Market Rule Amendment Proposal

PART 1 – MARKET RULE INFORMATION

Identification No.:	MR-00381
Subject:	Renewable Integration Initiative
Title:	Centralized Forecasting Integration

Nature of Proposal:	☒ Alteration	☐ Deletion	☒ Addition

Chapter:	7	Appendix:	7.5, 7.5A
Sections:	Chapter 7, section 3.4.1.4B (new), Appendix 7.5, section 2.2.1.15 h. (new), Appendix 7.5A, section 3.2.1		
Sub-sections proposed for amending:			

PART 2 – PROPOSAL HISTORY

Version	Reason for Issuing	Version Date
1.0	Draft for Technical Panel review	June 7, 2012
2.0	Publish for Stakeholder Review and Comment	June 14, 2012
3.0	Submitted for Technical Panel Vote	July 10, 2012
4.0	Recommended by Technical Panel; Submitted for IESO Board Approval	July 17, 2012
5.0	Approved by IESO Board	September 7, 2012

Approved Amendment Publication Date:	September 7, 2012
Approved Amendment Effective Date:	October 1, 2012

PART 3 – EXPLANATION FOR PROPOSED AMENDMENT

Provide a brief description of the following:

- The reason for the proposed amendment and the impact on the *IESO-administered markets* if the amendment is not made.
- Alternative solutions considered.
- The proposed amendment, how the amendment addresses the above reason and impact of the proposed amendment on the *IESO-administered markets*.

Summary

The IESO proposes to amend the market rules in order to integrate centralized forecasting for variable generation into IESO operations. Specifically, this amendment will integrate centralized forecasting as a limit to be applied on dispatch data submitted by variable generators in the Day-Ahead Commitment Process (DACP) and pre-dispatch schedules.

This proposal is based on stakeholder consultation as part of SE-91 Renewable Integration which includes the Dispatch Technical Working Group (DTWG) and the Floor Price Focus Group (FPFG).

Further information on SE-91 can be found on the IESO's website at:

http://www.ieso.ca/imoweb/consult/consult_se91.asp

Background

The IESO Board approved MR-00362-R00: Centralized Forecasting - Cost Recovery and MR-00362-R01: Data Obligations on June 16, 2011 to implement a centralized forecasting service for variable generation in Ontario. The next phase of market rule amendments will integrate the centralized forecasting into IESO operations and provide more accurate inputs to the DACP and pre-dispatch scheduling process.

Discussion

Prior to making variable generators dispatchable, use of the centralized forecast presents opportunities for greater market efficiencies in the day-ahead and pre-dispatch timeframes. Accurate inputs to the DACP and pre-dispatch will lead to more efficient unit commitment and intertie transaction scheduling decisions. In addition, benefits will also be realized through enhanced IESO operator awareness of changing conditions.

With the implementation of centralized forecasting, IESO systems will incorporate the centralized forecasts for variable generators that are registered market participants by automatically considering the centralized forecast as a limit to be applied on dispatch data submitted by variable generators. This mechanism is similar to the manner in which dispatch data for all generators is limited by submitted outages.

Currently, existing market rules, IESO systems and interfaces require intermittent generators to submit their best forecast of the amount of energy (quantity in MWh) that will be injected for each dispatch hour, as well as providing a price (in $/MWh) at and below which the market participant reasonably expects to reduce their energy output to zero. In order to minimize IESO system changes, costs, and to allow the variable generators a mechanism to reflect their plant operating characteristics, the IESO proposes to maintain this "price/quantity" mechanism, which is inputted by the market participant.

PART 3 – EXPLANATION FOR PROPOSED AMENDMENT

Once centralized forecasting is implemented, the IESO will no longer require variable generators to provide their own forecasts. The IESO will require variable generators to provide their generation facility's full capacity available for production in order to minimize IESO system changes.

The following change is proposed in Chapter 7, section 3.4.1.4B (new):

- Obligate registered market participants subject to centralized forecasting (i.e. are classified as intermittent and variable generators) to submit as its quantity component the generation facility's full capacity available for production[1] (i.e. installed capacity less outages which will be specified in the applicable market manual).

The following changes are proposed in Appendix 7.5 and Appendix 7.5A of Chapter 7 in order to incorporate the centralized forecasts for variable generators that are registered market participants in the pre-dispatch schedule and DACP:

- Pre-dispatch: Appendix 7.5, section 2.2.1.15h (new): Add forecasts of energy for variable generators that are registered market participants, produced by the forecasting entity. From an IESO systems perspective, the centralized forecast will be considered as a limit to be applied on dispatch data submitted in the dispatch scheduling and pricing process.

- DACP: Appendix 7.5A, section 3.2.1: Similarly, clarify that dispatch data submitted by variable generators that are registered market participants may be limited in accordance with section 2.2.1.15 of Appendix 7.5, which will include forecasts of energy produced by the forecasting entity as a limit to be applied on submitted dispatch data. The use of the word "may" in section 3.2.1 and the existing language of "the limits to be applied, where applicable" in existing section 2.2.1.15 will allow for the application of limits for any type of registered market participant as required as listed in this section.

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[1] The full capacity available for production may be submitted as standing dispatch data when the intermittent/variable generator specifies a price, in $/MWh, at and below which the registered market participant reasonably expects to reduce their energy output to zero (existing market rule requirement under Chapter 7, section 3.4.4A)

Chapter 7

3.4 The Form of Dispatch Data

3.4.1 *Dispatch data* shall relate to a specified *dispatch hour* of the *dispatch day* and to a specified *registered facility*, shall comply with the applicable provisions of this section and sections 3.5 to 3.9 and shall take one of the following forms:

3.4.1.1 for a dispatchable *generation facility*, an *offer* to provide a *physical service* to the appropriate *real-time market*. *Offers* accepted result in sales in the *real-time market* only to the extent that, for the *registered market participant* submitting such *offers*, the total value of the *physical services* provided to the *real-time markets* is greater than the total value of the *physical bilateral contract quantities* notified to the *IESO* in respect of that *registered market participant* pursuant to Chapter 8;

3.4.1.2 for a *dispatchable load facility*, a *bid* to take *energy* from the *energy market*. *Bids* accepted result in purchases in the *real-time market* only to the extent that, for the *registered market participant* submitting such *bids*, the total value of the *physical services* taken from the *real-time markets* is greater than the total value of *physical bilateral contract quantities* notified to the *IESO* in respect of that *registered market participant* pursuant to Chapter 8;

3.4.1.2A [Intentionally left blank – section deleted]

3.4.1.3 for a *self-scheduling generation facility*, a *self-schedule* for the provision of *energy* to the *energy* market. *Energy* actually provided by a *self-scheduling generation facility* results in sales in the *real-time market* only to the extent that, for the *registered market participant* designated for that *self-scheduling generation facility*, the total value of *energy* provided to the *real-time market* is greater than the total value of *physical bilateral contract* quantities notified to the *IESO* in respect of that *registered market participant* pursuant to Chapter 8;

3.4.1.4 for an *intermittent generator*, a forecast of *energy* expected to be provided to the *energy market*. *Energy* actually provided by an *intermittent generator* results in sales in the *real-time market* only to the extent that, for the *registered market participant* designated for such *intermittent generator*, the total value of *energy* provided to the *real-time market* is greater than the total value of *physical bilateral contract quantities* notified to the *IESO* by that *registered market participant* pursuant to Chapter 8. For an *intermittent generator* that is a *variable generator*, this section shall cease to have effect on a date to

be determined by the *IESO* with such date to be *published* by the *IESO*;

3.4.1.4A   for a *transitional scheduling generator*, a forecast schedule for the provision of *energy to the energy market*; ~~and~~

3.4.1.4B   for a *variable generator* that is a *registered market participant*, its *generation facility's* full capacity available for production determined in accordance with the applicable *market manual*; and

3.4.1.5   if the *capacity reserve market* has been activated pursuant to section 10.1.3, for all *registered facilities* providing *capacity reserve*, an *offer* to provide *capacity reserve*.

Appendix 7.5 – The Market Clearing and Pricing Process

2.2   Inputs

2.2.1   The required inputs to the *dispatch* scheduling and pricing process are:

2.2.1.1   *offers* for *energy* submitted by *generators*;

2.2.1.2   *offers* for each class of *operating reserve* submitted by *generators*;

2.2.1.3   self-schedules submitted by self-scheduling generation facilities for energy and the energy price below which each self-scheduling generation facility reasonably expects to reduce the energy output of such self-scheduling generation facility to zero determined in accordance with section 3.4.4A of this Chapter;

2.2.1.4   forecasts of *energy* submitted by *transitional scheduling generators* and intermittent *generators*;

2.2.1.5   *bids* for *energy* submitted by *dispatchable loads*;

2.2.1.6   *offers* for each class of *operating reserve* submitted by *dispatchable loads*;

2.2.1.7   forecasts of *energy* expected to be withdrawn by *non-dispatchable loads*;

2.2.1.8   coefficients of the penalty functions associated with violation of system constraints (generation, *operating reserves* and transmission) that allow relaxation of these constraints in a specified hierarchical

order when the solution to the scheduling problem is otherwise infeasible;

2.2.1.9   *generation facility output* and *dispatchable load* levels prevailing at the start of the *dispatch period* calculation;

2.2.1.10   in respect of the *pre-dispatch schedule* only, daily *energy* limits where specified pursuant to section 3.5.7 of this Chapter;

2.2.1.10A   in respect of the *real time* constrained *dispatch schedule* only, the start-up and shut-down times for each *generation facility*;

2.2.1.11   the operating characteristics of all *generation facilities* and *dispatchable loads* including, but not limited to ramp-rate limits and *operating reserve* response parameters and for the *real time* constrained *dispatch schedule* only, the *minimum loading point, forbidden regions* and *period of steady operation*;

2.2.1.12   the operating characteristics of the *IESO-controlled grid* including, but not limited to, the physical flow and loss characteristics and flow limits of *transmission facilities*;

2.2.1.13   the requirements for each of *ten-minute operating reserve* that is synchronised to the *IESO-controlled grid*, *ten-minute operating reserve* that is non-synchronised to the *IESO-controlled grid* and *thirty-minute operating reserve*, and the area requirements for *ten-minute operating reserve*;

2.2.1.14   security constraints determined by the *IESO* to be applicable;

2.2.1.14A   the outage schedules for transmission facilities;

2.2.1.15   the limits to be applied, where applicable, on *energy bids*, *energy offers*, ~~and~~ *offers* for *operating reserve*, and *dispatch data* as the case may be, to reflect:

    a.   transmission loading relief constraints;

    b.   *generation facility outages*;

    c.   applicable *contracted ancillary services* arranged for use outside of the market clearing mechanism; and for the *real time* constrained *dispatch schedule* only;

    d.   start-up and shut-down times;

    e.   *minimum loading point*;

    f.   *forbidden regions*; ~~and~~

    g.   *period of steady operation*~~.~~; and

> h. forecasts of *energy* for the *facilities* of *variable generators* that are *registered market participants* produced by the *forecasting entity.*

2.2.1.16   imports or exports between the *IESO-control area* and other control areas required by the *IESO* to meet its obligations under requirements established by all relevant standards authorities and which are outside the normal market *bids* and *offers* including but not limited to inadvertent *intertie* flows and shared activation reserve. These shall be represented as an increase or decrease in *non-dispatchable load*.

Appendix 7.5A – The DACP Calculation Engine Process

3.2   Energy Offers and Bids

3.2.1   A *registered market participant* may submit an *energy offer* or *energy bid* and associated *dispatch data* with respect to a given *registered facility* for each *dispatch hour* of the next day for DACP. *Energy offers, bids* and *dispatch data* shall be submitted in accordance to Chapter 7 and may be limited in accordance with section 2.2.1.15 of Appendix 7.5.

PART 5 – IESO BOARD DECISION RATIONALE

This amendment integrates centralized forecasting for variable generation into IESO operations. Specifically, the amendment integrates centralized forecasting as a limit to be applied on dispatch data submitted by variable generators in the Day-Ahead Commitment Process (DACP) and pre-dispatch schedules.