Preliminary Release Plan – 11.1

Release	Change ID	Interface Change	Market Facing	Application/ Server	Version	Sandbox	Production	Implementation Status	Referenced Documents	Description of Change
11.1	VCR259	Y	Y	EMS/MIS	TBD		2004/06/23	Undergoing Factory Acceptance Testing	MIO Functional Requirements, which provides further information on MIO and the related dispatch and operational issues, is available on IMO's public web site at http://www.theimo.com/imoweb/consult/mep_mio.asp.	**Description of Problem:** As part of the Market Evolution Program the IMO has been working with market participants to develop and implement multi-interval optimization (MIO). The MIO project proposes that the existing Real-Time Constrained Dispatch Scheduling Optimizer (RTC DSO) be enhanced such that it employs a formal multi-interval optimization technique rather than the current single interval optimization technique. MIO will determine security-constrained economic dispatch schedules for all dispatchable resources such that they are optimally utilized over a selected number of intervals. MIO is intended to result in a lower overall cost dispatch within the market, enhance unit scheduling, and to reduce dispatch volatility. As part of the MIO project, a number of other changes to the RTC DSO are being introduced to address facility dispatch and operational issues identified by market participant. These issues are related to facilities being dispatched currently in a manner that either increases equipment wear and tear and/or is not sustainable in the long term. These key issues are follows: - Minimum Loading Point - Many facilities have a requirement to operate at or above a minimum loading point. These facilities cannot operate below those levels without ignition support unless they are either synchronizing or being shutdown. A minimum loading point could be defined in PLC by the market participants during the registration process. The RTC DSO willnot schedule these units below this minimum output level unless the unit is synchronizing or shutting down. - Periof of Steady Operation - Ensure that thermal units will not reverse direction without a minimum period (an adjustable variable from zero to two intervals) of steady operation. If facilities switch from ramping up to ramping down without this period of steady operation it increases the risk of equipment damage at the facility. After the minimum period of steady operation, the unit would be available to be normally dispatched. - Forbidden Region - Hydro-electric generating station units have operating ranges, expressed in terms of a specific MW output range, where the units are unable to maintain steady operation without causing equipment damage. The RTC DSO should not schedule facilities in these predefined operating ranges. The forbidden range should be recorded in PLC for auditing purposes. Multiple forbidden ranges for aggregated facilities should be respected, up to a maximum of three. Market Participants have indicated to the IMO that this maximum number meets the need of generation facilities in Ontario. **Description of Fix:** Implement MIO and the resolution of the reference dispatch issues into the Real Time Constrained Schedule only. There will be no impact on Market Clearing Price. **Description of the Results:** Better optimize the dispatch solution and address a number of

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										dispatch concerns. Generation participants will be able to submit additional generator specific information to the IMO to allow the IMO to respect certain generation facility limitations. If a market participant submits forbidden region data to the IMO, it is important to note that the submitted offer price-quantity pairs for that facility must include a quantity equal in value to each of the lower and upper limit of each forbidden region. If the submitted offer price-quantity pairs do not include these quantity values the energy offer for the affected facility for the dispatch hour will be rejected.
11.1	VCR274	N	Y	EMS/MIS			2004/06/23	FAT		**Description of Problem:** The importing of reserve in recent months has exposed a flaw in the DSO calculations, resulting in inconsistent and incorrect 30R market clearing prices. Typically, the problem arises when the amount of imported 30R (correctly determined in PreDispatch and subsequently fixed in R/T), is equal to the difference between the Total Reserve Requirement and the Total 10-Minute Reserve Requirement. The resulting R/T shadow price for the Total Reserve Requirement constraint will then fluctuate between zero $/MW (indicating a non-binding constraint) and a non-zero value (correctly indicating the cost of supplying the next MW of Total OR) from one interval to the next, without any discernible pattern. Consequently, in Settlements, the R/T market clearing price for 30R likewise fluctuates, resulting in no payments to external 30R providers whenever the constraint shadow price is zero. The fundamental cause of the problem is believed to be the creation of redundant constraints within the linear programming formulation of the optimization problem. The redundancy exists between the Total Reserve Requirement constraint and the Total 10-Minute Reserve Requirement constraint, and is created whenever the imported 30R is equal to the difference in the two Requirements. Since the DSO routinely removes redundant constraints from the optimization problem, it is unclear if there is an algorithmic deficiency in the detection of redundancy, possibly caused by the floating-point representation of the imported reserve. **Description of Fix:** - The shadow price of the Total Reserve Requirement constraint should consistently be the cost of supplying the next MW of Total Reserve. - The shadow price* of the Total 10-Minute Reserve Requirement constraint should consistently be the cost of supplying the next MW of Total 10-Minute Reserve. - The shadow price of the Spinning Reserve Requirement constraint should consistently be the cost of supplying the next MW of Spinning Reserve. **Description of the Results:**
11.1	VCR267	Y	Y	Reports	N/A		2004/06/23	Awaiting SIT	Sample XML file, XML schema (XSD) and XML stylesheets (XSLT) are	**Description of Problem:** In support of the Multi Interval Optimization Project, there is a need to issue a Dispatch Advisory Report for all dispatchable

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									available on IMO's Pending Changes Page. Details on the Dispatch Advisory Report delivery mechanism will be made available on the Pending Changes Page shortly. Additional information on MIO is available at: http://www.theimo.com/imoweb/consult/mep_mio.asp	participant facilities every 5 minutes. The market participant specific report shall contain the anticipated energy schedule and schedules for each class of Operating Reserve for each of the participant's resources. The report shall include anticipated schedule information for the 4 selected advisory intervals and indicate for which interval that each relates to. **Description of Fix:** A Dispatch Advisory Report will be created, every 5 minutes, for each dispatchable market participant using XML technology. The report will be made available via a simple document user interface using HTTPS protocol. **Description of the Results:** Dispatch Advisory Reports will be available to market participants to show anticipated dispatch and Operating Reserve Schedules for 4 advisory intervals up to 55 minutes out from the dispatch interval. The Dispatch Instructions will continue to be issued via message exchange and will not be included on the Dispatch Advisory Report. The Dispatch Advisories are provided for information only and there is no obligation for participants to comply with the dispatch advisory schedules. Dispatch Advisories will not be re-issued in the event that they are unavailable to market participants for any reason.