Seams Issues - High Priority Items

Rank	Business Practice Inventory Item	IMO (Based on Anticipated Rules at Market Startup)	ISO-NE	NYISO	PJM	Characteristics of preferred practice
1	**Transaction Check-Out** • **How often and when** • **Schedule changes due to failure**	Day-Ahead: Check-out timeframe to be determined. IMO will perform an advisory check-out based on the pre-dispatch schedules. Because the pre-dispatch is non-binding, the IMO will not adjust schedules for check-out failures. In-Day Hourly: Check-out performed between 40 minutes to the hour and the start of the hour. Notification Method: by phone	Day-Ahead: Check-out performed after 12:00. Failed transactions are not included in the day-ahead unit commitment. Corrections to NERC tags can be submitted before 14:00. In-Day Hourly: Check-out performed between 30 minutes to the hour and start of the hour. Notification Method: by phone	Day-Ahead: All transaction information is required to be submitted by 5:00 AM the day before. The Check-out is started subsequent to the 11:00 AM posting of the Day-Ahead unit commitment. The NYISO check-out with all neighboring control areas is typically completed by 18:00. In-Day Hourly: Hourly transaction information is required to be submitted by ~~90~~ 75 minutes prior to each hour. The Check-out is performed between 30 minutes to the hour and the start of the hour. Notification Method: by email & the MIS	Day-Ahead: Check-out performed by 12:00. All information is required by 1400 for day-ahead transactions. In-Day Hourly: Check-out with NYISO between 45 minutes to the hour and start of the hour. Running schedules checked 2 times/day at NYISO shift change. Notification Method: by phone & EES/eData	1. Adequate notification. 2. Timely reinstatement. 3. Rules and procedures that allow for economic choices and options by participants

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	Transaction Check-Out Cont…	Transaction Check-out Rules: • Transactions agreed upon using the NERC Tag. • Transaction will fail for a NERC Tag Mismatch or if one of the Control Areas does not have the contract. • For MW quantity mismatches, the transaction will be scheduled to the lowest value accepted by the affected Control Areas Reinstatement Options: Day-Ahead – None Hourly – Corrections must be submitted prior to the next evaluation period. Hourly evaluation begins with the development of the relevant pre-dispatch schedule. This schedule is published at T-40 and includes the Interchange Schedules for each participant.	Transaction Check-out Rules: • Transactions agreed upon using the NERC Tag. • NYISO MIS number used only if NY cannot locate transaction. • Transaction will fail for a NERC Tag Mismatch or if one of the Control Areas does not have the contract. • For MW quantity mismatches, the transaction will be scheduled to the lowest value accepted by the affected Control Areas. Reinstatement Options: Day-Ahead – Failures due to NERC Tag Mismatch can be corrected prior to 16:00. Hourly – Failed transactions from the Day-Ahead may be resubmitted to the In-Day Hourly evaluation up to 90 minutes before each hour of the next day.	Transaction Check-out Rules: • Transactions agreed upon with PJM using the NYISO MIS number. The Check with all other ISOs is by NERC tag. • Transaction will fail for a NERC Tag Mismatch or if one of the Control Areas does not have the contract. • For MW quantity mismatches, the transaction will be scheduled to the lowest value accepted by the affected Control Areas. Reinstatement Options: Day-Ahead – Corrections may be made and submitted into the Hour-Ahead evaluation (up to 90 minutes before each hour of the next day). Hourly – Corrections may be submitted into the MIS 90 minutes before each hour, for the next Hour-Ahead evaluation.	Transaction Check-out Rules: • Transactions agreed upon with the NYISO using their MIS numbering. Market Participants are submitting the NY MIS number to PJM as part of their transaction request. • For MW quantity mismatches, the transaction will be scheduled to the lowest value accepted by the affected Control Areas. • A linked NERC tag is required. Reinstatement Options: Day-Ahead – Transaction owners have 60 Minutes from notification (but no later than 14:00) to make corrections when notified of a failed transaction. PJM will make 2 phone attempts to correct errors with the market participant. Hourly – Transaction owners have up to 20 minutes prior to the hour to change or correct transactions.	

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	Transaction Check-Out Cont…	The IMO confirms schedule data with the participant and the participant provides the NERC tag to accompany the transaction. The IMO coordinates with other scheduling entities to ensure transaction reliability. Any IS modifications resulting from this process will be communicated back to the participant verbally. Reference:	Transactions that initially fail the check-out may be reinstated prior to the start of the hour, as time permits when the discrepancy can be resolved among the affected ISO Control Areas. Reference: Transmission Business Practices Transmission Business Process Summary MRP 4 - Submittal of Bilateral Contracts MRP 5 - Energy Market MRP 3 - Bidding	Transactions that initially fail the check-out may be reinstated prior to the start of the hour, as time permits when the discrepancy can be resolved among the affected ISO Control Areas. Reference: Transmission and Dispatching Operations – 4.1.3 Interchange Scheduling	Reference: PJM Manual for Scheduling Operations, Section 5.	

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2	**Ramping of Interchange Transactions**	Ramp Limit: There are no net interchange ramp restrictions in the Ontario market. The 5-minute real-time dispatch along with the contracted AGC will provide for any expected net interchange. Frequency of Ramping: 1 per hour Allocation of Ramping Capability: Assigned in economic order Reference: Market Rules Chapter 7 Appendix 7.1-3	Ramp Limit: No Day ahead ramp limit on individual interchange transactions. Real time net schedule change with adjacent Control Areas is limited to 600 MWs with exceptions Frequency of Ramping: 1 per hour Allocation of Ramping Capability: Assigned using NERC policy. Reference: System Operating Procedure (SOP) 11 - Sections 5.3.1 and 5.3.2 Located at http://www.iso-ne.com/dsop	Ramp Limit: The net scheduled interchange ramp limit is nominally 700 MWs in 10 minutes across the top of the hour, however the limit may vary depending on system conditions during the dispatch day. Frequency of Ramping: 1 per hour Allocation of Ramping Capability: Assigned using NERC priority and economic order. Reference: NYISO Ancillary Services Manual, Attachment C – Section Titled Ramped Desired Net Interchange	Ramp Limit: The ramp of scheduled transactions is limited to a net of 500 MWs. NY interface ramp limit is 1000 MWs Frequency of Ramping: 4 per hour - Allow 500MW net schedule change every 15 minutes Allocation of Ramping Capability: Assigned on a first come, first serve basis using a timestamp. Reference: Operating Agreement Sched 1, 1.10.6 (b)	1. Maximum flexibility, shortest time-frame, and greater amount (MWs). 2. More frequent schedule changes. 3. Equitable allocation method. 4. Increased degree of coordination.

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3	**Transaction Scheduling** • **Transmission Service** • **Implementation Rules**	Transmission Reservations: Transmission cannot be reserved in Ontario. Transmission access is not explicitly allocated and physical transmission reservation is not required. Access to the Ontario transmission system is based on the outcome of the constrained optimization which uses the prices provided in the "energy" offers and bids only. A "winning" energy offer or bid receives the associated transmission access.	Transmission Reservations: The Restated NEPOOL Agreement (RNA) covers internal service, therefore no reservation is required for internal transmission. Reservations are required for transactions into, out-of, or through the NEPOOL control area. All external transactions are tracked via their NERC tag.	Transmission Reservations: Transmission reservations are not used in the NYISO system. The NYISO tariff provides for Firm and Non-Firm Point-To-Point Transmission Service over the transmission facilities of the parties to the ISO/TO Agreement. However, an explicit reservation process is not used since transmission service is **assigned** to accepted transaction bids through the SCUC and BME evaluation and scheduling process. A Market Participant may submit a request to preschedule an external LBMP or a bilateral wheel through transaction with the NYISO up to 18 months prior to the transaction date. The Market Participant must also schedule the desired transaction with all other affected control areas.	Transmission Reservations: Point-to-Point Service - Long Term Firm (>1 year), Short Term Firm (Monthly, Weekly, Daily), Non-Firm (Monthly, Weekly, Daily, Hourly, On-Peak, Off-Peak), Network Service, Fixed Transmission Rights(FTR) Auctions, Transmission loading Relief (TLR) Buy Through, Ancillary Services. Transmission service may be reserved up to 30 minutes prior to each hour.	1. Minimize transmission reservation time. 2. Maximize the use of the available transmission capacity. 3. Fewer scheduling restrictions. 4. Maximize the ability to change.

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		NERC Transmission Priority: All Interchange Schedules will be "tagged" with the NERC NF-7 Firm transmission designation. Reference: Market Rules Chapter 7, Appendix 7.5	NERC Transmission Priority: The Transaction priority is assigned as a result of the OASIS transmission reservation. The type of service (Firm or Non-Firm), and duration (monthly, weekly, daily) define the priority. Reference: Made in accordance with NEPOOL O.A.T.T. TSO - General Business Practices Section 2.4.3.	NERC Transmission Priority: The Transaction priority is assigned when the Market Participant enters the transaction into the MIS. Transactions may be submitted to the MIS via the Web as Firm (NERC Level 7) or Non-firm (NERC Levels 1 – 6). Reference: OATT Section II. Point-To-Point Transmission Service & III. Network Integration Transmission Service Prescheduling Reference: OATT Section 13.8 and Marketing Services 3.1 and 4.5a.	NERC Transmission Priority: NERC priorities are set based on the type of service purchased from PJM , firm or non-firm, and then by the length of the service purchased. NERC has no defined priority for the PJM service to pay through congestion. Reference: OATT & Regional Transmission and Energy Scheduling Practices.	5. Ease of transaction scheduling across regional boundaries.

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	Transaction Scheduling Cont…	Transaction Scheduling and Restrictions: There are no physical party to party transactions in the Ontario market, only offers to sell and bids to buy from the spot-market. All offers may be changed without restriction up to 4 hours prior to each dispatch hour. From 4 hours out to 2 hours out, offers may be changed on price and/or quantity by no more than +/- 10%. At less than 2 hours, offers can only be changed with ISO approval. Participants may submit standing offers/bids which remain valid until they are removed by the participant. In order to flow, transactions must have a valid NERC Tag and their transaction must successfully pass the inter-CA scheduling process. There are no ramp restrictions imposed by the IMO administered markets but the scheduling process may result in a reduction due to another CA's restrictions.	Transaction Scheduling and Restrictions: Day-Ahead transactions must be submitted by 12:00 the day before and must include the associated transmission reservation in order for it to be included in the Day-Ahead unit commitment. No changes are allowed to a Day-Ahead transaction except to correct a NERC tag or for transactions supplied from a generator that has tripped. In order to flow, a transaction must be schedule either day ahead or on Short Notice, and it must be confirmed with the neighboring control areas. While not incorporated in the day ahead scheduling restrictions, ISO-NE must have sufficient ramp capability in real-time (600 MW net interchange limit with adjacent control areas). Short Notice (Hourly) transactions must be submitted 90 minutes before each hour and must be accompanied by a valid transmission reservation.	Transaction Scheduling and Restrictions: New non-Prescheduled transactions may be submitted in the DAM and/or the HAM up to 15 days in advance, however an advanced submission does **not** give the transaction a scheduling priority. A Market Participant may submit a request to preschedule an external LBMP or a bilateral wheel through transaction with the NYISO up to 18 months prior to the transaction date. The Market Participant must also schedule the desired transaction with all other affected control areas. All transactions may be revised up to the closing time of each DAM or HAM evaluation period. DAM transactions may also be revised after the 11:00 AM posting of the day-ahead schedule and prior to the close of each Hour-Ahead evaluation period. Unchanged or unchanged portions of DAM transactions are given scheduling priority in the Hour-Ahead Evaluation over HAM only transactions. In order to flow, a transaction must be scheduled by BME and it must be confirmed with the	Transaction Scheduling and Restrictions: All transactions may be changed by the transaction owner up to 20 minutes prior to each hour. A change to a Day-Ahead transaction schedule will assign a new timestamp to it. PJM internal ramp priority and curtailment priority consider timestamp. In order to flow, transactions must have a valid NERC Tag, transmission path and associated Transmission service reservation. In addition, the PJM control area must have sufficient ramp capability and the transaction must be confirmed with the neighboring control areas.	

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	Transaction Scheduling Cont…	Reference: Chapter 7 section 3.4.1 and Chapter 8 section 2.1.2 of Market Rules.	Reference: Transmission Business Practices Transmission Business Process Summary MRP 4 - Submittal of Bilateral Contracts MRP 5 – Energy Market MRP 3 – Bidding	Reference: Market Services Tariff, Attachment B, Section III. Bilateral Transaction Bidding, Scheduling And Curtailment Prescheduling Reference: OATT Section 13.8 and Marketing Services 3.1 and 4.5a.	Reference: Scheduling Manual, Section 5.	

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4	**Transaction Curtailment** • **Rules** • **Notification**	Rules: Inter-ISO curtailment rules are still under development. The IMO will curtail inter-tie transactions consistent with good utility practice and in accordance with industry policy such as NERC TLR. Curtailments within the hour for security will be made when generation and/or dispatchable loads within Ontario cannot be dispatched to solve the security constraint. Curtailed transactions shall be paid an appropriate Congestion Management Settlement Credit (CMSC) so long as the curtailment is a result of an internal to Ontario constraint. If the transaction is curtailed by external scheduling entities (i.e. TLR in NY.) no CMSC is paid. Notification: Notifications are made by phone and as soon as possible.	Rules: Curtailments are performed in accordance with NEPOOL O.A.T.T. and General Business Practices Section 1.5.5 The order of curtailments for transactions to NY are: short notice (first), then dispatchable and must take transactions are curtailed in order of transmission priority. Notification: For in hour curtailments, the parties are notified through the tag adjustment software.	Rules: Real-Time/In-hour Curtailments: Non-Firm Transactions (NERC Level 1-6) are curtailed when congestion occurs between the contracts source and sink. Firm Transactions (NERC Level 7) are curtailed for system security. Transactions of equal priorities are selected for curtailment using decremental bids and curtailments within equal decremental bids are curtailed on a prorated basis. Notification: A transaction specific email is sent to owners of the affected transactions & a generic curtailment message is posted to the web.	Rules: Transmission users may choose curtailment or pay through congestion. When transmission is curtailed, non-firm customers indicating that they are not willing to pay congestion will be curtailed Notification: The PJM Transaction Dispatcher calls the PJM Market Participant. This applies when PJM is either the source or sink.	1. Adequate notification. 2. Timely reinstatement. 3. Rules and procedures that allow for economic choices and options by participants. 4. Transparency of information. 5. Minimize curtailments resulting from errors.

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	Transaction Curtailment Cont…	Reference:	Reference: O.A.T.T. General Business Practices Section 1.5.5	Reference: OATT Section 13.6, 14.7 & 33.0 Attachment J, Section III. Transmission Service Curtailment	Reference: OATT 1.7, 13.6, 14.7, 33. Manual for Scheduling Operations Sect. 5	

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5	**ATC**	Frequency of Updates: The IMO is not posting ATC on OASIS, but a similar quantity will be forecast for use in the financial transmission rights market. Daily posting of transmission capability will be available through System Status Reports. Updated: a) 2 days out b) 1 day out at 5:30 and 10:30 based on the predispatch evaluation c) In real-time during the dispatch day. Base Assumptions:	Frequency of Updates: ATC is decremented by acceptance of OASIS requests until noon day-ahead of contract. After the day-ahead evaluation, unscheduled reservations are added to ATC for Short Notice (Hourly) reservations. ISO-NE posts an "IN ATC" and an "OUT ATC" which are not netted and are posted by interface. Base Assumptions: Calculation of the ATC is in the OASIS Related Document relating to Total Transmission Capability (TTC), Transmission Reliability Margin (TRM), and Available Transmission Capability (ATC). Base calculation of TTC begins with all lines in-service and then accounts for specific line outages. The TTC is then decremented for reservations to obtain the ATC.	Frequency of Updates: ATC/TTC calculated and posted on the NYISO OASIS for each interface in the NY control area. Updated: a) Day-Ahead with the 11:00 AM SCUC posting. b) Hourly based on transactions accepted through the BME Hour-ahead posting. Base Assumptions: Transfer Capability of the transmission network is limited by physical and electrical characteristics of the system including thermal, equipment loading, voltage and stability considerations. Transfer capability is evaluated based on base system loading and an assessment of critical contingencies on the Transmission System.	Frequency of Updates: Posts TTC, firm and non-firm ATC for 27 transmission paths. Updated: a) every business day for the next 7 days b) weekly for the next 4 weeks c) monthly for the next 12 months. Updates maybe made more frequently as needed. Base Assumptions: PJM limits transfers so as to not exceed first contingency total transfer capability. Paths with low activity may initially be restricted to a nominal conservative value. If forecasted conditions remain unchanged, TTC and ATC will increase as the time frame decreases, due to a reduction of margins. Through paths are the lower of the individual path calculations.	1. Timely notification when TTCs change. 2. Frequent updates of TTCs to reflect the current system configuration. 3. Equivalent base assumptions in TTC calculations among the Control Areas.

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	ATC Cont…		The critical contingencies will be defined as appropriate using guidelines set forth in ISO Procedures. Determination of ATC will require, in all cases, that base system conditions and expected generation levels be identified and modeled for the period being analyzed. These conditions will include projected customer demand, anticipated transmission system facility availability, accepted transactions, and information about neighboring control areas that affect the transfer capability. The ISO's calculation of transfer capability will be consistent with NERC principles.	The critical contingencies will be defined as appropriate using guidelines set forth in ISO Procedures. Determination of ATC will require, in all cases, that base system conditions be identified and modeled for the period being analyzed. These conditions will include projected customer Demand, anticipated Transmission System facility availability, accepted Energy Transactions for the NYCA, and information about neighboring regions that affect the Transfer Capability of the NYCA. The ISO's calculation of Transfer Capability will be consistent with NERC principles.	Transfer capability depends on projections of system conditions including system topology, generation dispatch, load and transactions. Regional coordination of transfer capability is done through a number of data exchanges to promote accurate ATC calculations. This does not involve posting the lowest result of ATC paths on separate OASIS sites. A portion of TTC is set aside for Transmission Reliability Margin composed of Load forecast uncertainty, loop flow, and normal operating margins. Load forecast margin is applied to Firm ATC with PJM as the sink and is 2.2% for the first day and 6% thereafter. Loop flow margin is applied to Firm ATC when PJM is the source or sink and is based on historical loop flows. Normal Operating margin is applied to Firm and Non-Firm ATC when PJM is the source or sink and is set as 5% of the base TTC.	

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	ATC Cont…	Reference: Chapter 8, Section 4.7 of Market Rules. Chapter 7, Section 12 – Deviation of transmission ratings from normal values.	Reference: OASIS Related Document, Total Transmission Capability (TTC), Transmission Reliability Margin (TRM), and Available Transmission Capability (ATC)	Reference: OATT, Attachment C - Methodology To Assess Available Transfer Capability	Reference: Manual for Transmission Service Request Section 2 OATT 15.2	
6	**Capacity Market**	There will not be a capacity market in Ontario at market opening. One is contemplated, if IMO Board determines that future reliability is deemed to be in jeopardy. [See Chapter 7 section 10 of Market Rules.]	The auction market has been eliminated, but the requirement remains. A deficiency charge of $0.17/kW Month.	The NYISO determines the ICAP requirement for an LSE for each six month capability period. The LSE may contract directly with a qualified ICAP provider to meet some or all of its ICAP requirement. ICAP may also be purchased through the NYISO's ICAP auction in 1 month blocks and up to a maximum of 6 months. During the capability period, an LSE that is deficient in ICAP, may seek-out and contract for additional ICAP to meet their deficiency. If the LSE remains deficient, ICAP will be purchased for them via the NYISO's ICAP deficiency auction. Market Services Tariff, Section 5.12 - 5.15	Monthly. Daily markets for unforced Capacity Credits Operating Agreement Schedule 11	

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7	**Recall of Capacity** See the MOU Website – ISO Emergency Procedures Comparison Chart for the steps each ISO follows in an emergency and were Recall of Capacity fits in that sequence.	Ontario's capacity market (when implemented) is unlike the ICAP markets others in the MOU employ. There is no recall "capacity" in the operation of the Ontario market. Export energy that has been offered into and accepted by the IMO Operating Reserve (OR) market can however be withdrawn if OR energy activation is required. Reference:	Recallable Energy Types: E1 – Is recallable with 10-minutes notice E2 – Is Capacity Backed and sold above and beyond reserves Will Recall ISO-NE Contract Energy to restore 10 Minute Reserves. Will Recall Non-ISO-NE Contract energy as a last step, prior to shedding load. Reference: Recalled Under OP4 MRP - 4 Submittal of Bilateral Contracts - section 4.3.3.A	The NYISO follows established procedures, consistent with maintaining the reliability of the NYS Transmission System, to eliminate shortages in total operating reserves by exercising its discretion to purchase emergency energy or curtail an ICAP transaction. Reference: Market Services Tariff, Section 5.12.7 - Recall Procedures	In Emergencies, energy scheduled external to PJM from capacity resources is recalled. Reference: Operating Agreement p. 118F.	1. Common ICAP rules and definitions across all ISOs. 2. Provide the ability to register generators as ICAP providers in multiple markets.

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8	**Trading Hubs**	Trading Hubs: No Reference: NA	Trading Hubs: No Reference: NA	Trading Hubs: No Reference: NA	Trading Hubs: Yes, PJM has Three Trading Hubs. They are West, Western Interface, and East. Reference: Regional Transmission and Energy Scheduling Practices.	1. Establish hubs that will encourage liquid futures markets. 2. Provide settlements systems that accommodate hubs. 3. Establish hubs that will facilitate virtual trading.

Seams Issues - Remaining Items from the 8/22/2000 Meeting

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	User Interface	Dispatch signals and verification of use are communicated over frame-relay connection using combination of ICCP protocol and web-based dispatch - details in Participant Technical Reference Manual at www.theIMO.com See Appendix 2.2 section 1.3.1 of Market Rules	Internet based interface that will be either home grown or derivation of existing ESCA product	MIS/OASIS Public & Secured Internet-based system for submitting, changing and reviewing Generator Bids, Load Bids, and Transaction Bids (schedules).		
	Market Interface	Market information exchanged via Market Participant Interface - an internet-based interface to perform all market functions - details in Participant Technical Reference Manual at www.theIMO.com Appendix 2.2 section 1.4.1 of Market Rules		Same as User Interface		
	Hedging Mechanism	The voluntary Day-Ahead market, specified in Chapter 8 section 3 of Market Rules, is deferred for market opening date but, when in-service, will provide day ahead price hedging . Physical Bilateral contracts permit hedging	The Day-Ahead market provides a hedging mechanism for energy and ancillary reserve services. MR&P 2	Day-Ahead Market The Day-Ahead market issues forward contracts which provide a hedging mechanism for energy purchases in real-time.	The Day-Ahead market provides a hedging mechanism for energy purchases in real-time. Fixed Transmission Rights (FTRs) also provide hedging against Locational Marginal Price (LMP) charges.	

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		against real-time market spot prices. Chapter 8, Section 2 of Market Rules. Financial Bilaterals are permitted outside the market. The IMO will be opening the market with a Financial Transmission Rights market which is a financial instrument and an opportunity for participants to hedge against the cost of inter-ISO congestion. Market Rules Chapter 10 sections 2,3 & 4 Chapter 8 section 4.			Operating Agreement Schedule 1, Section 1.10 & Open Access Transmission Tariff Attachment K, Section B.	
	Balancing Generator/Load	Generation and Load is balanced by dispatching both generation and dispatchable load based on offers to sell and bids to buy. Suppliers offer, consumers bid. Chapter 7 section 6 of Market Rules.	Imbalance between Day Ahead and real time are quantified and payment/receipts for imbalance is based upon Real Time Prices. Exception, AGC Lost Opportunity.	Real-Time Spot Market The NYISO balances generation and load in real-time using the spot market. LBMPs are calculated nominally every 5 minutes.	PJM balances generation and load in real-time using the spot market. Participants are not required to submit balanced bids. Operating Agreement Schedule 1 Section 1.11.1	

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	Bilateral Transaction Market	The Ontario Physical Bilateral Contract is a participant to participant "financial" mechanism and is not a physical dispatch contract. In general terms, physical bilateral contract data is submitted to the IMO and the contract parties will have their energy component (injection/withdraw) removed from the IMO settlement process. Physical bilateral contract data may be submitted to the IMO no earlier than 7 days prior to the dispatch day and no later than the 6 days after the dispatch day. Chapter 8, Section 2 of the market rules.	Transactions can between a NEPOOL Participant and a non-Participant. Transactions for energy, capacity, obligation, & requirements.	Bilateral transactions may be scheduled within, into, out-of or though New York and must be submitted to the MIS every day/hour they are to be scheduled. The financial terms of a bilateral are private and are not known by the ISO. Exports can supply a Sink Price Cap and Imports/Wheel-Throughs can supply a Decremental Bid with their transactions. This allows the transaction owner to self-curtail the transaction at a specified price during the SCUC or BME evaluation. Technical Bulletin #20 - Decremental Bids for Import and Wheel-Through Transactions Technical Bulletin #52 – Sink Price Caps for Export Transactions	Market Participants may enter into bilateral contracts for the purchase or sale of electric energy to or from each other or any other entity. Bilateral arrangements shall be reported to and coordinated with the Office of Interconnection. Operating Agreement Schedule 1. 1.10.7, 1.7.4 (d), 1.7.10.	
	Day Ahead Schedules	Real-Time market bids and offers are collected at 11:00 AM the day ahead. A pre-dispatch schedule is produced by IMO at noon the day ahead and updated throughout day as offers and bids or expected system conditions change. Chapter 7, Section 5 of Market	Determined by Security constrained unit commitment including a yet to be finalized co-optimization of ancillary services MR&P 2.3.2	Transaction bids, Load bids and Generation bids may be submitted up to 05:00 the day before the operating day. The Security Constrained Unit Commitment program will run and post DAM prices and schedules at 11:00 AM. Market Services Tariff 4.6 & 4.11	Sellers may submit bids for hourly quantity and price, buyers may submit load levels and price before 12:00 PM on day prior to Operating Day. All participants shall submit schedules for bilateral transactions and elect their inclusion in the DA market. PJM posts total energy and	

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		Rules The pre-dispatch schedule is in no way binding on participants, and they are free to change their bids and offers with no restrictions up to 4 hours prior to the dispatch hour. Chapter 7, Section 3.3 of Market Rules. The Day Ahead Market, once in-service, is designed to be a voluntary price hedging tool and will not have dispatch schedules associated with it. Chapter 8 section 3 of Market Rules			hourly prices and informs participants by 16:00 hours. Implemented on 6/1/2000. Operating Agreement Schedule 1 10.1a, 2.6, 1.10.8	
	Emergency Purchases – Rules and impact on market prices	Emergency Energy arrangements will only be used if load is in jeopardy. The MW quantity could result in a change in Market Clearing Price(MCP) in Ontario, but the price of emergency assistance will not establish MCP. Chapter 7, Section 7.7 and Chapter 5, Section 10.3 of Market Rules	Impact on market price is in MR&P 5, Appendix 5-E. Rules for participant emergency energy transactions are in MR&P 3, 4, and 5.	Inter ISO: ISO-NE/NYISO will sell at 110% of LBMP @ Proxy Bus Sales w/other ISOs @ 150% of LBMP With Market Participants: Although the ability to submit "Emergency" contracts does not exist per se, participants always have available the option to provide additional resources to the NYISO by submitting bids	Participants authorize PJM to purchase or sell energy to meet emergencies and implement agreements with other control areas. Operating Agreement Schedule 1 3.2.6, 4.3	

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		Only the IMO can arrange emergency energy but it will be as a last resort. When deficient the IMO will send system advisories as well as solicit additional offers from participants. The offers/bids resulting from these advisories and solicitation are not considered emergency transactions. Should these advisories or solicitations be insufficient the IMO will attempt to secure emergency energy through our SC counterparts. Market Rules Chapter 7, Section 12		into the Hour-Ahead Market for selection by BME. In addition, participants may offer to provide additional resources to the NYISO for use in a Supplemental Resource Evaluation. NYISO/ISO-NE Emergency Purchase Agreement filed with FERC NYISO-PJM Inter Control Area Agreement – May 1, 2000 Accounting & Billing Manual, Section 3.3.3		
	Emergency Purchases - Market Notification & Solicitation of Assistance (See Link to MOU site for a flow chart comparing each ISOs Emergency Procedures)	As described above only the IMO can arrange for emergency energy and only when the IMO controlled grid is in an emergency operating state. Participants will be notified when an emergency operating state is declared and will be apprised of the existing conditions. Market Rules Chapter 5, Section 2.3 & 5.8 Additionally, the IMO may issue	Notification is made on the ISO website and Participants are provided with hourly energy amounts that the ISO expects to need.	If the NYISO is short of resources and time permits, an attempt to secure additional resources through the Supplemental Resource Commitment (SRE) process will be made. The NYISO will notify Market Participants via email, of the requested resources, what hours they are needed, and the deadline for submission. After the designated deadline, the NYISO will use the SRE application to select and commit the additional resources.	Following issuance of Maximum Emergency Generation, PJM may purchase available energy from any PJM Member. PJM will attempt to provide 60 minutes notice on the OASIS. PJM will post an emergency procedures notice requesting purchase and the start time expected. Bids may then be submitted via a voice line. Emergency Operations Manual Section 2 page 2-14 through 2-16	

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		an under-generation advisory which includes provisions for the solicitation of additional offers/bids. Time permitting this solicitation is intended to circumvent the need for the IMO procurement of emergency energy. (Market Rules Chapter 7 section 12.)		Section 4.2 of the NYISO Transmission & Dispatching Operations Manual		
	Market Closing Time (day ahead market) (See Link to MOU site for a chart comparing each ISOs times)	The Day Ahead Market is deferred from day one opening. Bids and offers submitted by 09:00 AM. [See Chapter 8 section 3.2 of Market Rules.] The Day-ahead or Energy Forward Market (EFM) when implement has no impact on the energy market. This EFM is a financial market used as a hedging instrument.	Proposed: Noon	Day-Ahead bids may be submitted or revised in the MIS up to 15 days in advance and until 05:00 the day before. Market Services Tariff 4.6	Noon PJM Operating Agreement Schedule 1 Section 1.10.1a	
	Market Closing Time (real time market)	Offers to sell and bids to buy can be changed without restriction up to 4 hours prior to dispatch hour. From 4 hours prior to 2 hours prior, there are restrictions on the changes to offers and bids. Within 2 hours of dispatch, offers and bids are not permitted to change, unless approved by IMO. Chapter 7, Section 3.3 of Market Rules	Proposed: Two hours ahead for Offers. Four hours for requests to commit or decommit	~~90~~ 75 Minutes before the hour Market Services Tariff 4.14	New transactions, changes to existing transactions, changes to self scheduled unit output, taking over a unit all must be done with 30 minute notice (assuming use of EES for external transactions).	

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	Market Posting Time (day ahead market)	The Day Ahead Market is deferred from day one opening. Market results will be published by 09:30 AM. Chapter 8, Section 3.6.1 of Market Rules	MR&P 2.4 – Initial unit commitment for the next day is published by 1700 hours.	11:00 AM Market Services Tariff 4.11	16:00 PJM Operating Agreement Schedule 1 Section 1.10.1a	
	Market Posting Time (real time market)	Real-time market prices are posted on IMO web site within 5 minutes of each 5-minute dispatch period. Chapter 7, Section 6.5 of Market Rules Dispatch instructions are provided to Ontario participants every 5 minutes. Chapter 7, section 7.3.1 of Market Rules Pre-dispatch schedule reports forecast all prices and schedules, and are made available on an hourly basis from noon the day ahead right up to the dispatch hour. Chapter 7, Section 5 of Market Rules The hour ahead pre-dispatch	Rules state as soon as practicable following the end of a Trading Interval. MR&P 3.13	30 Minutes before the hour Transmission and Dispatching Operations Manual, Section 4.2.1	Between 1600 and 1800 the day before the Operating Day, participants may submit bids for non-pool scheduled Day Ahead resources. Adjustments to the Day Ahead market will settle at real-time prices. Operating Agreement Schedule 1. Section 1.10.9	

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		schedule is used to establish the intertie energy schedule. The difference between the hour-ahead pre-dispatch External zone and Uniform Ontario energy prices are used to determine the cost of intertie congestion. This congestion cost is then applied to the real-time 5-minute energy price and the resultant outcome becomes the basis for external energy settlements.				
	Operating Reserves - 10 minute synchronized	10-minute synchronized reserve is a real-time market - Ontario generation participants submit offers to sell and are informed of their obligations every 5 minutes. Chapter 5, Section 4.5 and Chapter 7, Section 7.4 of Market Rules	Quantity of Operating reserve is first established based upon real time operating requirements. Requirements are schedule Day Ahead subject to reduction if price of requirement exceeds costs established by demand curve. MR&P 2.3.4	50 percent of the total 10-minute reserve requirements Ancillary Services Manual, Section 6	Spinning reserve must be equal to the largest single contingency the majority of the time. However, PJM does have operating procedures that allow operating with less synchronized reserve provided adequate non-synchronized reserve exists. Operating Agreement 1.7 and 1.7.17	
	Operating Reserves - 10 minute non-synchronized	10-minute non sync reserve is a real-time market - Ontario generator or participants external to Ontario or Ontario dispatchable loads can submit offers to sell and are informed of their obligations every 5 minutes (parties external to Ontario are	Same principle as 10 minute Synchronized. MR&P 2.3.4	Covers the loss of the most severe Normal Transfer Criteria Contingency Ancillary Services Manual, Section 6	This is defined in the PJM manuals as Primary reserve. Current requirement is 1,700 MW. Operating Agreement 1.7 and 1.7.17.	

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		informed on an hourly basis). Chapter 5, Section 4.5 and Chapter 7, Section 7.4 of Market Rules				
	Energy Pricing at the Boundaries	The IMO will calculate zonal marginal clearing prices for zones external to the province. One for each of New York, Michigan, Minnesota and Manitoba. There will be several zonal prices for Quebec due to the connectivity of interconnections with Hydro-Quebec. The hour ahead pre-dispatch schedule that is used to establish the inter-tie energy schedule will also determine the inter-tie congestion costs. The difference between the hour-ahead pre-dispatch External zone and Uniform Ontario energy prices are used to determine the cost of inter-tie congestion. This congestion cost is then applied to the real-time 5-minute energy price and the resultant price becomes the basis for external energy settlements.	At the present time, New England has a single ECP	Single Proxy Bus modeled for each control area boundary.	There are two price points in connection with PJM-NYISO model; NY-East and NY-West	1. Maximize the use of the transmission system through economic signals. 2. Market boundaries that do not double count congestion. 3. Clear system model descriptions.

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	Energy Pricing at the Boundaries Cont…	Reference: Chapter 7 section 5.5.3 and chapter 9 section 3.1.3 of Market Rules.	Reference: ECP is defined in MR&P 5	Reference: OATT Attachment J – LBMP Prices for External Locations	Reference: Regional Transmission and Energy Scheduling Practices	
	Area Regulation	Regulation is contracted for by the IMO. Chapter 7, Section 9.2.2 of Market Rules	Obligation created Day Ahead. MR&P 2.3.3 Price established in Real Time. MR&P 3.10.6 Quantity determined by NEPOOL Operating Procedure No. 8.	Regulation requirements are established through analysis of NY Control Area daily load patterns and tests performed under actual operating conditions. Tables are prepared by the NYISO which show the Regulation requirements for the NY Control Area for Summer and Winter capability periods over various hours of the day. The NYISO will determine the amount of regulation required for different time periods and load conditions based upon empirical experience and engineering judgement. Transmission and Dispatching Manual, Section 2.1.4	1.1% of Valley (off-pk) and Peak (on-pk) Transmission Tariff Schedule 3, Section 3.3, 1.11.4, and 3.2.2	

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	Who carries reserves on transactions Intra-ISO	Within Ontario there are no transactions; just dispatch instructions. Operating Reserve is provided through the real time operating reserve market. Chapter 5, Section 4.5 and Chapter 7 of Market Rules	Transfer of Intra-ISO reserves is dependent upon terms of "Obligation Transfer Contract" MR&P 4.2.3	NYISO for each LSE, who then pays a monthly operating reserves charge Ancillary Services Manual, Section 6.4.4, Operating Reserve Charge	Reserves are required to be carried by Load Serving Entities (LSEs) regardless of generation source. Operating Agreement Schedule 1; Section 3.2.3 (d) Day-Ahead market Section 3.2.3 (h) Real-time market.	
	Who carries reserves on transactions Inter-ISO	All inter-ISO dispatch instructions (I.e hourly schedules) are considered capacity backed. Chapter 5, Section 4.5 and Chapter 7 of Market Rules	For energy 1 type transactions, the transaction is considered recallable on 10-minutes notice and is counted in 10-minute reserve of ISO-NE. Energy 2 transactions are capacity backed and not recallable on 10-minutes notice.	NYISO for each Transmission Customer engaging in an Export Ancillary Services Manual, Section 6.4.4, Operating Reserve Charge	Reserves are required to be carried by Load Serving Entities (LSEs) regardless of generation source. Operating Agreement Schedule 1; Section 3.2.3 (d) Day-Ahead market Section 3.2.3 (h) Real-time market.	
	Forward Market - Day ahead	Day-Ahead forward market is deferred from market opening. Chapter 8, Section 3 of Market Rules.	Security constrained price based	Transaction bids, Load bids and Generation bids may be submitted for evaluation day-ahead by the Security Constrained Unit Commitment Program. The Day-Ahead market issues forward contracts which provide a hedging mechanism for energy purchases in real-time.	Sellers may submit bids and buyers may submit load levels and price. Incremental and decremental bids are also accepted in the Day-Ahead market. All participants submit schedules for bilateral transactions and elect their inclusion in the DA market. Operating Agreement Schedule 1; Section 1.10.1(a)	

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	Forward Market - Hour ahead	There is no hour-ahead forward market in the Ontario Market design.		A Hour-Ahead Evaluation, which is referred to as the HAM is performed each hour, however there is not an Hour-Ahead settlement.	There is no Hour ahead market.	
	User Interface - Oasis	Not employed in Ontario markets.		OASIS Web Pages Market Services Tariff, Section 2.127 & 4.3	PJM is Transmission Provider for the PJM system and maintains the OASIS. PJM Open Access Transmission Tariff 4	
	User Interface - Data Upload	See User Interface - Oasis		OASIS Upload Template MIS Instructions - Upload/Download Template		
	User Interface- Data Download	See User Interface - Oasis		OASIS Download Template MIS Instructions - Upload/Download Template		

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	Transmission Rate Information Transparency	Transmission costs are recovered through Ontario Energy Board (OEB) -approved rates applied to Ontario load. There is a fee charged to successful inter-ISO bids to buy of $1/MWh - reference OEB Approval of Hydro One transmission rate application.	NEPOOL Open Access Transmission Tariff	TSC Rates are Posted on OASIS Customer's may estimate a Transactions TSC charges using the Online TSC Calculator located on the NYISO Website under the Market Data Toolbox Transmission Owners (TOs) may selectively discount external Interface TSC rates for both on-peak and/or off-peak hours on a monthly basis. Wholesale TSC rates for all external interfaces are posted on the NYISO OASIS web site by the 15 (or next business day) of the month prior to the month that the rates are effective. The posted rates include both on-peak and off-peak rates for all export and wheel-through point-of-injection (POI) / point-of-withdrawl (POW) combinations. Transmission Owners may selectively discount their wholesale TSC rate for each external interface for the on-peak and/or off-peak time periods. Discounted rates are effective for the duration of the	Transmission rates are posted on OASIS and the PJM website under Documents, OATT, Attachment H and Schedules.	

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				month in which they are effective. Open Access Transmission Tariff, Attachment H		
	Data/Information Availability			NYISO Website Public Data available via the NYISO Website at www.nyiso.com Confidential Data under the secure area of the OASIS requiring appropriate user login privileges.	Specified by the Data plan WG of the Energy Market Committee Public data on www.pjm.com	

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	Bidding (cost-based vs. market-based)	Offers to sell and bids to buy are totally market based. IMO has no access to participant cost structure for bidding purposes. The Ontario market will have a set of market clearing price boundaries (+/- Maximum Market Clearing Price (MMCP) and Maximum Operating Reserve Price (MORP)) for energy and operating. These boundaries however have yet to be defined. Market Rule Chapter 7, Section 4.4.6	Market based MR&P 2.2 and 3.4. Reserve markets are capped at the ECP during times of OP-4 Conditions, until Dec. 31, 2000. Expect to request continuation until March 31, 2001.	Market Based - A price cap of +/- $1000.00 is in place for the following types of bids; Incremental Energy, Minimum Generation, Decremental, Price Sensitive, and Sink Price Cap. 10-minute reserve suppliers in eastern New York are required to offer all their available 10 minute non-spinning reserve capacity into the market at rates subject to a cost-based limit not to exceed $2.52 per megawatt. Technical Bulletin #56 - Bid Caps in the Market Information System (MIS)	All participants may submit market-based bids. Operating Agreement 1.2, 6.4.	

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	Limitations on Submission of Generator & Load Bids	Offers to sell and bids to buy can be changed without restriction up to 4 hours prior to dispatch hour. From 4 hours prior to 2 hours prior, there are restrictions on the changes to offers and bids. Within 2 hours of dispatch, offers and bids are not permitted to change, unless approved by IMO. Chapter 7, Section 3.3 of Market Rules	All capacity must be bid into the market. Generators on outage bid an HOL of 0. Presently load does not bid into the market. Under CMS/MSS load would be allowed to bid in day ahead.	All Installed Capacity (ICAP) units must bid into the DAM market. Generators with an accepted DAM bid cannot raise their bid curve in the HAM, they can only lower it. Load Serving Entities (LSEs) can purchase some or all of their forecasted load in the DAM market. Once selected, the market participant is lock-in. Excess load purchased in the day-ahead is sold back in the real-time market at the real-time price. Deficiencies would be purchased in the real-time market. Section 5.12 of the NYISO Services Tariff		
	Dynamic Scheduling	Dynamic scheduling will not be a part of day one market.	No	NA	There are presently no dynamically scheduled loads in PJM. Operating Agreement 1.12, Schedule 1	

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	Demand bidding	Voluntary bids to buy are an integral aspect of the Ontario market design. However, price-taking loads (e.g. local distributing company obligations) do not bid to buy; the IMO forecasts their load requirements. Chapter 11 definitions of dispatchable and non-dispatchable loads Chapter 5, Section 7.2.1 of Market Rules.	Yes Day Ahead MR&P 2.2 Real Time MR&P 3.4.2	A Load Serving Entity (LSE) may submit a fixed bid for energy in the Day-Ahead market, which means that the load will purchase a "fixed" amount of MW at the DAM LBMP regardless of the price. Additionally, an LSE may submit a price capped load bid which specifies a load block amount and a price (in $/MWh). If the DAM LBMP is below the bid price cap, the LSE will purchase the load block amount in addition to its fixed bid amount. If the DAM Energy LBMP is above the bid price cap, the additional load block will not be purchased; only the fixed bid amount will be purchased. An LSE may submit bids for up to three Price Capped Load blocks. Technical Bulletin #7 - Price Capped Loads and their Day Ahead Scheduling	Day Ahead Market permits demand bidding Operating Agreement , Schedule 1. 1.10a (a)	

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	Allowance of Virtual Bidding (Load & Generation)	The IMO administered markets are a real-time energy market which is used to satisfy non-dispatchable (forecast) and dispatchable (bid) loads and no virtual loads (or generators) are permitted. At market commencement there will be no day-ahead market but once implemented the IMO Energy Forward Market does permit the offering and bidding of virtual generation and load.	Presently virtual bids are not allowed. Under CMS/MSS virtual load bids would be allowed, but virtual bids of generation would not.	Virtual Load and Virtual Supply bids may be submitted by qualified NYISO Customers. Specific registration is required for both current and prospective NYISO Customers to participate in Virtual Bidding. . ~~Virtual Bidding.Virtual Load and Generation Bidding is not currently allowed under the NYISO rules, however proposals for virtual load bidding are currently under consideration and are being discussed through the NYISO Business Issues Committee~~ ~~Currently,~~ In addition, LSEs have the capability to purchase load day-ahead, including options for additional load at a price cap. Day-ahead load bids will lock-in the amount specified by the LSE at the DAM LBMP price. There is no direct penalty for over-forecasting and purchasing excess load in the day-ahead. Excess load purchased in the day-ahead is sold back at the real-time price. ~~Virtual Load Bidding [Working] Group~~	All Market Participants may submit Increment Bids and/or Decrement Bids that apply to the Day-ahead Energy Market only. Such bids must specify amount, location and price at which the Market Participant desires to purchase or sell energy. Operating Agreement Schedule 1. Section 1.10.1a (i)	

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	Self Scheduling	Small generators (up to 5 MW) may self-schedule. Intermittent generators may submit forecasts of expected energy to be provided. Each must be located within the IMO-control area and self-scheduling is not permitted across the control area boundaries Chapter 7, Sections 2.2 and 3.4.1 and the definitions of Chapter 11 of Market Rules	Yes MR&P appendix 2 section 2.b	Transmission Customers, including LSEs, may provide for Self-Supply of Regulation and Operating Reserve by placing generation facilities supplying any one of the Operating Reserves under ISO Operational Control. The generation facilities must meet ISO rules for acceptability. The amount that any such customer will be charged for Operating Reserve Services will be reduced by the market value of the services provided by the specified generation facilities as determined in the ISO Services Tariff. Open Access Transmission Tariff, Regulation, Sched 3, Section 1.0 Operating Reserves, Sched 5, Section 3.0	LSEs may self schedule resources. Operating Agreement Schedule 1 1.10.3	