister so that the amendments can be made to meet the market commencement date of May 1, 2002. We have an agreement with MoEE that any rule amendments identified during CODR will be made by the Minister on an expedited basis in time for market commencement.	May 1 for any further rule amendments identified during remainder of CODR
C6.2	Posting of final amendments to market manuals on the IMO web site	Up to date versions of all of these market documents were posted on the IMO web site on April 11. Final amendments will be published by the end of April.	May 1
C6.4	Confidentiality agreement for dispute resolution – agreement was under draft	Agreement will be presented for signature to members of the IMO's Dispute Resolution Panel on April 24.	April 24

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
C6.7	Participant network agreement – agreement was being finalised	Awaiting signature by relevant participants.	May 1
C6.8	Transmission operating agreement – agreements were awaiting signature	All transmission operating agreements are signed and ready for implementation.	Complete
C6.10	Interconnection agreement – Niagara Mohawk – as current	Ready for signature. Awaiting resolution between Hydro One and OPG on the ownership of the Beck radial interties. Should a timely resolution not be reached, interim arrangements to temporarily use the current interconnection agreement have been developed and will be implemented.	May 1
C6.11	Interconnection agreement – TransEnergie (Hydro Quebec) – as current	Agreement undergoing translation to French. Should any issues arise preventing signature for May 1 interim arrangements to temporarily use the current interconnection agreement have been developed and will be implemented.	May 1
C6.12	Interconnection agreement – International Transmission Company Detroit Edison – agreement was being finalised	Agreement has been finalised except for minor editorial changes. Consumers Power will not agree to the termination of the current interconnection agreement. Interim arrangements to temporarily use the current interconnection agreement have been developed and will be implemented.	May 1
C6.16	Operating reserve bid cap – agreement wasd awaiting OPGI signature	Signed by IMO and OPGI.	Complete
C6.17	Ancillary services – agreement on final price for AGC was outstanding	The AGC agreement has been approved and is ready for signature using interim prices. Agreements for black start and voltage control and reactive support are signed and ready for implementation.	May 1

Cross reference to version 2 of report	Issue as at March 28, 2002	Status as at April 19, 2002	Latest expected resolution date
Condition 7 – System Adequacy			
C7.0	April 18-Month Outlook	The IMO issued an updated 18-month Outlook on April 3, 2002 covering the period from April 2002 to September 2003. During the Outlook period, the IMO forecasts show that Ontario's available generation exceeds projected demands. Over this period, approximately 3,000 MW of additional generation resources are expected to either return to service or be placed in service for the first time - thereby enhancing the reliability of the Ontario electricity system. During the first half of the Outlook there are periods when Ontario's available reserves are forecast to be between 2,000 and 2,500. These reserves are below the IMO's required planning reserve levels, but do not account for additional resources from outside Ontario that are expected to be available. Reserves are planning buffers identified to address circumstances that cannot be accurately predicted such as weather variations and unscheduled maintenance. The IMO anticipates that the Ontario market will be effective in attracting additional resources to provide adequate reliability. However, there will likely be restrictions on planned maintenance to maintain reserve levels. Outside of these periods, available reserves are forecast to exceed requirements. Over the 18-month period under study, accounting for the availability of regional supply, the Northeast Power Coordinating Council resource adequacy criteria are met.	

- End of section –

Appendix A – CODR Success Criteria

The table below summarises the achievement of the CODR success criteria between April 1 and April 14. These criteria were established and agreed with the Market Commissioning Task Force (a representative body of participants established by the IMO to advise on market commissioning activities). Further information on each of the criteria, how it was measured and the status is available.

	Criteria	**Status**
1.	Compliance of (Commissioning) participants during CODR satisfactory	Achieved
2.	Prudential performance of (Commissioning) participants during CODR satisfactory	Achieved
3.	Meter Service Providers able to meet market obligations	On track[1]
4.	Pre-dispatch schedule produced according to market rule timelines	Achieved
5.	Real-time schedule produced according to market rule timelines	Achieved
6.	Provisional market schedule and prices published according to market rule timelines	Achieved
7.	Dispatch instructions issued according to market rule timelines	Achieved
8.	Participants able to respond to instructions according to market rule timelines	Achieved
9.	Issuing of preliminary settlement statement according to market rule timelines	Achieved
10.	Issuing of final settlement statement according to market rule timelines	Achieved
11.	Issuing of invoices (physical & financial) according to market rule timelines	Achieved
12.	Publication of load forecasts according to market rule timelines	Achieved

	Criteria	Status
13.	Publication of SAA/SSR according to market rule timelines	Achieved
14.	Dispute resolution procedures are functional	Achieved
15.	IMO systems and procedures are functional	Achieved
16.	Not ready distributor can be invoiced	Achieved
17.	Not ready wholesale customer can be invoiced (direct or embedded)	Achieved
18.	Not ready wholesale seller can be invoiced (direct or embedded)	Achieved
19.	Interconnection agreements functioning as anticipated and required	Achieved within confines of CODR
20.	EMS/MIS and related system reliability meets or exceeds the standard	Achieved
21.	MIS system has adequate capacity to handle all production users	Achieved
22.	Back-up operation centre is operational	Achieved
23.	Dispatch systems and procedures maintain adequate control (meet/exceed CPS)	Achieved
24.	Accuracy of average hourly day-ahead forecast is within standard	Achieved
25.	Dispatch accuracy	Achieved
26.	Variances (differences) between preliminary and final settlements acceptable	Achieved
27.	Call success rate of revenue meters meets industry standard	Achieved
28.	Metering VE processing	Achieved

	Criteria	Status
29.	Frequency and volume of NoDs during CODR is acceptable	Achieved
30.	No unreasonable requirement for market suspension during CODR	Achieved
31.	Market start-up, suspension and resumption procedures are functional	Tested today, results appear positive
32.	Participant start-up, suspension and resumption procedures are functional	Achieved
33.	Outage assessments completed as per market rules	Achieved
34.	Transmitters able to fulfill obligations under the market rules	Achieved

[1] Required timelines achieved only in latter part of measurement period following changes to configuration of MSP's system.

Appendix B – Application of contingency arrangements

It has been necessary to estimate some or all meter registration or delivery point data for:

- one distributor;
- four wholesale consumers; and
- two generators.

These estimates will have a relatively minor impact on the overall settlement results for a particular participant.

In addition, it has been necessary for some or all delivery points to remain with the host distributor for:

- three distributors;
- nine wholesale consumers; and
- three generators.

For four of these participants, only some of their delivery points will remain with the host. For the remaining eleven, all of their delivery points will remain with the host. Despite the need for its delivery points to remain with its host, one participant has been accommodated in the IMO-Administered Markets through the use of Physical Allocation Data.

It should be noted that the above numbers might change prior to the market commencement date. Also, it has been necessary to estimate administrative-type data for a number of other participants that are under contingency arrangements; however those estimates will not have an impact on the settlement results.

In addition to the above actions, many participants have not completed other authorisation, facility and registration activities specified in the market rules, and may therefore be liable to non-compliance penalties.

- End of section –

Appendix C – Participant readiness

In assessing participant readiness, consideration has been given to the number of participants that are compliant today, the actions underway to move non-compliant entities into compliance before market commencement, and the application of practical contingency arrangements. The information available to the IMO indicates that there is sufficient participant readiness for a viable market opening on May 1, 2002. The Market Commissioning Task Force has confirmed this assessment.

In total we have applications from 267 participants, with 245 participating in the market on Day 1. Of the 245 participants, there are 94 LDC's (of which 59 are direct and 35 are embedded) and 90 wholesale consumers (of which 73 are direct and 17 embedded). The progress of the 245 is summarised in the text below and presented in detail in the subsequent table.

As of noon April 22, 2002:

- 236 have active digital certificates to facilitate access to IMO systems. 9 do not have active digital certificates and may be in contingency arrangements. It is likely that some of the 9 may activate their digital certificates prior to May 1. Market participants that do not activate their digital certificates prior to the first billing period would be manually invoiced.

- 169 participants have posted prudential support. 76 have not yet posted prudential support, but it is understood that many additional postings will be received prior to market opening. Of the 76 who have yet to post, 13 are retailers and would not be permitted access May 1 unless the required prudential support is posted. The remaining participants who fail to post prudential support by market opening would fall under contingency arrangements. 81% of prudentials have now been posted.

- 235 participants have successfully completed Ability Testing. The 10 who have not completed ability testing as yet are eligible to participate in ability testing prior to May 1. Failure to complete ability testing prior to May 1 may result in non compliance sanctions. Of the 10, 8 have directly connected facilities, 1 has facilities that will be connected May 1 and 1 is an embedded load.

- 203 market participants have met the requirements for emergency preparedness plans, the 42 market participants that have not may be subject to non compliance sanctions.

- 200 market participants have executed participation agreements, the 45 market participants that have not may be subject to non compliance sanctions.

- OEB licenses have been received for 188 day one market participants. 15 have been granted by the OEB but have not been received by the IMO as yet. 20 have pending applications for licenses with the OEB. The remaining 22 have yet to apply for a licence and may be subject to non compliance sanctions.

- The IMO has complete facility information for 115 of the 153 Metered Market Participants with facilities connected to the IMO Controlled Grid, and for 48 of the 54 Metered Market Participants with embedded facilities. Outstanding information is being evaluated for contingency arrangements.

- The status of meter registration is that outstanding exemption requests, non-submission of data, and the non-completion of certain paperwork related to meter registration result in no participant having completed the full registration process. Of the 205 participants who are required to complete the meter registration process, 12 participants have registration deficiencies that will impact the settlement process and results; for these participants, contingency arrangements have been implemented. For the remaining 193 participants, the incomplete steps will not impact the settlement process or results.

  The approval of the Hydro One “omnibus exemption” on Wednesday, April 17 significantly increases the level of compliance. However, outstanding items such as: other exemption applications (including the requested exemption on the subject of a site-specific instrument transformer restoration plan), sign-off of metering documentation, last-minute registration data changes, and new installation requests, mean participants will not have completed the full registration process until possibly several months after market opening.

  Nevertheless, even though no participant will have completed the full administrative registration process by market opening, the elements essential for valid financial settlement of the market will be in place.

- 97 market participants are required to submit an Emergency Restoration Plan, 58 meet the requirements and the balance may be subject to non-compliance sanctions.

Other milestone activities are indicated below, the data in the table reflects information available at April 22, 2002. It should be noted that the column titled “Applicable participants for Day 1” reflects only those participants eligible to enter the market on May 1, 2002 as of April 22. It does not include those participants who will enter after the stability period.

	MILESTONE	MILESTONE DATE	Applicable participants for Day 1 *	COMPLIANT		NON-COMPLIANT: ONLY SANCTIONS APPLY		NON-COMPLIANT: CONTINGENCY ARRANGEMENTS REQUIRED	
	AUTHORIZATION REQUIREMENTS (all participants)								
1	Conditional Authorization Received	Oct. 26, 2001	249	233	94%	N/A		16	6%
		Connected	153	141	92%	N/A		12	8%
		Embedded	55	54	98%	N/A		1	2%
		Non Facilities	41	38	93%	N/A		3	7%
2	Ability Test Complete	Mar. 15, 2002	249	239	96%	10	4%	N/A	
		Connected	153	145	95%	8	5%	N/A	
		Embedded	55	53	96%	2	4%	N/A	
		Non Facilities	41	41	100%	0	0%	N/A	
3	Digital Certificates: Activation Data created (Production)	Jan 15, 2002	249	239	96%	N/A		10	4%
		Connected	153	145	95%	N/A		8	5%
		Embedded	55	54	98%	N/A		1	2%
		Non Facilities	41	40	98%	N/A		1	2%
4	Emergency Preparedness Plan Reviewed	Nov. 16, 2001	249	192	77%	57	23%	N/A	
		Connected	153	114	75%	39	25%	N/A	
		Embedded	55	42	76%	13	24%	N/A	
		Non Facilities	41	36	88%	5	12%	N/A	
5	Participation Agreement Signed	Jan 15, 2002	249	196	79%	53	21%	N/A	
		Connected	153	116	76%	37	24%	N/A	
		Embedded	55	48	87%	7	13%	N/A	
		Non Facilities	41	32	87%	9	22%	N/A	
6	OEB License Received	before market open	249	190	76%	59	24%	N/A	
		Connected	153	113	74%	40	26%	N/A	
		Embedded	55	50	91%	5	9%	N/A	
		Non Facilities	41	27	66%	14	34%	N/A	
7	Prudential Support Information Schedule B submitted	Mar 22, 2002	249	213	86%	N/A		36	14%
		Connected	153	128	84%	N/A		25	16%
		Embedded	55	53	96%	N/A		2	4%
		Non Facilities	41	32	78%	N/A		9	22%
8	Prudential Support Received	April 15, 2002	249	141	57%	N/A		108	43%
		Connected	153	84	55%	N/A		69	45%
		Embedded	55	39	71%	N/A		16	29%
		Non Facilities	41	18	44%	N/A		23	56%
	FACILITIES REQUIREMENTS (metered participants only)								
9	Facility Information Sent	Sept. 14, 2001	204	167	82%	N/A		37	18%
		Connected	150	116	77%	N/A		34	23%
		Embedded	54	51	94%	N/A		3	6%
10	Delivery Point Relationship Documents Signed	Nov. 16, 2001	204	152	75%	N/A		52	25%
		Connected	150	105	70%	N/A		45	30%
		Embedded	54	47	87%	N/A		7	13%
11	Meter Registration Complete	Nov. 16, 2001	204	0	0%	192	94%	12	6%
		Connected	150	0	0%	141	94%	9	6%
		Embedded	54	0	0%	51	94%	3	6%
12	Emergency Restoration Plan Reviewed	Nov. 16, 2001	97	52	54%	45	46%	N/A	
13	Connection Agreement: Draft Schedule D submitted	Dec. 14, 2001	155	108	70%	47	30%	N/A	
		Connected	146	103	71%	43	29%	N/A	
		Embedded	9	5	56%	4	44%	N/A	

* This value has changed from previous reports at it now reflects only those participants ready to enter the market on May 1, 2002. It does not include those participants who will enter after stability period or have put their application on hold.

- End of section -

Appendix D – Update of section covering reliability of operations

The following text is a complete update of section 10 of version 1 and Appendix D of version 2 of the market readiness report previously submitted to MoEE. This has been included due to the importance of reliability of operations.

This update shows that further data has been collected and positive experiences are being seen in all areas .

A significant accountability of the IMO is to direct the operation and maintain the reliability of the IMO-controlled grid and also to ensure that activities within the Ontario control area do not adversely impact its neighbouring interconnections. The ability to carry out this accountability is the culmination of the successful implementation and integration of rules, agreements, systems, processes and people. This is true of not just the IMO but involves the cooperation of all market participants. While the effectiveness of these various components has been demonstrated through various stages of individual and combined testing, these elements can only be brought together completely during the final stage of integrated testing. Listed below are the areas of demonstration and the IMO's current assessment.

- Energy Management System-related reliability and Back-up Operating Center readiness. The Energy Management System serves as the IMO's primary source of operational information and is the platform for commercial activity within the IMO-administered market place. A high level of sustained reliability is required to ensure effective operation of the power system and the market. Although both design and preventative measures have been undertaken there always exists a remote possibility that the main IMO control center could be rendered unavailable. To ensure the effects on both the IMO-administered markets and the IMO-controlled grid are minimized, a back-up operating centre must be in a state of ongoing readiness.

Assessment: The new Energy Management System is in continuous use as part of CODR and is performing reliably. Performance of the EMS/MIS systems is above the 99% standard target for CODR . Dispatch accuracy of the DSO is also being monitored during CODR and is also well above standard. The backup operating center is in service and has been exercised with respect to managing operations in today's environment. Fail over / Fall back / Fall forward testing, which tests the ability to switch from the primary to the back-up site, was completed in March and a report has been prepared by IT&I which concludes that this functionality was effectively demonstrated. (C4.1).

- Control performance. The NERC based Control Performance Standard (CPS) and Disturbance Control Standard (DCS) define a standard of minimum control performance. Each control area is to have the best performance above this minimum that can be achieved within the bounds of reasonable economic and physical limitations.

Assessment: The new Automatic Generation Control (AGC) is in continuous use in CODR and performing as expected. Some degradation is CPS performance was expected in CODR due to the rollout of new tools and procedures, both internal to the IMO and within the marketplace. Additionally, due to the financial impacts on AGC providers (who are not being compensated until market opening), the IMO is operating with only two thirds of the AGC margin it will have for market opening. During CODR CPS performance has hovered around the 95% level which is lower than historical levels but exceeds industry standards. Increased awareness and compliance with dispatch instructions is contributing to an upward trend in CPS performance. No DCS incidences have been experienced during this period (C4.2).

- Operating reserve. Capacity in excess of that required to meet the anticipated requirements for energy must be available to meet unforeseen contingencies and for load forecast uncertainties. To meet this obligation the IMO must procure sufficient 10 minute operating reserve and 30 minute operating reserve. The IMO must also ensure that reliability policies for local area supplies are addressed as per the market rules.

Assessment: The processes surrounding operating reserve have been extensively and successfully tested during CODR. Measures are being implemented to address dispatch and price volatility concerns arising during periods of reserve shortfall.

- Outage Scheduling. The IMO must be able to review and assess the impact of maintenance outages scheduled within the Ontario control area. This process will allow the IMO to engage in outage scheduling activities such as advance approve, approve, prioritize, publish, deny, defer, exempt, revoke or recall outages that could have an impact on the reliability of the IMO-controlled grid.

Assessment: The outage scheduling tools and processes have been successfully tested and are fully operational. Timeliness of outage scheduling processes have been measured and exceeded the CODR success criteria.

- Communications. To allow the IMO to direct the operations and maintain the reliability of the IMO-controlled grid, communications between the IMO, Market Participants and other entities (e.g. neighbouring control areas) must be consistent, efficient and effective at all times.

Assessment: The new communication protocols are being successfully exercised throughout CODR.

- Ancillary services. The IMO must operate the IMO-administered markets to ensure that sufficient ancillary services, such as automatic generation control, voltage support and black start capability are procured to meet the variations of the integrated power system.

Assessment: Ensuring sufficient ancillary services is an everyday activity for the IMO today. The new contractual mechanisms to procure these services are nearly finalized. Procedures surrounding AGC and voltage control are being successfully tested throughout CODR.

- Operating security limits. The IMO must have in place an adequate set of operating security limits such that the IMO-controlled grid can be operated within power system transfer capabilities in accordance with defined criteria to ensure system reliability is maintained.

Assessment: Operating Security Limits are in regular use today. The new market tools and processes being exercised throughout CODR and have not had a detrimental affect on our ability to manage within Operating Security Limits.

- Emergency preparedness: As dictated by the market rules and also by industry standards the IMO has the responsibility to coordinate and manage activities surrounding emergency preparedness within the Ontario electricity sector. This includes establishing planning criteria, and reviewing market participant plans and coordinating the execution of drills and exercises with the involvement of the Ministry of Environment and Energy and Emergency Measures Ontario.

Assessment: The IMO's Emergency Preparedness Plan and the Ontario Power System Restoration Plan were filed with the Ministry of Energy, Science and Technology in June 2000. The first simulated exercise of the Restoration Plan was successfully conducted on November 28, 2001. No change.

- Load forecast uncertainty. To ensure adequate energy, capacity, transmission and related ancillary services are available, the IMO must forecast and publish conditions within the IMO administered markets on an ongoing basis. These forecasts must be detailed, timely and accurate to allow market participants the opportunity to meet the reliability needs of the marketplace.

Assessment: The IMO is meeting its load forecasting accuracy target and has been publishing market awareness reports to the marketplace throughout CODR (4.2).

- Intertie scheduling. Intertie practices form an integral part of the IMO's administered markets. Associated activities include; imports, exports, segregated mode of operation, inadvertent management and downstream settlement functions.

Assessment: Until market opening, by law, only OPGI is allowed to hold title to imports and exports. As such the IMO processes surrounding intertie scheduling have not been extensively tested with other market participants. However, during CODR, limited activities have been undertaken to allow the IMO to test its associated tools and scheduling procedures. Some examples include curtailments due to external constraints, navigating adjacent markets, industry validation processes, operating reserve, congestion payments and a successful FTR auction test. Some further off line testing is being done to verify remaining items such as Maximum Market Clearing Price (MMCP) verification, net scheduling and internal constraint processes. Testing of intertie scheduling with the anticipated volume of transactions will not be possible prior to market launch, however the limited testing during CODR indicates the processes function as expected (C4.4).

- End of section -

- End of document -