

Renewed Market Rules

Chapter 7

System Operations and Physical Markets

Renewed Market Rules – Chapter 7: System Operations and Physical Markets

Library Record No.	RUL-17
Document Name	System Operations and Physical Markets
Issue	Issue 3.0
Reason for Issue	Baseline 54.1
Effective Date	December 3, 2025

Document Change History

Issue/Draft	Reason for Issue	Date
Issue 1.0	Market Transition	November 11, 2024
Issue 2.0	Issued in advance of Baseline 54.1	November 17, 2025
Issue 3.0	Baseline 54.1	December 3, 2025

Related Documents

Library Record No.	Document Title	Version
RUL-17	Market Rules for the Ontario Electricity Market	4.0



Document Control

Authorities

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Market Rules

Reviewed by
Technical Panel
Legal Affairs

Approved by
IESO Board

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Introduction

A.1.1 [Intentionally left blank - section deleted]

A.2 The *IESO* shall establish a working group the objective of which will be to assist in identifying unintended outcomes of the market power mitigation framework and recommending means to address such unintended outcomes. The working group shall serve as an advisory body to the *IESO* and the *technical panel* and shall consist of both *IESO* staff and representatives from potentially impacted parties. The working group will perform its function until a date that is one year following the *market transition completion*, or for such longer period as may be agreed to as between the *IESO*, the *technical panel*, and the working group.

B.1 Exceptions

B.1.1 Section 22.10.3 shall come into force on the first *business day* that is at least 30 days after the day the *IESO* designates the first *potential constrained area* pursuant to section 22.10.1.

1. Introductory Rules

1.1 Application

1.1.1 The rules in this Chapter apply to:

- 1.1.1.1 the *IESO*;
- 1.1.1.2 any person who causes or permits electricity or any *physical service* to be conveyed into, through or out of the *integrated power system*;
- 1.1.1.3 any *registered market participant* that submits *dispatch data* with respect to any *resource*; and
- 1.1.1.4 *transmitters*.

1.1.2 In this Chapter, a reference to the term “area” in the context of *operating reserve* shall be construed as a reference to a portion of the *IESO control area* designated as such by the *IESO* and within which the *IESO* may impose limits on the amount of *ten-minute operating reserve* that can be scheduled from *resources* located within that portion for the purpose of meeting the total requirement for *ten-minute operating reserve* within the *IESO control area*.

1.2 Scope of the Physical Markets

1.2.1 The *IESO* shall administer three types of *physical markets*: the *day-ahead market*, the *real-time market* and the *procurement markets*.

1.2.2 The *IESO* shall administer, the following markets:

- 1.2.2.1 a *day-ahead market* in *energy*, measured in MWh (comprised of *physical transactions* and *virtual transactions*);
- 1.2.2.2 a *day-ahead market* in several classes of *operating reserve*, measured in MW (comprised of *physical transactions*);
- 1.2.2.3 a *real-time market* in *energy*, measured in MWh (comprised of *physical transactions*); and
- 1.2.2.4 a *real-time market* in several classes of *operating reserve*, measured in MW (comprised of *physical transactions*).

1.2.3 The *IESO* shall administer, in accordance with section 9, the following *procurement markets* to procure certain *physical services* required for *reliable* operation of the *electricity system*:

1.2.3.1 markets for *contracted ancillary services*, including *regulation*, *reactive support service* and *voltage control service*, and *blackstart capability*; and

1.2.3.2 a market for *reliability must-run contracts*.

1.3 Coordination with Control Areas Outside the IESO Control Area

1.3.1 The *IESO* shall, where required or appropriate under duly constituted regional *reliability* agreements with one or more other *control areas* and subject to any confidentiality agreements entered into with *market participants* or as part of such *reliability* agreements, share with other *control area operators* all relevant information concerning physical system operations in relation to the *electricity system*.

1.4 Delivery in Respect of Extra-provincial Intertie Transactions

1.4.1 Where *energy* or an *ancillary service* is being conveyed:

1.4.1.1 into the *IESO-controlled grid* from an *intertie zone* outside the Province of Ontario; or

1.4.1.2 out of the *IESO-controlled grid* to an *intertie zone* outside the Province of Ontario,

delivery of such *energy* or *ancillary service* to or from, as the case may be, the *boundary entity* shall, for all purposes under these *market rules*, be deemed to occur on the Ontario portion of the applicable *intertie*.

1.5 Planned Outages for Maintenance and Upgrades of IESO-Administered Markets Software, Hardware and Communication Systems

1.5.1 The *IESO* may, from time to time, undertake *planned outages* on *IESO-administered markets* software, hardware or communication systems for the purpose of maintenance and/or upgrades to those systems. These *planned outages* may result in temporary disruptions to some market activities, including but not limited to submission of *dispatch data*, scheduling, pricing, issuing of *dispatch instructions* and *IESO* report *publishing*.

- 1.5.2 The *IESO* shall, in respect of a *planned outage* referred to in section 1.5.1:
- 1.5.2.1 Notify all *market participants*, as far in advance as reasonably practicable, of the timing and duration of the *planned outage*;
 - 1.5.2.2 Maintain normal *market operations* during the *planned outage* to the greatest extent practicable; and
 - 1.5.2.3 Limit the impact and duration of the *planned outage*, and any resulting disruption to *market operations* to the greatest extent practicable.
- 1.5.3 If a *planned outage* referred to in section 1.5.1 is expected to result in a disruption to normal *market operations*, the *IESO* shall notify all *market participants* of the expected disruption and shall specify any required alternative procedures that will be in effect for the duration of the disruption. These alternative procedures shall be designed so as to permit normal *market operations* to the greatest extent practicable. These alternative procedures may include, but are not limited to:
- 1.5.3.1 Submission of *dispatch data* by an alternate means and/or in an alternative form pursuant to section 3.1.2; and
 - 1.5.3.2 Establishment of *administrative prices* pursuant to section 8.4A.
- 1.5.4 *Market participants* shall comply with the alternative procedures specified by the *IESO* in section 1.5.3.

1.6 IESO Authorities and Obligations Regarding the Operation of the IESO-Administered Markets

- 1.6.1 The following parameters of the *day-ahead market calculation engine*, *pre-dispatch calculation engine* and *real-time calculation engine* shall be as specified from time to time by the *IESO Board*:
- 1.6.1.1 the *maximum market clearing price*;
 - 1.6.1.2 the *maximum operating reserve price*;
 - 1.6.1.3 the constraint violation penalties; and
 - 1.6.1.4 the *settlement floor price* for *energy*.
- 1.6.2 The *IESO Board* shall establish floor prices for *energy offers* from a *registered market participant* associated with a *variable generation resource* and for *energy*

offers from a generation resource that has a component classified as flexible nuclear generation, in accordance with the applicable market manual.

- 1.6.3 The *IESO* shall establish the following limits for *virtual transactions* for any *virtual transaction zone*:
- 1.6.3.1 *energy lamination volume limit; and*
 - 1.6.3.2 *offer or bid quantity limit.*
- 1.6.4 The *IESO* shall suspend the *day-ahead market* or *real-time market* as required in accordance with section 13. If the *IESO* suspends the *day-ahead market* or *real-time market*, the *IESO* shall:
- 1.6.4.1 *inform market participants of the suspension the impacted trade date, hours and cause of error if practicable;*
 - 1.6.4.2 *inform market participants of when normal market operations is expected to resume; and*
 - 1.6.4.3 *subject to section 13.6, apply administrative prices in accordance with section 8.4A.*
- 1.6.5 Unless otherwise directed by the *IESO Board*, the *IESO* shall no less than once every two calendar years, commission and *publish* the results of an independent review of the operation and application of the *day-ahead market calculation engine, pre-dispatch calculation engine, and real-time calculation engine* and the related *dispatch* processes and procedures. The *IESO* shall use the results of such review to determine the need or otherwise for improvements in the calculation engines and related procedures in meeting the objectives of the *market rules* and/or the mathematical representation of the *electricity system* or the solution procedures which form part of the market clearing logic. The first such review shall be completed no later than two years following the *market transition completion*.
- 1.6.6 If the *IESO* determines the *publication* of specific types of information from calculation engine results may facilitate anti-competitive behaviour, the *IESO* may limit the *publication* of such information through an *urgent amendment* to these *market rules*. The *IESO* shall advise the *market surveillance panel* of the matter. The *IESO Board* may request the advice of the *market surveillance panel* of the need or otherwise for the *urgent amendment* to remain in effect.

2. Registration for Physical Operations in the Day-Ahead Market and Real-Time Market

2.1 Requirements for Operating on the Grid

2.1.1 No person shall conduct *physical transactions* in the *day-ahead market* or in the *real-time market* or cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* unless:

2.1.1.1 that person is authorized to be a *market participant* in accordance with MR Ch.2;

2.1.1.2 the *facility* to or from which the electricity or *physical service* is to be so conveyed or the *boundary entity* to which the electricity or *physical service* relates has either been registered by the *IESO* as a *resource* pursuant to section 2.2 or section 2.2A, as the case may be, or is exempt from registration under section 2.1.3;

2.1.1.3 subject to section 2.1.1A, where such *resource* associated with a *generation facility* that is connected electrically to a neighbouring *control area*, and the electricity or *physical service* is to be conveyed out of the *integrated power system* over a *radial intertie*:

a. the person complies with the requirements of Appendix 7.7;

b. the person has entered into a *connection agreement*;

c. the *IESO* has entered into an *interconnection agreement* with the *control area operator*, *security coordinator* or *interconnected transmitter* for the relevant *radial intertie*; and

d. the *interconnection agreement* referred to in section 2.1.1.3(c) supports the implementation of the requirements of Appendix 7.7;

2.1.1.4 in accordance with sections 22.1.3 and 22.6.3, that person has provided to the *IESO* all relevant materials the *IESO* may require to determine *reference levels* and *reference quantities* for that person's *resources* and the *IESO* has registered all applicable *reference levels* and *reference quantities* for that person's *resources*;

2.1.1.5 that person has disclosed all of its *market control entities* to the *IESO*;

- 2.1.1.6 that person has designated a *market control entity for physical withholding* in accordance with section 22.9 for each of its *resources* that is a *dispatchable generation resource, dispatchable electricity storage resource* or a *dispatchable load*; and
 - 2.1.1.7 that person has completed all applicable processes to register its *facilities* and any associated *resources* set out in the applicable *market manual*.
- 2.1.1A Section 2.1.1.3 shall not apply in respect of:
- 2.1.1A.1 the delivery of electricity or a *physical service* out of the *integrated power system* over a *radial intertie* where such delivery is required to provide support in the case of an *emergency* in a *control area*;
 - 2.1.1A.2 the delivery of electricity or a *physical service* out of the *integrated power system* over a *radial intertie* where such delivery is required to provide support in the case of an *outage* in a *control area*; or
 - 2.1.1A.3 the delivery of electricity or a *physical service* out of the *integrated power system* over an *intertie* that is configured as a *radial intertie* following and as a result of a *contingency event*.
- 2.1.2 A *market participant* shall not submit, and the *IESO* shall not accept, any *dispatch data* with respect to a *resource*, including a *boundary entity resource*, unless:
- 2.1.2.1 that *resource*, has been registered for the provision of the *physical service(s)* to which the *dispatch data* relate, or, in the case of a *boundary entity resource*, the *IESO* has authorized the *market participant* to use it for the provision of the *physical service(s)* to which the *dispatch data* relate;
 - 2.1.2.2 that *market participant* is the *registered market participant* for that *resource*; and
 - 2.1.2.3 the *dispatch data* are consistent with: (i) the registration information defining the capabilities of the *resource*; (ii) the *market participant's* reasonable expectations of the current actual capabilities of the *resource*; and (iii) any revision in registration information requested by the *IESO* under section 7.5.6.2 or other provision of these *market rules*.
- 2.1.3 Subject to section 2.3, no person that intends to participate in the *IESO-administered markets* or to cause or permit *electricity* or any *physical service* to

be conveyed into, through or out of the *integrated power system* shall be required to register a *facility* to or from which the *electricity* or *physical service* is to be so conveyed as a *facility* and any associated *resources* registered with the *IESO* if such *facility* is embedded within a *distribution system*, a *load facility*, a *generation facility* or an *electricity storage facility* and that:

- 2.1.3.1 in the case of a *generation facility*, has a maximum rated *generation capacity*, net of auxiliary requirements, of less than 1 MW;
- 2.1.3.2 in the case of a *load facility*, has a maximum load capacity of less than 1 MW;
- 2.1.3.3 in the case of a *distribution system*, has a maximum load capacity of less than 1 MW; or
- 2.1.3.4 in the case of an *electricity storage facility*, has a maximum capacity for *energy* for each of injections and withdrawals, net of auxiliary requirements, of less than 1 MW.

2.2 Facility and Associated Resources Registration

- 2.2.0 The *IESO* shall establish and maintain *boundary entity resources* and *virtual zonal resources*, which shall be set out in the applicable *market manual*.
- 2.2.1 The *IESO* shall establish a process for registering a *facility* and any associated *resources* or for using a *boundary entity resource* and for registering a *market participant* as a *registered market participant*. Such process shall be set out in the applicable *market manual* and shall include, but not be limited to, the certifications referred to in sections 2.2.3.3 and 2.2.3.4 and the testing and inspection referred to in section 2.2.3.5.
- 2.2.2 A *market participant* may request to register a *facility* or any associated *resources* or to use a *boundary entity resource*:
 - 2.2.2.1 for the delivery or withdrawal of specific *physical services* pursuant to the provisions of this section 2.2 and, if applicable, section 21.2.
- 2.2.3 The *IESO* shall approve a request to register a *facility* and any associated *resources* or to use a *boundary entity resource* if:
 - 2.2.3.1 the *market participant* submits:
 - a. the registration information required by this section 2.2;

- b. in the case of a *facility connected to the IESO-controlled grid*, a copy of the *connection agreement* pertaining to the *facility* and entered into with the applicable *transmitter*; and
 - c. in the case of a *generation facility*, an *electricity storage facility*, or a *load facility* associated with a *dispatchable load*, embedded within a *distribution system*, a copy of the *connection agreement* pertaining to the *facility* and entered into with the applicable *distributor*;
- 2.2.3.2 the *IESO* is satisfied on reasonable grounds that the *facility* is capable of operating as described in the registration information or as otherwise provided by the *market rules* in respect of the relevant *physical service*;
- 2.2.3.3 the *market participant* certifies to the *IESO* that all of the *facilities* and equipment to which its request for registration relates comply with all applicable technical requirements, other than those referred to in MR Ch.2 s.6.2 , set forth in these *market rules* applicable to all *market participants*, the class of *market participant* of which the *market participant* forms part and the *IESO-administered market* in which the *market participant* wishes to participate;
- 2.2.3.4 the *market participant* certifies to the *IESO* that it has adequate qualified employees or other personnel and organizational and other arrangements that are sufficient to enable the *market participant* to perform all of the functions and obligations applicable to *market participants*, the class of *market participant* of which the *market participant* forms part and the *IESO-administered market* in which the *market participant* wishes to participate in respect of all of the *facilities*, equipment and any associated *resources* to which its request for registration relates;
- 2.2.3.5 the *market participant* successfully completes such testing and permits such inspection as the *IESO* may require for the purposes of testing or inspecting whether all of the *facilities* and equipment to which its request for registration relates meet all applicable technical requirements, other than those referred to in MR Ch.2 s.6.2, set forth in these *market rules* applicable to all *market participants*, the class of *market participant* of which the *market participant* forms part and the *IESO-administered market* in which the *market participant* wishes to participate;
- 2.2.3.6 the *market participant* certifies to the *IESO* in writing that all of the *facilities* and equipment to which its request for registration relates

complies with the requirements identified in any applicable *preliminary assessment* or *system impact assessment* associated with that *market participant's facilities* or equipment; and

- 2.2.3.7 the *market participant* certifies to the *IESO* that all of the *facilities*, equipment and any associated *resources* to which its request for registration relates does not differ materially from the configuration or technical parameters that were used by the *IESO* as the basis for which it issued any applicable approvals for such new or modified *connection* in accordance with MR Ch.4 ss.6.1.14 – 6.1.18, unless the applicable *market participant* or *connection applicant* has obtained the approval of the *IESO* for the change in configuration or technical parameter in accordance with MR Ch.4 s.6.1.22.
- 2.2.4 The *market participant* designated in the registration information as the *market participant* authorized to submit *dispatch data* with respect to a *resource* shall be the *registered market participant* for that *resource*. The *registered market participant* designated for a *resource* may not be changed without the prior approval of the *IESO*.
- 2.2.5 The *IESO* shall define the form and content of information, as further specified in the applicable *market manual*, required for registration as a *facility* with associated *resources* where applicable in accordance with this section 2.2.
- 2.2.6 Where the *facility* sought to be registered is within the *IESO control area*, the information required for registration as a *facility* or as an associated *resource*, as the case may be, shall, subject to any lesser requirements that may be *published* by the *IESO* in respect of the information required for registration of a given class or size of *facility* or any associated *resource*, include, but not be limited to:
 - 2.2.6.1 the identity of the owner and the operator of the *facility* and any associated *resources*;
 - 2.2.6.2 the identity of the *market participant* authorized to submit *dispatch data* with respect to the *resource*;
 - 2.2.6.3 for a *connected facility*, information demonstrating that the *facility* has met the *connection* requirements set forth in MR Ch.4;
 - 2.2.6.4 information demonstrating that the *market participant* designated as the *registered market participant* for the *facility* and its associated *resources* has the operational control necessary to assure delivery or withdrawal of the relevant *physical services* as described in the registration information;

- 2.2.6.5 for a *connected facility*, the location of the *facility* and the identity of the *primary RWM* that will measure the flow of *energy* between the *resource* and the *IESO-controlled grid*;
- 2.2.6.6 for a *facility* embedded within a *distribution system* or within a *connected facility* within the *IESO control area* that is *connected* to the *IESO-controlled grid*, the location of that *facility*, the identity of the *primary RWM(s)* through which *energy* will flow between that *facility* and the *IESO-controlled grid* and information demonstrating that *energy* can flow to and from the identified *primary RWM(s)* with allocations and loss factors specified in the registration information;
- 2.2.6.7 standing technical data defining the ability of the *facility* and any associated *resources* to deliver or withdraw each *physical service* for which registration is sought including, where relevant, the trade-off functions among *energy* and *operating reserve*;
- 2.2.6.8 for a *resource* that will be subject to the *IESO's dispatch instructions*, certification that the *resource* has a minimum rated *generation capacity*, net of auxiliary requirements, or a minimum *dispatchable load capacity*, of 1 MW, or for an *electricity storage resource* an ability to inject a minimum of 1 MW and withdraw a minimum of 1 MW. Individual *generation units*, *electricity storage units* or sets of *load equipment* may be aggregated to meet this minimum capacity requirement if they meet the aggregation requirements of section 2.3; and
- 2.2.6.9 [Intentionally left blank – section deleted]
- 2.2.6.10 for any *resources* associated with a *cogeneration facility* or *enhanced combined cycle facility* choosing to be either a *dispatchable* or *self-scheduling generation resource*, and the *registered market participant* wishes the compliance bands used to determine whether or not the *resource* is in compliance with its *dispatch instructions* or its current schedule, information as outlined in the applicable *market manual* concerning the impact that the production or supply of the other forms of useful *energy* within the *facility* has on *energy* production. The *IESO* may audit this information, which is to be used to determine appropriate compliance bands as outlined in section 3.3.8, at any time.

- 2.2.6A A *registered market participant* for a hydroelectric *generation resource* may submit, in addition to any relevant documentation that the *IESO* may request, the following *resource-specific* information as applicable:
- 2.2.6A.1 *forbidden regions*;
 - 2.2.6A.2 a *start indication value*. A *registered market participant* that elects to submit a *start indication value* shall provide one or more *start indication values* not exceeding the number of *generation units* associated with the *resource*;
 - 2.2.6A.3 whether it intends to submit *hourly must run*; and
 - 2.2.6A.4 *forebay* and any associated *time lags*.
- 2.2.6B A *registered market participant* for a *dispatchable generation resource* shall submit to the *IESO* the *minimum loading point*, the *minimum generation block run-time*, and the *minimum run-time* for the *generation resource* if the *minimum loading point* for the *resource* is greater than zero MW and if the *minimum generation block run-time* for the *resource* is greater than one hour.
- 2.2.6C [Intentionally left blank – section deleted]
- 2.2.6D The *IESO* may request, and the *registered market participant* for a *dispatchable generation resource* or a *dispatchable electricity storage resource* shall submit to the *IESO*, the following information:
- 2.2.6D.1 *start-up time*; and
 - 2.2.6D.2 *minimum shut-down time*.
- 2.2.6E If no *resource specific* data is submitted to the *IESO* for a *generation resource's minimum loading point*, *forbidden regions*, or *period of steady operation* in accordance with sections 2.2.6A, and 2.2.6B, the *IESO* shall assign default values of zero for that data.
- 2.2.6F If *resource-specific* data is submitted to the *IESO* in accordance with sections 2.2.6A, 2.2.6B or 2.2.6G the *IESO* shall respect the data as submitted in its determination of the *day-ahead schedule* in accordance with section 4, the *pre-dispatch schedule* in accordance with section 5, and the *real-time schedule* in accordance with section 6.

- 2.2.6G In accordance with the applicable *market manuals*, a *registered market participant* that operates a *combined cycle plant* that is composed of *generation resources* that are not aggregated under section 2.3 shall submit to the *IESO*:
- 2.2.6G.1 the required data for each *resource* associated with that *combined cycle plant*, including the steam turbine *resource's minimum loading point*; and
- 2.2.6G.2 if the *registered market participant* intends to designate any *resources* associated with its non-aggregated *combined cycle plant* as a *pseudo-unit*, the required data for that *pseudo-unit* including the *steam turbine percentage share* and *duct firing 10-minute operating reserve capability*.
- 2.2.6H [Intentionally left blank – section deleted]
- 2.2.6I Subject to section 2.2.6G, the *IESO* shall determine, in accordance with the applicable *market manual*, the *pseudo-unit* technical parameters based on the *resource* specific data submitted under section 3.
- 2.2.6J [Intentionally left blank – section deleted]
- 2.2.6K A *registered market participant* for a *dispatchable generation resource* shall submit to the *IESO*:
- 2.2.6K.1 the *elapsed time to dispatch*; and
- 2.2.6K.2 *period of steady operation*.
- 2.2.7 To use a *boundary entity* and its associated *boundary entity resources*, a valid *interconnection agreement* over the relevant *interconnection* must have been entered into prior to the approval of the request. In addition, the information required to use the *boundary entity resources* shall include, but not be limited to:
- 2.2.7.1 identification of the *intertie registered wholesale meter(s)* through which the *physical services* will be delivered to or withdrawn from the *IESO-controlled grid*, which shall determine the *intertie zone* within which the *boundary entity* is deemed to be located;
- 2.2.7.2 information confirming that the *market participant* authorized to submit *dispatch data* with respect to the *boundary entity resource* holds all licences, permits or other authorizations that may be required to permit such *market participant* to deliver or withdraw the *physical services* to or from the *intertie zone* within which the *boundary entity resource* is deemed to be located;

- 2.2.7.3 information demonstrating compliance with applicable requirements of all relevant *standards authorities* and completion of the necessary *transmission service* arrangements with affected *control areas*;
 - 2.2.7.4 the identity of the *market participant* authorized to submit *dispatch data* with respect to the *boundary entity resource*; and
 - 2.2.7.5 information defining the maximum quantities of each *physical service* that the *market participant* authorized to submit *dispatch data* in respect of the *boundary entity resource* is entitled to inject into or withdraw from the *IESO-controlled grid* in respect of the *boundary entity resource* including, where relevant, the trade-off functions among *energy* and *operating reserves*.
- 2.2.8 In addition to the information required by section 2.2.6 or 2.2.7, as the case may be, the registration information for a *resource* that will provide *operating reserves* shall include information in a form approved by the *IESO* demonstrating the ability of the *resource* to:
- 2.2.8.1 provide *energy* and *operating reserve* according to the trade-off functions described in, and with the *response* times indicated in, the registration information; and
 - 2.2.8.2 deliver, when the *resource* is called upon to do so by the *IESO*, *energy* at the specified rate (in MWh/hour or MW) in accordance with its *operating reserve offer* for at least one hour.
- 2.2.9 A *market participant* may request to register as a *self-scheduling generation facility* any *generation facility*:
- 2.2.9.1 that has a name-plate rating of individual components of equipment that collectively adds up to 1 MW or more but is less than 10 MW; or
 - 2.2.9.2 that is a *cogeneration facility* or *enhanced combined cycle facility* that has a name plate rating of individual components of equipment that collectively adds up to 10 MW or more provided that the *IESO* determines that there are no adverse impacts on the *reliable* operation of the *IESO-controlled grid* of the *facility* being registered as a *self-scheduling generation facility*.

- 2.2.9A Except as the *IESO* may authorize under section 21.3.2, a *market participant* may request to register a *facility* and any associated *resources* as a *self-scheduling electricity storage facility* if:
- 2.2.9A.1 the *facility* is comprised of individual *electricity storage units* with *electricity storage unit sizes* that collectively add up to a total *electricity storage facility size* of 1 MW or more but less than 10 MW and meets the condition of section 2.1.3.4.
- 2.2.10 A *self-scheduling generation facility* may be registered:
- 2.2.10.1 to provide *energy* and *reactive support service* and *voltage control service*; and
- 2.2.10.2 as a *certified black start facility*.
- 2.2.11 The *IESO* shall approve a request for registration as an *electricity storage facility* or a *self-scheduling generation facility* if the information required by this section 2.2 is provided and the *IESO* determines that the participation of that *facility* and any associated *resources* will not have a material adverse effect on power system *security*.
- 2.2.12 A *self-scheduling generation facility* or a *self-scheduling electricity storage facility* whose request for *facility* registration has been approved by the *IESO* is a *facility* with associated *resources* registered by the *IESO*.
- 2.2.13 A *market participant* may apply to register a *generation facility* associated with an *intermittent generation resource*, if it has a name-plate rating of not less than 1 MW.
- 2.2.14 A *generation facility* associated with an *intermittent generation resource* may not be registered to provide any *physical service* other than *energy* and *reactive support service* and *voltage control service*.
- 2.2.15 The *IESO* shall approve a request under section 2.2.13 if the information required by this section 2.2 is provided and the *IESO* determines that intermittent operation of the *resource* will not have a material adverse impact on power system *security*.
- 2.2.16 A *generator* with an *intermittent generation resource* whose request for *facility* registration has been approved by the *IESO* is a *facility* with associated *resources* registered by the *IESO*.
- 2.2.17 For the purposes of this Chapter, a *distribution system connected* to the *IESO-controlled grid* must be a *facility* that is registered by the *IESO*.

- 2.2.18 The *IESO* shall develop procedures and requirements for registering a *distribution system*. Such procedures shall include, but not be limited to, the certifications referred to in sections 2.2.3.3 and 2.2.3.4 and the testing and inspection referred to in section 2.2.3.5.
- 2.2.19 A *market participant* for a *load resource* may request to change that *resource's* load participation type as either a *dispatchable load*, *non-dispatchable load*, or *price responsive load* as follows:
- 2.2.19.1 a request to change from a *non-dispatchable load* to a *dispatchable load* shall be submitted at least 180 calendar days prior to the effective date of the change;
 - 2.2.19.2 a request to change from a *non-dispatchable load* to a *price responsive load* shall be submitted at least 75 calendar days prior to the effective date of the change;
 - 2.2.19.3 a request to change from a *dispatchable load* or *price responsive load* to a *non-dispatchable load* shall be submitted at least 75 calendar days prior to the effective date of the change;
 - 2.2.19.4 a request to change from a *dispatchable load* to a *price responsive load* shall be submitted at least 75 calendar days prior to the effective date of the change; and
 - 2.2.19.5 a request to change from a *price responsive load* to a *dispatchable load* shall be submitted at least 180 calendar days prior to the effective date of the change.
- 2.2.20 Once the change to a *non-dispatchable load* takes effect in accordance with section 2.2.19.3, the *market participant* shall not change that *resource's* load participation type back to a *dispatchable load* or a *price responsive load* in accordance with sections 2.2.19.1 or 2.2.19.2, as the case may be, for at least 180 calendar days from the effective date of the change.
- 2.2.21 A *registered market participant* for a *generation resource* shall be eligible for the real-time generator offer guarantee or day-ahead generator offer guarantee if, as part of the registration process under this section 2.2, the *market participant* provides the *resource* specific information required for a *GOG-eligible resource*.

2.2A Registration of Commissioning Generation Facilities

- 2.2A.1 A *market participant* may apply to register a *commissioning generation facility*, in accordance with section 2.2, for the purpose of being permitted to convey electricity or a *physical service* into, through or out of the *integrated power*

system or of participating in the *day-ahead market* or *real-time market* during the period in which the *commissioning generation facility* is undergoing the commissioning tests referred to in section 2.2A.4.

- 2.2A.2 The *IESO* shall approve an application to register a *commissioning generation facility* if the *IESO* is satisfied that the *commissioning generation facility* meets the requirements provided by section 2.2 applicable to *generation facilities* associated with a *self-scheduling generation resource*, except for section 2.2.9.1. Any such registration shall expire upon completion by the *commissioning generation facility* of the final commissioning test submitted to and approved by the *IESO* pursuant to section 2.2A.4.
- 2.2A.3 Upon expiry of the registration referred to in section 2.2A.2, a *market participant* shall not participate in the *day-ahead market* or *real-time market* nor cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* in respect of a former *commissioning generation facility* unless such former *commissioning generation facility* has been registered, other than pursuant to this section 2.2A, in accordance with section 2.2.
- 2.2A.4 Where a *commissioning generation facility* has been registered by the *IESO* pursuant to section 2.2A.2, the *market participant* for that *commissioning generation facility* shall, while such registration is in effect:
- 2.2A.4.1 ensure that the *commissioning generation facility*:
- a. complies with all of the provisions of these *market rules* applicable to *self-scheduling generation resources* and associated *generation facilities*; and
 - b. notwithstanding section 2.2A.4.1(a), where it will seek to be registered other than pursuant to this section 2.2A, in accordance with section 2.2 as other than a *self-scheduling generation resource* and associated *generation facility*, complies with all of the applicable requirements of section 2.1.1.4 and MR Ch.4 s.7.3; and
- 2.2A.4.2 submit to the *IESO*, for approval and in accordance with section 2.2A.5, information detailing the commissioning test plans for the *commissioning generation facility*.
- 2.2A.5 The detailed commissioning test plans, referred to in section 2.2A.4.2 shall be submitted to the *IESO* for approval and shall be scheduled in accordance with the procedures applicable to the *outage* coordination process described in MR

Ch.5 s.6 and with any applicable *market manual* and shall include, but not be limited to:

2.2A.5.1 the time required for the *commissioning generation facility* to synchronize to and de-synchronize from the *IESO-controlled grid*;

2.2A.5.2 *energy* and reactive output levels;

2.2A.5.3 the timing of and ramp rates associated with changes in *energy* and reactive output levels; and

2.2A.5.4 run-back or trip tests for the *commissioning generation facility*.

2.2A.6 Except as otherwise provided in this section 2.2A, where a *commissioning generation facility* has been registered by the *IESO* pursuant to section 2.2A.2, the *IESO* shall, while such registration is in effect,

2.2A.6.1 For purposes of the *settlement process*, treat the *commissioning generation facility* as the type of *resource* for which it has sought registration; and

2.2A.6.2 For the purposes of the *day-ahead market*, *pre-dispatch process* and *real-time dispatch process*, treat the *resource* as a *self-scheduling generation resource*.

2.2B [Intentionally left blank – section deleted]

2.2C [Intentionally left blank – section deleted]

2.2D Registration of Commissioning Electricity Storage Facilities

2.2D.1 A *market participant* may apply to register a *commissioning electricity storage facility*, in accordance with section 2.2, for the purpose of being permitted to convey electricity or a *physical service* into, through or out of the integrated power system or of participating in the *day-ahead market* or *real-time market* during the period in which the *commissioning electricity storage facility* is undergoing the commissioning tests referred to in section 2.2D.4.

2.2D.2 The *IESO* shall approve an application to register a *commissioning electricity storage facility* if the *IESO* is satisfied that the *commissioning electricity storage facility* meets the requirements provided by section 2.2 applicable to *electricity storage facilities* associated with a *self-scheduling electricity storage resource* except for section 2.2.9A.1. Any such registration shall expire upon completion

by the *commissioning electricity storage facility* of the final commissioning test submitted to and approved by the *IESO* pursuant to section 2.2D.4.

2.2D.3 Upon expiry of the registration referred to in section 2.2D.2, a *market participant* shall not participate in the *day-ahead market* or *real-time market* nor cause or permit electricity or any *physical service* to be conveyed into, through or out of the *integrated power system* in respect of a former *commissioning electricity storage facility* unless such former *commissioning electricity storage facility* has been registered, other than pursuant to this section 2.2D, in accordance with section 2.2.

2.2D.4 Where a *commissioning electricity storage facility* has been registered by the *IESO* pursuant to section 2.2D.2, the *market participant* for that *commissioning electricity storage facility* shall, while such registration is in effect:

2.2D.4.1 ensure that the *commissioning electricity storage facility*:

- a. complies with all of the provisions of these *market rules* applicable to *self-scheduling electricity storage resources* excluding section 3.4.1.7 and associated *electricity storage facilities*; and
- b. notwithstanding section 2.2D.4.1(a), where it will seek to be registered other than pursuant to this section 2.2D, in accordance with section 2.2 as other than a *self-scheduling electricity storage resource* and associated *electricity storage facility*, complies with all of the applicable requirements of section 2.1.1.4 and MR Ch.4 s.7.3A ; and

2.2D.4.2 submit to the *IESO*, for approval and in accordance with section 2.2D.5, information detailing the commissioning test plans for the *commissioning electricity storage facility*.

2.2D.5 The detailed commissioning test plans, referred to in section 2.2D.4.2 shall be submitted to the *IESO* for approval and shall be scheduled in accordance with the procedures applicable to the *outage* coordination process described in MR Ch.5 s.6 and with any applicable *market manual* and shall include, but not be limited to:

2.2D.5.1 the time required for the *commissioning electricity storage facility* to synchronize to and de-synchronize from the *IESO-controlled grid*;

2.2D.5.2 *energy* and reactive output levels;

2.2D.5.3 the timing of and ramp rates associated with changes in *energy* and reactive output levels; and

- 2.2D.5.4 run-back or trip tests for the *commissioning electricity storage facility*.
- 2.2D.6 Except as otherwise provided in this section 2.2D, where a *commissioning electricity storage facility* has been registered by the *IESO* pursuant to section 2.2D.2, the *IESO* shall, while such registration is in effect;
 - 2.2D.6.1 For purposes of the *settlement process*, treat the *commissioning electricity storage facility* as the type of *resource* for which it has sought registration; and
 - 2.2D.6.2 For the purposes of the *day-ahead market, pre-dispatch process* and *real-time dispatch process*, treat the *resource* that is registered to inject as a *self-scheduling electricity storage resource*, and the *resource* registered to withdraw, as the type of *resource* for which it has sought registration.

2.3 Aggregated Generation Units, Electricity Storage Units or Sets of Load Equipment as Resources

- 2.3.1 A *market participant* may request that the *IESO* aggregate several of its *resources* associated with either *generation units, electricity storage units* or sets of *load equipment*, respectively, for one or more of the following purposes: (i) participating in the *day-ahead market*; or (ii) delivering or withdrawing one or more *physical services* in the *real-time market*, or the *procurement markets*. Upon *IESO* approval, the aggregated *resources* associated with either *generation units, electricity storage units* or sets of *load equipment* shall, except as specifically stated in the registration information or the *IESO's* approval of the aggregation, be treated as a single *resource*:
 - 2.3.1.1 either for the provision or withdrawal of the approved *physical services* by the *registered market participant* for purposes of the submission of *dispatch data*; and
 - 2.3.1.2 by the *IESO*, for purposes of the scheduling and *dispatch* processes described in this Chapter.
- 2.3.2 The *IESO* shall approve a request for the aggregation of *resources* associated with either *generation units, electricity storage units* or sets of *load equipment* into a single *resource* unless:
 - 2.3.2.1 the registration information for the *resources* associated with either *generation units, electricity storage units* or sets of *load equipment* proposed to be aggregated fails to satisfy the conditions of section 2.2;

- 2.3.2.2 the registration information fails to demonstrate one or more of the following in respect of the *resources* associated with either *generation units*, *electricity storage units* or sets of *load equipment* proposed to be aggregated;
- a. that they are all located within the *IESO control area*;
 - b. subject to section 2.3.2A, that they are all *connected* to the *IESO-controlled grid* at the same *connection point*;
 - c. that the *resource* is under the operational control of a single *market participant* and that such *market participant* is authorized to submit *dispatch data* for it;
 - d. that operational communication between each of them and the *IESO* meets all applicable standards and protocols; or
 - e. that they all have relevant metering systems to be used for *settlements* purposes that satisfy the requirements of MR Ch.6; or
- 2.3.2.3 one or more of the *resources* associated with *generation units*, *electricity storage units* or sets of *load equipment* proposed to be aggregated is or includes a *resource*:
- a. whose *offer* or *bid* information or whose in-service or out-of-service status affects the numerical value of operating *security limits* in any manner;
 - b. whose *offer* or *bid* information or whose in-service or out-of-service status is information required by the *IESO* for conducting detailed *security* and *resource* adequacy assessment;
 - c. whose *offer* or *bid* information or whose in-service or out-of-service status is information required to be submitted to the *market assessment unit* or the *market surveillance panel* in furtherance of their respective functions and obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998* and these *market rules*; or
 - d. whose *offer* or *bid* information, or whose in-service or out-of-service status or other information is required by *applicable law*, by *licence*, by the *Ontario Energy Board* or by a *standards authority* to be submitted to or obtained by the *IESO*.
- 2.3.2.4 the *market participant* fails to provide the certification referred to in section 2.2.3.3 in respect of any of the *facilities*;

- 2.3.2.5 the *market participant* fails to provide the certification referred to in section 2.2.3.4 in respect of any of the *facilities*; or
 - 2.3.2.6 the *market participant* fails to successfully complete the testing or to permit the inspection referred to in section 2.2.3.5 in respect of any of the *facilities*.
- 2.3.2A Notwithstanding section 2.3.2.2b, the *IESO* may approve a request for the aggregation of *resources* associated with either *generation units*, *electricity storage units* or sets of *load equipment* into a single *resource* that are not all *connected* to the *IESO-controlled grid* at the same *connection point*, provided that, in the sole judgement of the *IESO*, they can be represented as a single point of injection or withdrawal without compromising the *reliability* of the *IESO-controlled grid*. Aggregation for the purposes of calculating *transmission service charges* is specified in the then current *Ontario Energy Board* Transmission Rate Order.
- 2.3.3 If a proposed aggregation of *resources* meets one or more of the above conditions, the *IESO*:
- 2.3.3.1 shall provide to the *market participant* whose application is denied the reasons for such denial.
- 2.3.4 Approval of the aggregation of *resources* shall be withdrawn by the *IESO* where, for any reason, one or more of the aggregated *resources* commences to meet any one or more of the conditions described in section 2.3.2. The *IESO* shall give notice of the withdrawal to the *market participant* authorized to submit *dispatch data* in respect of the aggregated *resources* and shall cease to treat those *resources* as a single *resource* as of the date and time specified in the notice for such purpose. The date and time so specified shall not be less than two days from the date and time at which the notice of withdrawal is given to the *market participant*. If the *market participant* subsequently wishes to thereafter re-aggregate the *resources*, it shall be required to re-apply to the *IESO* for approval of the aggregation in accordance with section 2.3.1.
- 2.3.5 A *market participant* authorized to submit *dispatch data* for aggregated *resources* may give notice to the *IESO* that it no longer wishes to aggregate those *resources*. The *IESO* shall acknowledge receipt of the *market participant's* notice and shall cease to treat those *resources* as a single *resource* as of the date and time specified in the acknowledgement of receipt for that purpose. The date and time so specified shall be as soon as reasonably practicable following the date of receipt by the *IESO* of the *market participant's* notice. If the *market participant* subsequently wishes to re-aggregate the *resources*, it shall be required to submit a new request to the *IESO* for approval of the aggregation in accordance with section 2.3.1.

2.4 De-registration of Facilities

- 2.4.1 A *market participant* that wishes to de-register a *facility* and any associated *resources* that have been registered in accordance with this section 2, other than a *boundary entity resource*, which is being removed from service, shall file with the *IESO* a notice of request to de-register in such form as may be specified by the *IESO*; provided, however, that a *market participant* shall not be entitled to file such a notice if it is no longer the beneficial owner of the *facility*.
- 2.4.2 Within ten *business days* of the date of receipt of the notice referred to in section 2.4.1, the *IESO* shall notify the *market participant* and the *transmitter* to whose *transmission system* the *facility* is *connected* as to whether the *IESO* requires a technical assessment of the impact of the removal from service of the *registered facility* on the *reliability* of the *IESO-controlled grid* and, if so, of the expected date of completion of such assessment. Such date shall not be more than 45 days from the date of issuance by the *IESO* of such notice or such later date as may be agreed between the *IESO* and the *market participant*.
- 2.4.3 Where the notice issued by the *IESO* pursuant to section 2.4.2 indicates that the *IESO* does not require a technical assessment or where the *IESO* conducts a technical assessment and concludes the removal from service of the *facility* will not or is not likely to have an unacceptable impact on the *reliability* of the *IESO-controlled grid*, the *market participant* shall file with the *IESO* a notice setting forth the date upon which the *market participant* wishes the *IESO* to de-register the *facility*. Such date shall not be less than five *business days* from the date of receipt by the *market participant* of the notice issued by the *IESO* pursuant to section 2.4.2 and, as applicable, shall be subject to the date on which the *facility* has been *disconnected* as confirmed by the relevant *transmitter* to the *IESO*.
- 2.4.4 Where section 2.4.3 applies, the *IESO* shall:
- 2.4.4.1 if the *facility* is not *connected* to the *IESO-controlled grid*, de-register the *facility* promptly upon completion of the technical assessment if applicable, or as of the date specified in the notice filed by the *market participant* pursuant to section 2.4.3, whichever is the later, and shall so notify the *market participant*, the *metering service provider* for the *metering installation* that relates to the *registered facility*, and any *market participant* within which the *registered facility* is embedded; or
 - 2.4.4.2 if the *facility* is connected to the *IESO-controlled grid*:
 - a. issue to the relevant *transmitter* a *disconnection order* directing the relevant *transmitter* to *disconnect* the *facility* from the *IESO-controlled grid* on the date specified in the *disconnection order*

which shall be no earlier than the date specified in the notice filed by the *market participant* pursuant to section 2.4.3; and

- b. de-register the *facility* as of the date on which the relevant *transmitter* confirms to the *IESO* that the *facility* has been *disconnected* from the *IESO-controlled grid*.

and shall notify the *market participant* accordingly.

2.4.5 Where the *IESO* conducts the technical assessment referred to in section 2.4.2 and concludes that the removal from service of the *facility* will or is likely to have an unacceptable impact on the *reliability* of the *IESO-controlled grid*, the *IESO* and the *market participant* shall commence the process described in sections 9.6 and 9.7 and in MR Ch.5 s.4.8 with a view to concluding a *reliability must-run contract* for that *facility*. The *facility* shall not be removed from service during the course of such process.

2.4.6 [Intentionally left blank – section deleted]

2.4.6.1 [Intentionally left blank – section deleted]

2.4.6.2 [Intentionally left blank – section deleted]

2.4.7 A *transmitter* that receives a *disconnection order* from the *IESO* pursuant to section 2.4.4.2(a) shall:

2.4.7.1 subject only to MR Ch.5 s.3.4.1.5 and to the completion of any operating and decommissioning procedures contemplated in the *connection agreement* applicable to the *facility*, *disconnect* the *facility* from the *IESO-controlled grid* on the date and at the time specified in the *disconnection order*; and

2.4.7.2 promptly inform the *IESO* once the *facility* has been *disconnected* from the *IESO-controlled grid*.

Planned Retirements of Generation and Electricity Storage Facilities

2.4.8 Each *generator* shall provide the *IESO* not less than six months advance notice of the commencement of the planned retirement of any one of its *generation facilities* and any associated *resources* that have been registered in accordance with this section 2, including notification of any plans the *generator* may have to construct replacement *facilities* for those being retired.

2.4.9 Each *electricity storage participant* shall provide the *IESO* not less than six months advance notice of the commencement of the planned retirement of any one of its *electricity storage facilities* and associated *resources* that have been

registered in accordance with this section 2, including notification of any plans the *electricity storage participant* may have to construct replacement *facilities* for those being retired.

2.5 Transfer of Registration of Facilities

2.5.1 A *market participant* that wishes to transfer the registration of a *facility* and any associated *resources* that has been registered in accordance with this section 2, as a result of the proposed transfer of the *facility* to another person by sale, assignment, lease, transfer of control or other means of disposition shall, not less than 10 *business days* prior to the date on which the transfer is proposed to take effect, file with the *IESO* and the relevant *transmitter* or *distributor*, a notice of request to transfer the registration of the *facility* in such form as may be specified by the *IESO*. Such notice shall specify:

2.5.1.1 the identity of the transferee and whether the transferee is or intends to be a *market participant*; and

2.5.1.2 the date upon which the transfer is proposed to take effect,

and shall be accompanied by a written declaration by the proposed transferee that it is willing and able to assume control of the *facility* and any associated *resources* and to comply with all provisions of these *market rules* and of any *reliability must-run contract* or *contracted ancillary services* contract applicable to such *facility*.

2.5.2 If the proposed transferee satisfies or is capable of satisfying the requirements of section 2.2, the *IESO* shall approve a request to transfer the registration of a *facility* and any associated *resources* unless the proposed transferee is a *suspended market participant* or is otherwise ineligible under these *market rules* to be a *market participant*.

2.5.3 Where the *IESO* approves a request to transfer the registration of a *facility*, the *IESO* shall transfer the registration of the *facility* to the proposed transferee:

2.5.3.1 on the date referred to in section 2.5.1.2, provided that the proposed transferee was a *market participant* at the time of filing of the notice referred to in section 2.5.1 and remains a *market participant* on such date; or

2.5.3.2 on such later date as may reasonably be required to permit the *IESO* to effect the transfer following the later of the date of authorization of the proposed transferee as a *market participant* and the date on which the proposed transferee meets the requirements of section 2.2.

- 2.5.4 Upon completion of the transfer of the *facility*, the proposed transferee will have to post with the *IESO prudential support* or *capacity prudential support* as applicable, equal to the proposed transferee's *prudential support obligation* or *capacity prudential support obligation*. Until the proposed transferee has done so, the transferring *market participant* shall continue to be liable for the obligations of the proposed transferee in the *IESO-administered markets*. Such obligations shall include, without limitation, the cost of electricity withdrawn from the *IESO-controlled grid* by the proposed transferee and related charges as determined by the *IESO* in accordance with MR Ch.9. The *prudential support obligation* and/or *capacity prudential support obligation* as applicable of the transferring *market participant* shall include all such amounts whether or not the transferring *market participant* has complied with the provisions of this section 2.5.

3. Data Submissions for the Day-Ahead Market and the Real-Time Market

3.1 General Dispatch Data Submission Requirements

- 3.1.1 Each *registered market participant* shall submit its *dispatch data* to the *IESO* through the *electronic information system* or, when not available, by such alternative means and/or in such alternative simplified form as may be specified by the *IESO* pursuant to section 3.1.2.3.
- 3.1.2 The *IESO* shall:
- 3.1.2.1 stamp all *dispatch data* with the time that it was received by the *IESO*;
 - 3.1.2.2 within five minutes, confirm receipt of all such *dispatch data* through the *electronic information system*; and
 - 3.1.2.3 specify alternative means and/or an alternative simplified form of submitting and confirming *dispatch data* when the *electronic information system* is unavailable.
- 3.1.3 *Dispatch data* submitted on a *resource* with the latest time stamp shall replace any *dispatch data* previously submitted on the *resource* for the corresponding *dispatch day* or *dispatch hour*, subject to section 3.1.4.

- 3.1.4 The *IESO* may reject any *dispatch data* that does not comply with this section 3 and shall provide to the *registered market participant* submitting such rejected *dispatch data* the reasons for such rejection. Nothing in section 3.1.4 shall limit the *IESO's* rights under section 22.13.1 or shall be construed as an *IESO* determination under MR Ch.3 s.6.
- 3.1.4A For the purposes of this section 3, where the *IESO* has approved the submission of *dispatch data*, such approval shall not be construed as the *IESO's* determination that the *dispatch data* is compliant with any applicable obligations under these *market rules*, and shall not prejudice the *IESO's* rights or remedies under MR Ch.3 s.6.
- 3.1.5 A *registered market participant* that does not receive from the *IESO* confirmation of receipt of *dispatch data* in accordance with section 3.1.2.2 shall immediately contact the *IESO* by telephone or facsimile seeking confirmation of receipt.
- 3.1.6 A *registered market participant* shall, if requested by the *IESO*, resubmit *dispatch data* by such means as may be specified by the *IESO* in the request.
- 3.1.7 For the purposes of this section 3, *dispatch data* that is submitted to the *IESO* through the electronic information system or by other means and that the *IESO* has rejected pursuant to section 3.1.4, or is otherwise not valid, shall be deemed not to have been submitted to the *IESO*.
- 3.1.8 *Dispatch data* submitted during the *dispatch day* to which it applies shall only be submitted for the remaining *dispatch hours* of that *dispatch day*.

General Submission Requirements

- 3.1.9 A *registered market participant* shall submit *dispatch data* in the *day-ahead market* or *real-time market*, as may be permitted under this section 3, to be eligible for *dispatch* or to otherwise provide *physical services*.
- 3.1.10 *Dispatch data* submitted in the *day-ahead market* in accordance with section 3.2 shall be used as a *dispatch data* submission into the *real-time market* where applicable, unless the *dispatch data* is subsequently resubmitted or revised.

Establishing an Availability Declaration Envelope

- 3.1.11 A *registered market participant* that intends for its *dispatchable generation resources*, *dispatchable electricity storage resources*, *dispatchable loads*, or *hourly demand response resources* to be eligible for *dispatch* by the *IESO* for a given *dispatch hour* of a *dispatch day* shall establish an *availability declaration envelope* by submitting a *bid* or *offer*, as applicable, for *energy* in the *day-ahead market* in accordance with section 3.2.1 on the *resource* for the applicable *dispatch hour*, subject to section 3.1.14.

- 3.1.12 If a *registered market participant* for a *dispatchable generation resource* or a *dispatchable electricity storage resource* does not establish an *availability declaration envelope*, the *resource* shall not operate in the *real-time market* without the approval of the *IESO* under section 3.1.14.
- 3.1.13 If a *registered market participant* for a *dispatchable load* or an *hourly demand response resource* does not establish an *availability declaration envelope*, the *resource* shall not operate in the *real-time market* as a *dispatchable load* or *hourly demand response resource* without the approval of the *IESO* under section 3.1.14, except for the portion of *energy* identified to be consumed as a *non-dispatchable load* in accordance with section 3.3.3.1.
- 3.1.14 The *IESO* shall approve an increase to the *availability declaration envelope* of a *resource* if:
- 3.1.14.1 the *resource* returns from *outage* earlier than planned in accordance with the provisions of MR Ch.5 s.6;
 - 3.1.14.2 the *IESO* has solicited additional *offers* or *bids*;
 - 3.1.14.3 the increase will avoid an *emergency operating state* or *high-risk operating state*;
 - 3.1.14.4 the increase is required in order to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*, or
 - 3.1.14.5 the increase does not exceed the materiality threshold specified in the applicable *market manual*.

3.2 Dispatch Data Submissions in the Day-Ahead Market

Submissions During the Day-Ahead Market Submission Window

- 3.2.1 A *registered market participant* that submits *dispatch data* for the *day-ahead market*, shall submit such *dispatch data* during the *day-ahead market submission window* unless the *registered market participant* has submitted *standing dispatch data* in accordance with section 3.3.9. A *registered market participant* may also submit *dispatch data* for the *day-ahead market* during the *day-ahead market restricted window* as permitted by section 3.2.4.
- 3.2.2 A *registered market participant* may submit revised *dispatch data* into the *day-ahead market* provided that it is submitted during the *day-ahead market submission window* or as permitted by section 3.2.4.

- 3.2.3 A *registered market participant* for a *dispatchable load* may, in the *dispatch data* submitted under sections 3.2.1 and 3.2.2, identify all or a portion of the *energy* to be consumed at such *resource* as *non-dispatchable load* in accordance with the applicable *market manual*.

Submissions During the Day-Ahead Market Restricted Window

- 3.2.4 During the *day-ahead market restricted window*, *dispatch data* submissions shall require *IESO* approval in accordance with section 3.2.5.
- 3.2.5 The *IESO* may approve *dispatch data* submitted during the *day-ahead market restricted window* if the *IESO* is unable to receive *dispatch data* submissions during the *day-ahead market submission window* due to a failure in or *planned outage* of the software, hardware or communications systems that support the submission of *dispatch data*, as determined by the *IESO*.
- 3.2.6 The *IESO* shall use the most recent *dispatch data* submitted by *registered market participants*, provided that it is received by the *IESO* before 10:00 EPT on each day prior to the relevant *dispatch day* or submitted with the *IESO's* approval pursuant to section 3.2.5, as inputs into the *day-ahead market calculation engine* in accordance with section 3.

3.3 Dispatch Data Submissions in the Real-Time Market

- 3.3.1 The *IESO* shall use the following types of *dispatch data* submitted by *registered market participants* to determine the *pre-dispatch schedule* in accordance with section 5 and Appendix 7.5A:
- 3.3.1.1 *dispatch data* submitted in the *day-ahead market* that has been converted in accordance with section 3.1.10; and
 - 3.3.1.2 *dispatch data* submitted during the *pre-dispatch process*.
- 3.3.2 For the purposes of this section 3.3, any *dispatch data* submission made during the *pre-dispatch process* on a *resource* for any *dispatch hour* shall be deemed to constitute a revision to *dispatch data* or revised *dispatch data*.

Submissions During the Real-Time Market Unrestricted Window for Hourly Dispatch Data Parameters

- 3.3.3 Subject to this section 3.3.3, a *registered market participant* may submit revised hourly *dispatch data* parameters described in sections 3.5.3 and 3.5.4 with respect to any *dispatch hour* during the *real-time market unrestricted window*.
- 3.3.3.1 During the *real-time market unrestricted window*, notwithstanding section 2.2.20, a *registered market participant* may, for any one or

more of its *dispatchable loads*, identify all or a portion of the *energy* to be consumed at such *resources* as a *non-dispatchable load* by submitting revised *dispatch data* in accordance with the applicable *market manual*.

- 3.3.3.2 A *registered market participant* for a *dispatchable load*, *hourly demand response resource* or *dispatchable electricity storage resource* that has established its *availability declaration envelope* may revise its *bid* during the *real-time market unrestricted window* provided that the revised *bid* does not increase the *resource's availability declaration envelope* which, for the avoidance of doubt, excludes the portion of *energy* a *dispatchable load* identified to be consumed as a *non-dispatchable load*. Revised *bids* that seek to increase the *resource's availability declaration envelope* shall require *IESO* approval under section 3.1.14 or in accordance with the applicable *market manual*.
- 3.3.3.3 Subject to sections 3.3.3.4 to 3.3.3.14, a *registered market participant* for a *dispatchable generation resource* or a *dispatchable electricity storage resource* that has established its *availability declaration envelope* may revise its *offer* during the *real-time market unrestricted window* provided that the revised *offer* does not increase the *resource's availability declaration envelope*. Revised *offers* that seek to increase the *resource's availability declaration envelope* shall require *IESO* approval under section 3.1.14 or in accordance with the applicable *market manual*.
- 3.3.3.4 During the *real-time market unrestricted window* for *dispatch hours* where a *GOG-eligible resource* has received a *day-ahead operational schedule*, its *registered market participant* shall not increase its (i) *speed no-load offer*, or (ii) *energy offer price* for quantities up to and including its *minimum loading point*, above the latest *offer* submitted for the corresponding *dispatch hour* under section 3.1.11.
- 3.3.3.5 Starting at 20:00 EST on the day prior to the relevant *dispatch day*, for *dispatch hours* where a *GOG-eligible resource* has not received a *day-ahead operational schedule*, its *registered market participant* shall not increase its (i) *speed no-load offer*, or (ii) *energy offer price* for quantities up to and including its *minimum loading point*, above the latest *offer* submitted for the corresponding *dispatch hour*.
- 3.3.3.6 During the *real-time market unrestricted window*, for *dispatch hours* where a *GOG-eligible resource* has received a *day-ahead operational commitment*, its *registered market participant* shall not increase its

start-up offers above the latest *offer* submitted for the corresponding *dispatch hour* under section 3.1.11.

- 3.3.3.7 Starting at 20:00 EST on the day prior to the relevant *dispatch day*, for *dispatch hours* where a *GOG-eligible resource* has not received a *day-ahead operational commitment*, its *registered market participant* shall not increase its *start-up offers* above the latest *offer* submitted for the corresponding *dispatch hour*.
- 3.3.3.8 Subject to 3.3.3.9, during *the real-time market unrestricted window*, for *dispatch hours* where a *GOG-eligible resource* (i) has received a *binding pre-dispatch advisory schedule*, and (ii) has not received a *day-ahead operational schedule*, its *registered market participant* shall not increase its *energy offer* prices above *the energy offer* prices submitted for the corresponding *dispatch hour*:
- a. used at the time of establishing the *binding pre-dispatch advisory schedule*; and
 - b. for quantities above the *resource's minimum loading point* and up to and including the quantity scheduled by the *binding pre-dispatch advisory schedule*.
- 3.3.3.9 The restrictions in section 3.3.3.8 shall not apply in the following circumstances:
- a. for the remaining *dispatch hours* of the *binding pre-dispatch advisory schedule* when the *GOG-eligible resource* has received a notice of de-commitment in accordance with section 10.2.1; or
 - b. for the *dispatch hours* where a steam turbine *resource* associated with a *pseudo-unit* experiences a *forced outage* and the *registered market participant* submits an *outage slip* to the *IESO* for that steam turbine *resource*. Under such circumstances, the *energy offer* price increase for the *pseudo-unit* shall be limited to the *energy offer reference level* of the *resource* associated with the *single cycle mode* of operation.
- 3.3.3.10 Subject to 3.3.3.11, during the *real-time market unrestricted window*, for *dispatch hours* where a *GOG-eligible resource* (i) has received a *binding pre-dispatch advisory schedule*, and (ii) has not received a *day-ahead operational schedule*, its *registered market participant* shall not increase its *energy offer* prices above the *energy offer* prices submitted for the corresponding *dispatch hour*.

- a. used at the time of establishing the *binding pre-dispatch advisory schedule*; and
 - b. for quantities that exceed the *resource's binding pre-dispatch advisory schedule*.
- 3.3.3.11 The restrictions in section 3.3.3.10 shall not apply in the following circumstances:
- a. for the remaining *dispatch hours* of the *binding pre-dispatch advisory schedule* when the *GOG-eligible resource* has received a notice of de-commitment in accordance with section 10.2.1; or
 - b. for the *dispatch hours* where a steam turbine *resource* of a *pseudo-unit* experiences a *forced outage* and the *registered market participant* submits an *outage slip* to the *IESO* for that steam turbine *resource*. Under such circumstances, the *energy offer price increase* for the *pseudo-unit* shall be limited to the *energy offer reference level* of the *resource* associated with the *single cycle mode* of operation; or
 - c. for the *dispatch hours* for which the *IESO* has temporarily revised the *resource's energy offer reference level* in accordance with section 22.5.8, and the following requirements are satisfied:
 - i. The revision occurs after the *binding pre-dispatch advisory schedule* is published and prior to the *mandatory window*; and
 - ii. The revision applies to the quantities that exceed the *resource's binding pre-dispatch advisory schedule*.
- 3.3.3.12 Subject to 3.3.3.13, during the *real-time market unrestricted window*, for *dispatch hours* where a *GOG-eligible resource* (i) has received a *binding pre-dispatch advisory schedule*, (ii) has not received a *day-ahead operational schedule*, and (iii) has submitted an *operating reserve offer*, its *registered market participant* shall not increase its *operating reserve offer prices* above the *operating reserve offer prices* submitted for the corresponding *dispatch hour* used at the time of establishing the *binding pre-dispatch advisory schedule*.
- 3.3.3.13 The restrictions in section 3.3.3.12 shall not apply:
- a. for the remaining *dispatch hours* of the *binding pre-dispatch advisory schedule* when the *GOG-eligible resource* has received a notice of de-commitment in accordance with section 10.2.1; or

- b. for the *dispatch hours* where the steam turbine *resource* of a *pseudo-unit* experiences a *forced outage* and the *registered market participant* submits an *outage slip* to the *IESO* for that steam turbine *resource*. Under such circumstances, the *operating reserve offer price* increase for the *pseudo-unit* shall be limited to the *operating reserve offer reference level* of the *resource* associated with the *single cycle mode* of operation.
- 3.3.3.14 During the *real-time market unrestricted window* a *registered market participant* for a *GOG-eligible resource* shall not increase its *energy offer prices* for quantities above the *resource's minimum loading point*, or its *operating reserve offer prices*, within the first 30 minutes of any *dispatch hour*. Where a *registered market participant* for a *GOG-eligible resource* increases its *energy offer prices* for quantities above the *resource's minimum loading point*, or its *operating reserve offer prices*, within the first 30 minutes of any *dispatch hour* during the *real-time market unrestricted window*, the *IESO* may adjust *settlement amounts* paid or payable to that *registered market participant* to place that *market participant* in the position it would have occupied but for that *dispatch data* revision.

Replacement Energy Offers – Forced Outage Revisions During the Real-Time Market Unrestricted Window and Mandatory Window

- 3.3.4 A *registered market participant* for a *generation resource* associated with a hydroelectric *generation facility*, a *combined cycle plant*, an *enhanced combined cycle facility* or a *cogeneration facility* that experiences a *forced outage* may submit revised *dispatch data* on a related *generation resource*, with respect to any *dispatch hour* up until 10 minutes prior to the beginning of that *dispatch hour*. If the revised *dispatch data* is submitted less than 10 minutes prior to the beginning of that *dispatch hour*, the revised *dispatch data* will apply to the subsequent *dispatch hour*. This section is subject to the following conditions:
- a. The submission of revised *dispatch data* takes place no later than one hour after the *generation resource* experiences the *forced outage* and is limited to the maximum MW amount offered by the *generation resource* experiencing the *forced outage*;
 - b. The *registered market participant* whose *generation resource* experienced a *forced outage* notifies the *IESO*, in accordance with the applicable *market manual*, of its intention to submit revised *dispatch data* for the related *generation resource* for

- the next available *dispatch hour* and of its intention to provide replacement *energy* from the related *generation resource*;
- c. Where the related *generation resource* is not synchronized, the *registered market participant* notifies the *IESO* of its intention to synchronize the related *generation resource* and the *IESO* determines synchronization will have no adverse impact on the *reliability* of the *IESO-controlled grid*;
 - d. The related generation resource and the generation resource experiencing the forced outage have the same registered market participant; and
 - e. The related generation resource and the generation resource experiencing the forced outage have the same metered market participant.
- 3.3.4.1 For the purposes of this section 3.3, related *generation resources* are *generation resources* that, in the case of a hydroelectric *generation facility*, can utilize the water of the *generation resource* experiencing the *forced outage* without delay. In the case of *combined cycle plants, enhanced combined cycle facilities or cogeneration facilities*, related *generation resources* are *generation resources* that can make up the loss in steam production to the steam turbine *resource* that would otherwise have been produced by the gas turbine *resource* experiencing the *forced outage*.
- 3.3.4.2 In the period after the notification and before the market tools process the revised *dispatch data*, the *IESO* shall approve the replacement *energy offer* from the related *generation resource*, provided there is no adverse impact on the *reliability* of the *IESO-controlled grid*. The *market participant* may choose to provide replacement *energy* from a related *generation resource* without submitting revised *dispatch data* for the current *dispatch hour* or, if within 10 minutes of the next *dispatch hour*, the current and subsequent *dispatch hour*.
- 3.3.4.3 The related *generation resource* that submits revised *dispatch data* under section 3.3.4 shall not be entitled to the *day-ahead operational commitment, pre-dispatch operational commitment, day-ahead market generator offer guarantee settlement amount* or *real-time market generator offer guarantee settlement amount* that was received by the *resource* that experienced the *forced outage*.

Revisions During the Real-Time Market Mandatory Window for Hourly Dispatch Data Parameters

- 3.3.5 A *registered market participant* may submit revised hourly *dispatch data* parameters described in sections 3.5.3 and 3.5.4 during the *real-time market*

mandatory window, in accordance with the applicable *market manual*, only in circumstances where it would otherwise be permitted to submit such revised *dispatch data* on the *resource* in the *real-time market unrestricted window* after 20:00 EST on the day prior to the relevant *dispatch day*, provided that the *IESO* approves the submission of such revised *dispatch data*. Notwithstanding the foregoing, the *IESO* shall approve revisions to hourly *dispatch data* during the *real-time market mandatory window* in the following circumstances:

- 3.3.5.1 the submission of replacement *energy offers* in accordance with section 3.3.4;
 - 3.3.5.2 the submission of revised *dispatch data* due to a *pre-dispatch schedule* that a *resource* reasonably expects to differ in schedule, delivery or withdrawal in accordance with section 3.3.8;
 - 3.3.5.3 the submission of revised *dispatch data* in accordance with section 3.3.11 where the *registered market participant* has been issued a direction by the *IESO* in accordance with 3.3.10.2;
 - 3.3.5.4 the submission of revised *dispatch data* identifying all or a portion of a *dispatchable load's* consumption as a *non-dispatchable load* in accordance with section 3.3.3.1; or
 - 3.3.5.5 the submission of revised *dispatch data* on an *electricity storage resource* in accordance with section 21.5.
- 3.3.6 Where pursuant to section 3.3.5, the approval of the *IESO* is required for the submission of revised *dispatch data*, the *IESO* shall, unless the change in quantity poses risks in relation to the *reliability* or *security* of the *electricity system*, or, for clarity, otherwise contravenes the requirements under section 3.3.5, approve the submission of revised *dispatch data* where:
- 3.3.6.1 the revision is required in order to reflect a proposed change in the operational status of the *resource* designed solely to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*.

The *IESO* may refer such changes or revision of *dispatch data* to the *market surveillance panel*.

Revisions During the Real-Time Market Restricted Window for Daily Dispatch Data Parameters

- 3.3.7 Subject to 3.3.7.1, 3.3.7.2 and 3.3.7.4, during the *real-time market restricted window*, a *registered market participant* may submit revised *dispatch data* for daily *dispatch data* parameters described in sections 3.5.21 and 3.5.22, in

accordance with the applicable *market manual*, if the revision is required in order to reflect a proposed change in the operational status of the *resource* designed solely to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*.

- 3.3.7.1 During the *real-time market restricted window*, a *registered market participant* shall not submit revised *dispatch data* for the following daily *dispatch data* parameters:
- a. *minimum loading point*; or
 - b. *minimum generation block run-time*.
- 3.3.7.2 Subject to 3.3.7.3, during the *real-time market restricted window*, a *registered market participant* may revise its submission of *single cycle mode* for any reason.
- 3.3.7.3 During the *real-time market restricted window*, a *registered market participant* shall not revise its submission of *single cycle mode* where:
- a. the *pseudo-unit* has received a *day-ahead operational commitment* for any of the remaining hours of the *dispatch day* that the revision is intended to apply;
 - b. the *pseudo-unit* has received a *pre-dispatch operational commitment* for any of the remaining hours of the *dispatch day* that the revision is intended to apply; or
 - c. the *pseudo-unit* is synchronized and the revision is intended to apply to the current *dispatch day*;

unless the *pseudo-unit* is operating in combined cycle mode, and the associated steam turbine *resource* of the *pseudo-unit* experiences a *forced outage* and the *registered market participant* submits a *forced outage* slip for the steam turbine *resource*.

- 3.3.7.3A Notwithstanding section 3.3.7.3, if the *pseudo-unit* has received a *day-ahead operational commitment* or *pre-dispatch operational commitment* that will keep the *resource* synchronized through midnight after a revision to its *single cycle mode* for the next *dispatch day*, the *registered market participant* shall, as soon as reasonably practicable, revise its submitted *single cycle mode* to align with the requirements and the duration of such commitment, in accordance with the applicable *market manual*.

- 3.3.7.4 During the *real-time market restricted window*, a *registered market participant* may revise its submission of certain daily *dispatch data* parameters for the reasons prescribed in the applicable *market manual*.

Obligation to Revise Dispatch Data

3.3.8 Notwithstanding any other provision of this section 3.3 and with the exception of testing specified in MR Ch.5 s.6.6, a *registered market participant* shall as soon as practical, submit to the *IESO* revised *dispatch data* for any *resource* in respect of which it is the *registered market participant* if, for any *dispatch hour* in the current *pre-dispatch schedule*, the quantity of any *physical service* scheduled for that *resource* differs from the quantity the *registered market participant* reasonably expects to be delivered or withdrawn in the *dispatch hour* by more than the greater of:

- (i) 2 percent;
- (ii) such absolute amount as may be determined by the *IESO* based on considerations of *reliability* and *resource* specific characteristics;
- (iii) in the case of a *resource associated* with a *cogeneration facility* that is either a *dispatchable* or *self-scheduling generation resource*, such amount based on the impact that the production of the other forms of useful *energy* within the *facility* has on *energy* production based on the information outlined in section 2.2.6.10, and the *IESO*; and
- (iv) in the case of a *resource associated* with an *enhanced combined cycle facility* that is either a *dispatchable* or *self-scheduling generation resource*, such amount based on the impact that the recovery of waste heat from an industrial process/processes within the *facility* has on *energy* production based on the information outlined in section 2.2.6.10;

and the *IESO*:

3.3.8.1 shall, unless the change in quantity poses risks in relation to the *reliability* or *security* of the *electricity system*, include such change as an input in respect of any subsequent schedule determined following receipt of the change; and

3.3.8.2 may refer such changes or revision of *dispatch data* to the *market surveillance panel*.

Standing Dispatch Data

- 3.3.9 A *registered market participant* may submit *standing dispatch data* on a *resource* which shall:
- 3.3.9.1 define the *dispatch data* for each *dispatch hour* of each *dispatch day* or for the duration of the *dispatch day*;
 - 3.3.9.1A in respect of each *dispatch day* for which it is in effect, be deemed for the purposes of this section 3.3 and section 22 to be *dispatch data*, submitted at 06:00 EPT for the *day-ahead market submission window* on the day prior to the relevant *dispatch day*; and
 - 3.3.9.2 remain in effect until the expiration date specified in the *standing dispatch data* unless earlier withdrawn or earlier revised by the *registered market participant*:
 - a. as *standing dispatch data* prior to 06:00 EPT on the day prior to the relevant *dispatch day*;
 - b. as *dispatch data* for the *dispatch day* in accordance with sections 3.3.3 to 3.3.8; or
 - c. as *dispatch data* for the *dispatch day* in accordance with sections 3.2.

IESO Authorities to Direct Submission or Revision of Dispatch Data

- 3.3.10 Notwithstanding sections 3.3.3, 3.3.4, 3.3.5, 3.3.7 and 3.3.8, where the *IESO* determines, on the basis of the *day-ahead schedule* or any subsequent *pre-dispatch schedule* determined in accordance with section 5, that a revision to *dispatch data* will not allow it to maintain the *reliability* of the *IESO-controlled grid*, the *IESO* may, subject to sections 3.3.15 and 3.3.16:
- 3.3.10.1 refuse to permit a revision to the quantity element of *dispatch data* submitted by a *registered market participant*; or
 - 3.3.10.2 direct a *registered market participant* to submit or to resubmit a revision to the quantity element of its *dispatch data*, or both. The *IESO* shall notify the *registered market participant* of a refusal referred to in section 3.3.10.1 and shall include in any direction issued pursuant to section 3.3.10.2 a description of the revised *dispatch data* to be submitted or resubmitted by the *registered market participant*.
- 3.3.11 A *registered market participant* to which a direction has been issued pursuant to section 3.3.10.2 shall submit revised *dispatch data* to the *IESO* in accordance

with the terms of the direction within two hours of the time of receipt of the direction.

- 3.3.12 If the *IESO* determines, on the basis of the *day-ahead schedule* or any subsequent *pre-dispatch schedule* determined in accordance with section 5, that it requires the supply of *energy, ancillary services* other than *contracted ancillary services*, or both from additional *resources* in order to maintain the *reliability* of the *IESO-controlled grid*, the *IESO* shall determine if there are additional *resources* that have not submitted *dispatch data* and that can, to the *IESO's* knowledge, be made available within the time required in order to help maintain the *reliability* of the *IESO-controlled grid*.
- 3.3.13 Subject to sections 3.3.14 to 3.3.16, the *IESO* may direct the *registered market participant* for an additional *resource* identified pursuant to section 3.3.12 to submit *dispatch data*, and shall include in such direction a description of the *dispatch data* to be submitted by the *registered market participant*.
- 3.3.14 A *registered market participant* to which a direction is issued pursuant to section 3.3.13 shall submit *dispatch data* to the *IESO* in accordance with the terms of the direction within two hours of the time of receipt of the direction.
- 3.3.15 The *IESO* shall not issue a direction pursuant to section 3.3.10 or 3.3.13 for the purposes of addressing a lack of overall *adequacy* of the *IESO-controlled grid*.
- 3.3.16 Where a *resource* to which a direction issued pursuant to section 3.3.10.2 or 3.3.13 relates has a *reliability must-run contract* with the *IESO*, any such direction shall, subject to the time period for the submission of *dispatch data* referred to in sections 3.3.11 and 3.3.14, be consistent with the terms of such *reliability must-run contract*.
- 3.3.17 Nothing in sections 3.3.10 to 3.3.16 shall preclude the application of the provisions of section 22, MR Ch.9 s.5 or of MR Ch.9 App.9.4 in respect of *dispatch data* that is revised or submitted in accordance with sections 3.3.10 to 3.3.16.

3.4 The Form of Dispatch Data

- 3.4.1 *Dispatch data* shall relate to a specified *dispatch hour* or *dispatch day* of the current or next *dispatch day*, as the case may be, and to a specified *resource*, shall comply with sections 3.5 to 3.11, and shall take one of the following forms:
 - 3.4.1.1 for a *dispatchable generation resource*, or a *dispatchable electricity storage resource* proposing to inject *energy*, an *offer* to provide a physical service to the *day ahead-market* or *real-time market*;

- a. for a *dispatchable variable generation resource*, an *offer* to provide a *physical service* to the *day ahead-market* or *real-time market* reflecting the *resource's* full capacity available for production, determined in accordance with the applicable *market manual*.
- 3.4.1.2 for a *dispatchable load*, or a *dispatchable electricity storage resource* proposing to withdraw *energy*, a *bid* to take *energy* from the *day ahead-market* or *real-time market*;
- 3.4.1.3 for a *self-scheduling generation resource* or a *self-scheduling electricity storage resource*, a *self-schedule* for the provision of *energy* to the *day ahead-market* or *real-time market*;
- 3.4.1.4 for an *intermittent generation resource*, a forecast of *energy* expected to be provided to the *day ahead-market* or the *real-time market*;
- 3.4.1.5 for a *boundary entity resource*, an *offer* to sell *energy* or a *bid* to purchase *energy* in the *day-ahead-market* or the *real-time market*;
- 3.4.1.6 for a *capacity market participant* with an *hourly demand response resource* or a *capacity dispatchable load resource*, a *demand response energy bid* to reduce its *energy* consumption in the *day ahead-market* or the *real-time market*;
- 3.4.1.7 for a *price responsive load* or a *self-scheduling electricity storage resource* that intends to withdraw *energy*, a *bid* to purchase *energy* from the *day-ahead market*; and
- 3.4.1.8 for a *virtual transaction*, an *offer* or *bid* for *energy* on a *virtual zonal resource* in the *day-ahead market*.
- 3.4.2 Each *offer* for *energy* or *operating reserve* or *bid* for *energy* shall contain prices, each with an associated quantity. A price and the associated quantity in an *offer* or *bid* is a *price-quantity pair* and shall comply with sections 3.5 and 3.6, as applicable, and the following:
 - 3.4.2.1 the quantity in any *price-quantity pair*, other than in the first *price-quantity pair*, shall be an increasing cumulative quantity representing the maximum quantity the *registered market participant* is *offering* to sell or *bidding* to buy, respectively, at the associated price in the *price-quantity pair*;
 - 3.4.2.2 in any *offer*, the price in each *price-quantity pair* must not decrease as the associated quantity increases; and

- 3.4.2.3 in any *bid*, the price in each *price-quantity pair* must not increase as the associated quantity increases.
- 3.4.3 Every submission of an *offer* on a *dispatchable generation resource* shall specify a price of *energy* in \$/MWh, at and below which the *IESO* may schedule a *generation resource* to zero in the *day-ahead market*, or, in the *real-time market*, instruct a *registered market participant* for the *generation resource* to reduce its *energy* output to zero. Such price represents the lowest price in the *price-quantity* pairs submitted for that *generation resource*, and may be zero or negative but may not be less than the negative *maximum market clearing price*.
- 3.4.4 Every submission of a *self-schedule* on a *self-scheduling generation resource*, or a forecast of intermittent generation for an *intermittent generation resource*, shall specify a price, in \$/MWh, at and below which the applicable *registered market participant* reasonably expects to reduce the *energy* schedule in the *day-ahead market* to zero, or, in the *real-time market*, reduce its *energy* output of such *self-scheduling generation resource* or *intermittent generation resource* to zero. Such price may be zero or negative but may not be less than the negative *maximum market clearing price*.
- 3.4.5 Every submission of an *offer* for an *electricity storage resource* proposing to inject *energy* shall specify a price of *energy* in \$/MWh, at and below which the *IESO* may instruct a *registered market participant* for the *electricity storage resource* to reduce its *energy* schedule in the *day-ahead market* to zero, or, in the *real-time market*, reduce its injections to zero. Such price represents the lowest price in the *price-quantity* pairs submitted for that *electricity storage resource*, and may be zero or negative but may not be less than the negative *maximum market clearing price*.
- 3.4.6 Every submission of a *self-schedule* on a *self-scheduling electricity storage resource* shall specify a price, in \$/MWh, at and below which the applicable *registered market participant* reasonably expects to reduce its *energy* schedule in the *day-ahead market* to zero or, in the *real-time market*, reduce its injections of *energy* from the *self-scheduling electricity storage resource* to zero. Such price may be zero or negative but may not be less than the negative *maximum market clearing price*.
- 3.4.7 Every submission of a *bid* on a *dispatchable load* or a *dispatchable electricity storage resource* proposing to withdraw *energy* shall specify a price of *energy*, in \$/MWh, at and above which the *IESO* may instruct the *dispatchable load* or *electricity storage resource*, as the case may be, to reduce its *energy* schedule in the *day-ahead market* to zero, or, in the *real-time market*, reduce its *energy* withdrawals to zero. Every submission of a *bid* to withdraw *energy* on a *price responsive load* or a *self-scheduling electricity storage resource* shall specify a price of *energy*, in \$/MWh, at and above which the *IESO* may instruct the *price*

responsive load or self-scheduling electricity storage resource to reduce its *energy* schedule in the *day ahead* market to zero. Such price represents the highest price in the *price-quantity* pairs submitted for that *dispatchable load, electricity storage resource, price responsive load or self-scheduling electricity storage resource*, and shall not be greater than the *maximum market clearing price*.

3.5 Energy Offers and Energy Bids

- 3.5.1 A *registered market participant* may have no more than one *energy offer* or one *energy bid* submitted on a given *resource* for any *dispatch hour*.
- 3.5.2 All *energy offers* and *energy bids* shall be submitted using such forms as may be specified by the *IESO*, which forms shall require, at a minimum, provision of all of the information specified in Appendices 7.1 and 7.2, respectively, except where the *IESO* specifies an alternative means and/or an alternative simplified form pursuant to section 3.1.2.3.

Hourly Dispatch Data Parameters

- 3.5.3 For each *dispatch hour*, each *energy offer* and *energy bid* shall include the following hourly *dispatch data* parameters where applicable:
 - 3.5.3.1 *price-quantity pairs* in accordance with sections 3.5.5, 3.5.9 – 3.5.11, and 3.10.1.5;
 - 3.5.3.2 hourly ramp quantities and the corresponding ramp up and ramp down values in accordance with section 3.5.7; and
 - 3.5.3.3 a ramp rate applicable to all categories of *operating reserve* being *offered* in accordance with section 3.5.8.
- 3.5.4 For each *dispatch hour*, each *energy offer* may include the following hourly *dispatch data* parameters where applicable:
 - 3.5.4.1 a *start-up offer* in accordance with section 3.5.12;
 - 3.5.4.2 a *speed no-load offer* in accordance with section 3.5.13;
 - 3.5.4.3 a *minimum hourly output* in accordance with sections 3.5.14 and 3.5.15;
 - 3.5.4.4 an *hourly must-run* in accordance with sections 3.5.16 and 3.5.17; and

- 3.5.4.5 *variable generation forecast quantity* in accordance with sections 3.5.18.
- 3.5.5 Subject to 3.5.5.6, each *energy offer* or *energy bid* must contain at least two and, may contain up to 20 *price-quantity pairs* for each *dispatch hour*. *Price-quantity pairs* shall be submitted in accordance with this section:
- 3.5.5.1 The price in each such *price-quantity pair* shall be not more than the *maximum market clearing price* and not less than the negative *maximum market clearing price* and shall be expressed in dollars and whole cents per MWh.
- 3.5.5.2 The quantity in each such *price-quantity pair* shall:
- a. in the case of a *resource* other than a *boundary entity resource*, be expressed in MW (or MWh/hour) to one decimal place and shall not be less than 0.0 MW (or 0.0 MWh/hour); or
 - b. in the case of a *boundary entity resource*, be expressed in whole MW (or MWh/hour) and shall not be less than 0 MW (or 0 MWh/hour).
- 3.5.5.3 The quantity in the first *price-quantity pair* shall be 0.0 MW (or 0.0 MWh/hour) or 0 MW (or 0 MWh/hour) as applicable.
- 3.5.5.4 The price in the second *price-quantity pair* shall be the same as the price in the first *price-quantity pair*.
- 3.5.5.5 The quantity in the second *price-quantity pair* shall be greater than or equal to the *minimum hourly output* submitted in accordance with section 3.5.14.
- 3.5.5.6 The number of *price-quantity pairs* submitted on a *pseudo-unit* shall not exceed 20 divided by the number of combustion turbine *resources* within the *generation facility*, rounded down to the next whole number.
- 3.5.5.7 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, shall submit in one of its *price-quantity pairs* a quantity that is equal to its *minimum loading point* submitted in accordance with section 3.5.29.
- 3.5.5.8 The prices in each *price-quantity pair* on a *variable generation resource* or a *generation resource* that has a component classified as *flexible nuclear generation* shall not be less than the floor prices specified in section 1.6.2.

- 3.5.6 Prices in *energy offers* and *energy bids* may be negative and such negative price shall imply:
- 3.5.6.1 when in an *energy offer*, that the *registered market participant* is willing to pay up to that price for each MWh of *energy* it is scheduled in the *day-ahead market* or injects rather than reduce its output in the *real-time market*; and
 - 3.5.6.2 when in an *energy bid*, that the *registered market participant* is willing to take or dispose of excess *energy*, but only if paid at least that price for each excess MWh it is scheduled in the *day-ahead market*, or taken or disposed of in the *real-time market*.
- 3.5.7 Each *energy offer* or *energy bid*, other than an *energy offer* or *energy bid* on a *price responsive load*, a *boundary entity resource*, a *self-scheduling electricity storage resource* that intends to withdraw, or a *virtual zonal resource*, shall contain at least one and up to five sets of hourly ramp quantities and its corresponding ramp up and ramp down values for each *dispatch hour*. Ramp quantities and corresponding ramp up and ramp down values shall be submitted in accordance with this section:
- 3.5.7.1 The hourly ramp quantity shall be expressed in MW to one decimal place, be greater than 0.0 MW and increase monotonically;
 - 3.5.7.2 The hourly ramp quantity shall constitute the maximum MW quantity at which the corresponding ramp up and ramp down values apply;
 - 3.5.7.3 The last hourly ramp quantity shall be greater than or equal to the maximum quantity of the *price-quantity pairs* submitted in an hour; and
 - 3.5.7.4 The hourly ramp up and ramp down values in each such set shall be expressed in MW/minute to one decimal place, be greater than 0.0 MW/min and be less than or equal to the maximum *offer* or *bid* ramp rate, as applicable, specified during the registration process determined by the *IESO* in accordance with section 2.2.
- 3.5.8 Each *energy offer* associated with a *dispatchable generation resource*, *dispatchable electricity storage resource* or *dispatchable load* shall contain one ramp rate applicable for all categories of *operating reserve* being *offered*. Each such *operating reserve* ramp rate shall:
- 3.5.8.1 be greater than or equal to half the registered *reference level* associated with the *operating reserve* ramp rate;

- 3.5.8.2 in the case of a *dispatchable generation resource* or *dispatchable electricity storage resource*, be less than or equal to the maximum *offer* ramp rate for *operating reserve* specified during the registration process in accordance with section 2.2; and
 - 3.5.8.3 in the case of a *dispatchable load* or *dispatchable electricity storage resource* be less than or equal to the maximum *bid* ramp rate for *operating reserve* specified during the registration process in section 2.2.
- 3.5.9 The largest quantity in any *energy offer* or *energy bid* for any *dispatch hour* must be at least 1.0 MWh but shall not exceed the lesser of:
- 3.5.9.1 the maximum output or withdrawal of *energy* in an hour indicated in the registration information for the relevant *resource*;
 - 3.5.9.2 the maximum quantity of *energy* that can be supplied (for an *energy offer*) or taken (for an *energy bid*) in that *dispatch hour* by the *resource*, as estimated by the *registered market participant* for that *resource*;
 - 3.5.9.3 the maximum allowed injection (for an *energy offer*) or withdrawal (for an *energy bid*) in that *dispatch hour* through the relevant *connection point*, as limited by the lesser of:
 - a. the capacity of any radial line connecting the relevant *facility* to the *connection point*;
 - b. the maximum injection or withdrawal as specified in the *connection agreement* applicable to the relevant *facility*; or
 - c. the maximum injection or withdrawal otherwise permitted by the relevant *transmitter*;
 - 3.5.9.4 for a *virtual zonal resource*, the quantity referred to in section 3.10.1.3.
- 3.5.10 Where one or more *electricity storage facilities* and one or more other *generation facilities* are all:
- 3.5.10.1 connected at the same *connection point*;
 - 3.5.10.2 registered to the same *registered market participant*, and

3.5.10.3 none of the *facilities* or any associated *resources* are providing *contracted ancillary services* or participating in the *operating reserve market*;

section 3.5.9 shall not apply to those *facilities* or any associated *resources*. Instead, the largest quantity in any *energy offer* or *energy bid* for any *dispatch hour* for such *resources* must be at least 1.0 MWh but shall not exceed the lesser of:

3.5.10.4 the maximum output of *energy* in an hour indicated in the registration information for the relevant *resource*;

3.5.10.5 the maximum quantity of *energy* that can be supplied (for an *energy offer*) or taken (for an *energy bid*) in that *dispatch hour* by the *resource*, as estimated by the *registered market participant* for that *resource*; or

3.5.10.6 the maximum allowed injection (for an *energy offer*) or withdrawal (for an *energy bid*) in that *dispatch hour* through the relevant *connection point*, as limited by the lesser of:

- a. the capacity of any radial line connecting the relevant *facility* to the connection point; or
- b. the maximum injection or withdrawal as specified in the *connection agreements* applicable to the relevant *facilities* or to the maximum injection or withdrawal otherwise permitted by the relevant *transmitter*, calculated as the total net injections and withdrawals for all *generation facilities* and *electricity storage facilities* registered to the same *registered market participant* at the same *connection point*.

3.5.11 Where one or more *electricity storage facilities* and one or more other *generation facilities* are all:

3.5.11.1 connected at the same *connection point*;

3.5.11.2 registered to the same *registered market participant*, and

3.5.11.3 any of the *facilities* or any associated *resources* are providing *contracted ancillary services* or participating in the *operating reserve market*;

sections 3.5.9 and 3.5.10 shall not apply to those *facilities* or any associated *resources*. Instead, the largest quantity in any *energy offer* or *energy bid* for any

dispatch hour for each such *resources* must be at least 1.0 MWh but shall not exceed the lesser of:

- 3.5.11.4 the maximum output of *energy* in an hour indicated in the registration information for the relevant *resource*;
 - 3.5.11.5 the maximum quantity of *energy* that can be supplied (for an *energy offer*) or taken (for an *energy bid*) in that *dispatch hour* by the *resource*, as estimated by the *registered market participant* for that *resource*; or
 - 3.5.11.6 the maximum allowed injection (for an *energy offer*) or withdrawal (for an *energy bid*) in that *dispatch hour* through the relevant *connection point*, as limited by the lesser of:
 - a. the capacity of any radial line connecting the relevant *facility* to the *connection point*; or
 - b. the maximum injection or withdrawal will be what is specified in the *connection agreement* applicable to the relevant *facility* or the maximum injection or withdrawal otherwise permitted by the relevant *transmitter*, and the sum of all *energy offers* or the sum of all *energy bids* from all *facilities* shall not exceed these limits.
- 3.5.12 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, may submit a *start-up offer* for each *thermal state*. The *start-up offer* shall be expressed in whole dollars between 0 and 999,999.
- 3.5.13 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, may submit a *speed no-load offer*. The *speed no-load offer* shall be expressed in whole dollars between 0 and 99,999.
- 3.5.14 A *registered market participant* for a *dispatchable hydroelectric generation resource* may submit a *minimum hourly output* that the *registered market participant* reasonably expects to be necessary to prevent the *resource* from operating in a manner:
- 3.5.14.1 that would require spill restrictions; and
 - 3.5.14.2 that would endanger the safety of any person, damage equipment, or violate any *applicable law*.
- 3.5.15 *Minimum hourly output* shall be submitted only in accordance with this section:

- 3.5.15.1 *Minimum hourly output* shall be expressed in MW, up to one decimal place and be greater than or equal to 0.0 MW;
 - 3.5.15.2 *Minimum hourly output* shall not exceed the largest quantity in the *price-quantity pairs* for that hour; and
 - 3.5.15.3 The sum of all *minimum hourly output* submissions in a given *dispatch day* shall not exceed the *dispatchable hydroelectric generation resource's maximum daily energy limit* submitted under section 3.5.25.
- 3.5.16 A *registered market participant* for a *dispatchable hydroelectric generation resource* may submit an *hourly must run* if it has submitted the required information in accordance with section 2.2.6A.3, and that *registered market participant* reasonably expects the submission of *hourly must run* to be necessary to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*.
- 3.5.17 *Hourly must run* shall be submitted only in accordance with this section:
- 3.5.17.1 *Hourly must run* shall be expressed in MW, up to one decimal place and be greater than or equal to 0.0 MW;
 - 3.5.17.2 *Hourly must run* shall not exceed the largest quantity in the associated *price-quantity pairs* for that hour; and
 - 3.5.17.3 The sum of all *hourly must run* submissions in a *dispatch day* on (i) a *dispatchable hydroelectric generation resource* that is not registered on a *forebay*; or (ii) all *dispatchable hydroelectric generation resources* that are registered on the same *forebay*, shall not exceed the *maximum daily energy limit* submitted on the *resource* or the *forebay*, as applicable.
- 3.5.18 A *registered market participant* for a *dispatchable variable generation resource* may submit a *variable generation forecast quantity* only in accordance with this section:
- 3.5.18.1 the *variable generation forecast quantity* shall be expressed in MWh per hour to one decimal place and must be greater than or equal to 0.0 MW; and
 - 3.5.18.2 the *variable generation forecast quantity* shall not exceed the maximum registered *generation capacity* in accordance with section 3.5.9.1.

Linked Wheeling Through Transactions

- 3.5.19 All *linked wheeling through transactions* shall consist of:
- 3.5.19.1 an individual *energy offer* from a *boundary entity resource* injecting *energy* into the *IESO-controlled grid* and an *energy bid* from a *boundary entity resource* withdrawing *energy* from the *IESO-controlled grid*; or
 - 3.5.19.2 an individual *energy offer* from a *boundary entity resource* injecting *energy* into the *IESO-controlled grid* and an *energy bid* from a *boundary entity resource* withdrawing *energy* from the *IESO-controlled grid*, and an identification of the desire for these to be linked, in accordance with the applicable *market manual*. The *IESO* shall assess these *offers* and *bids* as linked transactions. The *IESO* shall schedule and *dispatch* the linked *offers* and *bids* such that both are equal to the lower of the *offer* or *bid* that would otherwise be scheduled and *dispatched*.
- 3.5.20 An *energy bid* submitted by a *registered market participant* on a *boundary entity resource* in respect of the withdrawal from the *IESO-controlled grid* of *energy* destined for an *intertie zone* in the United States of America shall constitute a declaration by a *registered market participant* for the *boundary entity resource* of an intention to export *energy* in the circumstances described in paragraphs 1(b) to 1(d) of Part V of Schedule VI of the Excise Tax Act (Canada).

Daily Dispatch Data Parameters

- 3.5.21 For each *dispatch day*, an *energy offer* may include the following daily *dispatch data* parameters where applicable which will apply to each *dispatch hour* within the *dispatch day*:
- 3.5.21.1 Downstream *linked forebay*, *time lag* and *MWh ratio* in accordance with section 3.5.23;
 - 3.5.21.2 *Forbidden regions* in accordance with 3.5.24;
 - 3.5.21.3 *Maximum daily energy limit* in accordance with section 3.5.25;
 - 3.5.21.4 *Minimum daily energy limit* in accordance with section 3.5.26;
 - 3.5.21.5 *Single cycle mode* in accordance with section 3.5.27; and
 - 3.5.21.6 *Maximum number of starts per day* in accordance with section 3.5.28.

- 3.5.22 For each *dispatch day*, an *energy offer* and *energy bid* shall include the following daily *dispatch data* parameters where applicable which will apply to each *dispatch hour* within the *dispatch day*:
- 3.5.22.1 *Minimum loading point* in accordance with section 3.5.29;
 - 3.5.22.2 *Minimum generation block run-time* in accordance with section 3.5.30;
 - 3.5.22.3 *Minimum generation block down-time* in accordance with section 3.5.31;
 - 3.5.22.4 *Lead time* in accordance with section 3.5.32;
 - 3.5.22.5 *Ramp up energy to minimum loading point* in accordance with section 3.5.33;
 - 3.5.22.6 Daily ramp quantities and the corresponding ramp up and ramp down values in accordance with section 3.5.34; and
 - 3.5.22.7 *Thermal state* in accordance with section 3.5.35.
- 3.5.23 A *registered market participant* for a *dispatchable hydroelectric generation resource* that intends to establish a *linked forebay* shall submit the corresponding set of *dispatch data* consisting of (i) the downstream *linked forebay*, (ii) *time lag*, and (iii) *MWh ratio*, if the *registered market participant* reasonably expects that the submission of the above daily *dispatch data* parameters is necessary to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*. The downstream *linked forebay*, *time lag* and *MWh ratio* shall be submitted only in accordance with this section:
- 3.5.23.1 the downstream *linked forebay* shall consist of a *forebay* that is registered downstream to the relevant *forebay* within the *cascade group*, registered in accordance with section 2.2.6A.4;
 - 3.5.23.2 the *time lag* shall be expressed as a whole number that is greater than or equal to 0 and less than or equal to the registered *time lag*; and
 - 3.5.23.3 *MWh ratio* shall be expressed up to two decimal places and shall be greater than 0.00.
- 3.5.24 A *registered market participant* for a *dispatchable hydroelectric generation resource* that has one or more *forbidden regions* registered in accordance with section 2.2.6A.1, may submit, subject to section 3.5.24.1, no more than five

forbidden regions as daily *dispatch data* parameters. Each *forbidden region* shall be submitted only in accordance with this section in order to apply to a given *dispatch day*:

- 3.5.24.1 The number of *forbidden regions* submitted shall not exceed the number of *forbidden regions* registered for the applicable *resource*;
 - 3.5.24.2 The *registered market participant* shall submit a quantity for both the upper limit and lower limit for the applicable *forbidden region*, expressed in MW up to one decimal place;
 - 3.5.24.3 The quantity submitted for the upper limit shall be greater than the quantity submitted for the lower limit of that *forbidden region*;
 - 3.5.24.4 The quantity submitted for the upper limit of a *forbidden region* shall be less than or equal to the registered upper limit of that *forbidden region*;
 - 3.5.24.5 The quantity submitted for the lower limit of a *forbidden region* shall be greater than or equal to the registered lower limit of that *forbidden region*; and
 - 3.5.24.6 If more than one *forbidden region* is submitted in a given *dispatch day*, the lower limit for each successive *forbidden region* shall be greater than the upper limit of the previously submitted *forbidden region*.
- 3.5.25 A *registered market participant* for a *dispatchable electricity storage resource* or a *dispatchable generation resource* other than a *nuclear generation resource* may submit a *maximum daily energy limit*. *Maximum daily energy limit* shall be submitted only in accordance with this section:
- 3.5.25.1 *Dispatchable hydroelectric generation resources* that are registered on the same *forebay* shall be collectively bound by the same *maximum daily energy limit*;
 - 3.5.25.2 *Maximum daily energy limit* shall be expressed in MWh, up to one decimal place, and shall be greater than or equal to 0.0 and less than or equal to 999,999.9;
 - 3.5.25.3 *Maximum daily energy limit* shall be greater than or equal to the *energy* required to operate the *generation resource* at *minimum loading point* for the *minimum generation block run-time*, submitted in accordance with sections 3.5.29 and 3.5.30, as applicable; and

- 3.5.25.4 For *dispatchable hydroelectric generation resources*, the *maximum daily energy limit* shall be greater than or equal to the *minimum daily energy limit* submitted for the *dispatch day* on (i) the *resource* where it is not registered on a *forebay*; or (ii) all the *resources* registered on the *forebay*.
- 3.5.26 A *registered market participant* for a *dispatchable hydroelectric generation resource* may submit a *minimum daily energy limit* if the submission is necessary to prevent the *resource* from operating in a manner that would endanger the safety of any person, damage equipment, or violate any *applicable law*. *Minimum daily energy limit* shall be submitted only in accordance with this section:
- 3.5.26.1 *Dispatchable hydroelectric generation resources* that are registered on the same *forebay* shall be collectively bound by the same *minimum daily energy limit*;
- 3.5.26.2 *Minimum daily energy limit* shall be expressed in MWh up to one decimal place, shall be greater than or equal to 0.0, and less than or equal to the lesser of:
- a. 999,999.9,
 - b. the sum of all hourly *energy* quantities submitted for the *dispatch day* on (i) the *resource* where it is not registered on a *forebay*; or (ii) all the *resources* registered on the *forebay*; as applicable; and
 - c. the *maximum daily energy limit* submitted for the *dispatch day* on (i) the *resource* where it is not registered on a *forebay*; or (ii) all the *resources* registered on the *forebay*;
- as applicable.
- 3.5.27 A *registered market participant* for a *pseudo-unit* may submit single cycle mode.
- 3.5.28 A *registered market participant* for a *dispatchable generation resource* (i) that is a *non-quick start resource* and is not a nuclear *generation resource*, or (ii) that is a hydroelectric *generation resource* provided that it has registered a *start indication value* in accordance with 2.2.6A.2, may submit a *maximum number of starts per day*. *Maximum number of starts per day* shall be submitted only in accordance with this section:
- 3.5.28.1 Subject to section 3.5.28.2, *maximum number of starts per day* shall be submitted as a whole number less than or equal to 24; and

- 3.5.28.2 *Maximum number of starts per day for dispatchable hydroelectric generation resources* registered as an aggregated *resource* in accordance with section 2.3 shall not exceed 24 multiplied by the number of *start indication values* registered to the *resource* during registration.
- 3.5.29 A registered market participant for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, shall submit a *minimum loading point*. *Minimum loading point* shall be submitted only in accordance with this section:
- 3.5.29.1 For a steam turbine *resource* that is registered with a *combined cycle plant* and not registered for *resource* aggregation, the registered market participant shall submit a *minimum loading point* for each combustion turbine *resource* within that *generation facility*, to reflect the n-on-1 *minimum loading point*. A registered market participant shall submit at least one n-on-1 *minimum loading points* and no more than the lesser of (i) four or (ii) the number of combustion turbine *resources* within that *generation facility*. N-on-1 *minimum loading points* shall be submitted in increasing numerical order;
- 3.5.29.2 *Minimum loading point* shall be greater than 0.0 MW, up to one decimal place, and shall not exceed the lesser of:
- a. 9999.9 MW; or
 - b. the maximum registered *generation capacity* in accordance with section 3.5.9.1 and the applicable *market manual*.
- 3.5.30 A registered market participant for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, shall submit a *minimum generation block run-time*. *Minimum generation block run-time* shall be submitted only in accordance with this section:
- 3.5.30.1 *minimum generation block run-time* shall be a whole number greater than or equal to zero; and
- 3.5.30.2 *minimum generation block run-time* shall not exceed 24.
- 3.5.31 A registered market participant for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource*, shall submit *minimum generation block down-time* for each of its *thermal states*. *Minimum generation block down-time* shall be submitted only in accordance with this section:

- 3.5.31.1 *minimum generation block down-time* shall be a whole number greater than or equal to zero;
- 3.5.31.2 *minimum generation block down-time* submitted for the hot *thermal state* shall not exceed *minimum generation block down-time* submitted for the warm *thermal state*, and *minimum generation block down-time* submitted for the warm *thermal state* shall not exceed *minimum generation block down-time* submitted for the cold *thermal state*;
- 3.5.31.3 the *minimum generation block down-time* shall not exceed 24 for the hot *thermal state*; and
- 3.5.31.4 the *minimum generation block down-time* shall not exceed 99 for the warm or cold *thermal state*.
- 3.5.32 A registered market participant for a GOG-eligible resource shall submit a *lead time* for each of its *thermal states*; however, a registered market participant for a dispatchable generation resource (i) that is a non-quick start resource, and (ii) is not a nuclear generation resource or a GOG-eligible resource, may, but for the avoidance of doubt, is not required to, submit a *lead time* for each of its *thermal states*. *Lead time* shall be submitted only in accordance with this section:
- 3.5.32.1 *lead time* for each *thermal state* shall be a whole number greater than or equal to zero;
- 3.5.32.2 *lead time* submitted for the hot *thermal state* shall not exceed *lead time* submitted for the warm *thermal state*, and *lead time* submitted for the warm *thermal state* shall not exceed *lead time* submitted for the cold *thermal state*; and
- 3.5.32.3 *lead time* shall not exceed the lesser of:
- a. 24 for each *thermal state*; or
 - b. the *minimum generation block down-time* for the corresponding *thermal state* submitted in accordance with section 3.5.31.
- 3.5.33 A registered market participant for a dispatchable generation resource that is a non-quick start resource and is not a nuclear generation resource, shall submit *ramp up energy to minimum loading point*, consisting of its *ramp hours to minimum loading point* and its corresponding *energy per ramp hour*, for each *thermal state*. *Ramp up energy to minimum loading point* shall be submitted only in accordance with this section:

- 3.5.33.1 *Ramp hours to minimum loading point* for each *thermal state* shall be a whole number greater than or equal to zero;
- 3.5.33.2 *Ramp hours to minimum loading point* shall not exceed the lesser of:
 - a. 12 for each *thermal state*; or
 - b. the *lead time* for the corresponding *thermal state* submitted in accordance with section 3.5.32.
- 3.5.33.3 The *energy per ramp hour* for each *thermal state* shall be expressed in MWhs up to one decimal place and be greater than or equal to the greater of:
 - a. 0.1; or
 - b. the *energy per ramp hour* for the previous hour for the corresponding *thermal state*, as applicable.
- 3.5.33.4 The *energy per ramp hour* for each *thermal state* shall be less than or equal to the *minimum loading point*.
- 3.5.34 Each *registered market participant* that submits an *energy offer* or *energy bid*, other than an *energy offer* or *energy bid* on a *price responsive load*, *boundary entity resource*, *self-scheduling storage resource* that intends to withdraw, or *virtual zonal resource*, shall submit at least one and up to five sets of daily ramp quantities and its corresponding ramp up and ramp down values for each *dispatch day*. Daily ramp quantities and corresponding ramp up and ramp down values shall be submitted in accordance with this section:
 - 3.5.34.1 The daily ramp quantity shall be expressed in MW to one decimal place, be greater than 0.0 MW and increase monotonically;
 - 3.5.34.2 The daily ramp quantity shall constitute the maximum MW quantity at which the corresponding ramp up and ramp down values apply;
 - 3.5.34.3 The last daily ramp quantity shall be greater than or equal to the maximum *offer* quantity submitted for the *dispatch day*, and
 - 3.5.34.4 The daily ramp up and ramp down values in each such set shall be expressed in MW/minute to one decimal place, be greater than 0.0 MW/minute and be less than or equal to the daily maximum *offer* or *bid* ramp rate, as applicable, specified during the registration process in accordance with section 2.2.

- 3.5.35 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource* shall submit a *thermal state*.

3.6 Operating Reserve Offers

- 3.6.0 A *registered market participant* may submit an *offer* to provide *operating reserve* from an eligible *dispatchable generation resource*, a *dispatchable load*, a *dispatchable electricity storage resource* or a *boundary entity resource*, as applicable, in accordance with MR Ch.5 s.4.5.1.

- 3.6.1 A *registered market participant* may not submit, for any *resource*, more than one *offer* to provide each class of *operating reserve* in any *dispatch hour*.

- 3.6.2 Each submitted *offer* to provide *operating reserve* must contain at least two and may contain up to five *price-quantity pairs*. The price in each such *price-quantity pair* shall be not more than the *maximum operating reserve price* and not less than zero and shall be expressed in dollars and whole cents per MW. The quantity in each such *price-quantity pair* shall:

3.6.2.1 in the case of a *resource* other than a *boundary entity resource*, be expressed in MW to one decimal place and shall not be less than 0.0 MW; or

3.6.2.2 in the case of a *boundary entity resource*, be expressed in whole MW and shall not be less than 0 MW.

The quantity in the first *price-quantity pair* shall be 0.0 MW (or 0.0 MWh/hour) or 0 MW (or 0 MWh/hour) as applicable. The price in the second *price-quantity pair* shall be the same as the price in the first *price-quantity pair*.

- 3.6.3 Each *offer* to provide *operating reserve* shall be accompanied by a corresponding *energy offer* or *energy bid* for at least the same MW quantity *offered* for *operating reserve*.

- 3.6.4 *Offers* to supply *operating reserve* shall be submitted in such form as may be specified by the *IESO*, which form shall require, at a minimum, provision of all of the information specified in Appendix 7.3, except where the *IESO* specifies an alternative means and/or an alternative simplified form pursuant to section 3.1.2.3.

- 3.6.5 Each *offer* to provide *operating reserve* associated with a *dispatchable generation resource* or *dispatchable electricity storage resource* that proposes to inject *energy* shall contain a *reserve loading point* for each applicable class of *operating reserve offered*.

- 3.6.6 A *registered market participant* for a *dispatchable generation resource* or a *dispatchable electricity storage resource* shall not submit an *offer* to provide *operating reserve* if the *registered market participant* has estimated, in accordance with sections 3.5.9.2, that its *resource* cannot be scheduled to a quantity greater than or equal to its *reserve loading point* or is otherwise unable to provide the *operating reserve*.
- 3.6.7 A *registered market participant* for a *dispatchable generation resource* or a *dispatchable electricity storage resource* shall withdraw an *offer* to provide *operating reserve* as soon as practicable, if, for any *dispatch hour* in the current *pre-dispatch schedule*, the *resource* cannot provide the scheduled *operating reserve* because the *resource's pre-dispatch schedule* for *energy* is less than its *reserve loading point*.

3.7 Self-Scheduling Generation Resources

- 3.7.1 A *registered market participant* for a *self-scheduling generation resource* shall submit *dispatch data* for the *day-ahead market* indicating the amount of *energy* that the *registered market participant* reasonably expects to be provided by that *self-scheduling generation resource* in each *dispatch hour*. Such *dispatch data* shall:
- 3.7.1.1 be submitted to the *IESO* in such form as may be specified by the *IESO* by providing, at a minimum, the information specified in Appendix 7.1; and
 - 3.7.1.2 comply with section 3.4.4.
- 3.7.2 A *registered market participant* for a *self-scheduling generation resource* associated with a *cogeneration facility* or an *enhanced combined cycle facility* shall ensure its *facility* operates in accordance with its *dispatch data* within the tolerances for updating *dispatch data* outlined in section 3.3.8.

3.8 Self-Scheduling Electricity Storage Resources

- 3.8.1 A *registered market participant* for a *self-scheduling electricity storage resource* shall submit *dispatch data* in the *day-ahead market* indicating the amount of *energy* that the *registered market participant* reasonably expects to be injected or withdrawn by that *self-scheduling electricity storage resource* in each *dispatch hour*. Such *dispatch data* shall:
- 3.8.1.1 be submitted to the *IESO* in such form as may be specified by the *IESO* by providing, at a minimum, the information specified in Appendix 7.1 and 7.2; and

- 3.8.1.2 in the case of a *self-scheduling electricity storage resource* that intends to inject, comply with section 3.4.6, and in the case of a *self-scheduling electricity storage resource* that intends to withdraw, comply with section 3.4.7.

3.9 Intermittent Generation Resources

- 3.9.1 A *registered market participant* for an *intermittent generation resource* shall submit *dispatch data* for the *day-ahead market* indicating its best forecast of the amount of *energy* that the *intermittent generation resource* will inject in each *dispatch hour*. Such *dispatch data* shall:
 - 3.9.1.1 be submitted to the *IESO* in such form as may be specified by the *IESO* by providing, at a minimum, the information specified in Appendix 7.1; and
 - 3.9.1.2 comply with section 3.4.4.

3.10 Virtual Zonal Resources

- 3.10.1 A *virtual trader* for a *virtual zonal resource* shall submit an *energy offer* or *bid* in the *day-ahead market* in accordance with the following requirements, in addition to the applicable requirements provided by sections 3.4 and 3.5:
 - 3.10.1.1 Each *energy offer* or *bid* shall be submitted to the *IESO* by providing, at a minimum, the information specified in Appendix 7.1 and 7.2, as applicable;
 - 3.10.1.2 Each quantity in a subsequent *price-quantity pair* shall be at least 1.0 MW greater than the previous quantity;
 - 3.10.1.3 The largest *energy* quantity in any *dispatch hour* shall not exceed the *IESO*-determined *virtual transaction offer* or *bid* quantity limit established in accordance with section 1.6.3;
 - 3.10.1.4 The *virtual trader's IESO*-estimated submitted-but-not-cleared cumulative dollar exposure resulting from such *energy offer* or *bid* shall not exceed the *virtual trader's trading limit* for *virtual transactions*;
 - 3.10.1.5 The number of *price-quantity pairs* submitted by a *virtual trader* on all *virtual zonal resources* for each *dispatch day* shall not exceed the *virtual transaction energy lamination volume limit* established in accordance with section 1.6.3; and

- 3.10.1.6 The absolute value of the sum of the *energy bid* and *offer* quantities submitted by a *virtual trader* on all *virtual zonal resources* for each *dispatch day* shall not exceed the *virtual trader's maximum daily trading limit*.

3.11 Price Responsive Loads

- 3.11.1 A *registered market participant* for a *price responsive load* that intends to consume *energy* in the *real-time market* shall submit an *energy bid* in the *day-ahead market*. Such *dispatch data* shall:
 - 3.11.1.1 be submitted to the *IESO* in such form as may be specified by the *IESO*, by providing, at a minimum, the information specified in Appendix 7.2; and
 - 3.11.1.2 comply with section 3.4.7.
- 3.11.2 For a set of *load equipment* that is associated with both a *price responsive load* and an *hourly demand response resource*, the sum of the maximum *bid* quantities submitted on each such *price responsive load* and *hourly demand response resource* shall not exceed the maximum quantity permitted under 3.5.9.1 for the *price responsive load*.

3.12 Transmission System Information

- 3.12.1 Each *transmitter* whose *transmission system* is part of the *IESO-controlled grid* shall provide the *IESO* with the *transmission system* information described in Appendix 7.4 in such form as the *IESO* may specify.
- 3.12.2 Each *transmitter* referred to in section 3.12.1 shall update the information described in Appendix 7.4 so that it is current at:
 - 3.12.2.1 15:00 EST on the day which is two days prior to the relevant *dispatch day*;
 - 3.12.2.2 05:00 EST on the day prior to the relevant *dispatch day*;
 - 3.12.2.3 10:00 EPT on the day prior to the relevant *dispatch day*; and
 - 3.12.2.4 any time subsequent to 10:00 EPT on the day prior to the relevant *dispatch day* up to the beginning of the relevant *dispatch hour* if there is a material change in the information required by this section.

3A. The Scheduling Process

3A.1 Information Used by the IESO to Determine Schedules and Prices

- 3A.1.1 The *IESO* shall determine a random daily *dispatch* order for *variable generators* that are *registered market participants* in accordance with the applicable *market manual*.
- 3A.1.2 The *IESO* shall represent power flow relationships between locations on the *IESO-controlled grid* and between the *IESO control area* and adjoining *control areas* for use in Appendices 7.5, 7.5A, 7.6.
- 3A.1.3 The *IESO* shall use an *IESO-controlled grid model*, with constraints for *interconnections* represented as *inertie* limits for each *inertie zone* or multiple *inertie zones*.
- 3A.1.4 Limits on *inertie* flows between the *integrated power system* and neighbouring *transmission systems* shall be based on:
- 3A.1.4.1 a simple model that assumes that each *inertie meter* is *connected* to an isolated *inertie zone* by a single transmission line;
 - 3A.1.4.2 the *IESO's* best estimate of the maximum flow on the single transmission line to each *inertie zone*, given the status of the neighbouring *transmission systems* and expected or actual unscheduled flows (including as unscheduled flows any flows planned by the *IESO* to balance interchange accounts with other *control area operators*). The *IESO's* best estimate of the maximum flow on the single transmission line to an *inertie zone* may reflect the *integrated power system's* limited capability to supply and export *energy* to an *inertie zone* and applicable neighbouring *transmission system* without scheduling imported *energy* to supply the exported *energy*; and
 - 3A.1.4.3 a net *interchange scheduling* limit to represent the *integrated power system's* ability to respond to hourly *interchange schedule* deviations and maintain the *reliability* of the *IESO-controlled grid*.
- 3A.1.5 Constraints on the use of the *IESO-controlled grid* shall be determined by the *IESO* as necessary to maintain *reliable* system operations, which shall include, at a minimum, the following:
- 3A.1.5.1 the largest applicable *contingency events* and any increments above these required to satisfy applicable *reliability standards*;

- 3A.1.5.2 *security* constraints on identified *facilities*;
 - 3A.1.5.3 minimum requirements for each class of *operating reserve*;
 - 3A.1.5.4 the *IESO*'s commitments to neighbouring *transmission systems* for *operating reserve* and *regulation*;
 - 3A.1.5.5 the availability and need for contracted *ancillary services* and *reliability must-run resources*; and
 - 3A.1.5.6 *reliability* constraints associated with *interchange schedules* as referred to in section 3A.1.4.3.
- 3A.1.6 The *IESO* shall determine the most recent projections of forecast data and other information pertaining to the *electricity system* which relates to future periods of time, as are available to the *IESO*.
- 3A.1.7 The *IESO* shall determine the demand forecasts.

3A.2 Uses of the Pre-Dispatch Calculation Engine and Real-Time Calculation Engine

- 3A.2.1 The *IESO* shall, as far as practical, use the outputs of the *pre-dispatch calculation engine* and *real-time calculation engine* to determine the *dispatch instructions* that guide actual physical operations of the *electricity system*. However, because the *pre-dispatch calculation engine* or *real-time calculation engine* is only an approximation of a complex physical reality and may sometimes malfunction, the *IESO* may modify or override the results of the *pre-dispatch calculation engine* and the *real-time calculation engine* when issuing *dispatch instructions* pursuant to section 7.

4. The Day-Ahead Market

4.1 Day-Ahead Market Scheduling Process

- 4.1.1 The *IESO* shall determine *day-ahead schedules* in order to create financially binding obligations on the day prior to the relevant *dispatch day* to facilitate *settlement*, and to provide itself and *market participants* with advance information and projections necessary to plan the physical operation of the *electricity system*.

4.2 Determining the Day-Ahead Schedule

- 4.2.1 When determining the *day-ahead schedule* applicable to the first hour of the next *dispatch day*, the *IESO* may disregard the net *interchange schedule* limit.

4.3 Day-Ahead Market Scheduling Process Failure

- 4.3.1 If the *IESO* fails to produce valid results, the *IESO* may rerun the *day-ahead market calculation engine* before *day-ahead market expiration*. Where the *IESO* reruns the *day-ahead market calculation engine*, the *IESO* shall notify *market participants* of the rerun and of any revised inputs in accordance with the applicable *market manual*.
- 4.3.2 The *IESO* shall declare a failure of the *day-ahead market* by 15:30 EPT if it does not *publish day-ahead market* results in accordance with sections 4.7.2.
- 4.3.3 If the *IESO* declares a failure of the *day-ahead market*:
- 4.3.3.1 as soon as reasonably practicable after the failure, the *IESO* shall notify *market participants* of the failure of the *day-ahead market* for the relevant *dispatch day*, and
 - 4.3.3.2 *registered market participants* shall not be subject to sections 3.1.11, 3.1.12, and 3.1.13 for the relevant *dispatch day*.

4.4 Administration of the Day-Ahead Market Calculation Engine

- 4.4.1 The *IESO* shall administer the *day-ahead market calculation engine* in accordance with Appendix 7.5.

4.5 Information Used by the Day-Ahead Market Calculation Engine

- 4.5.1 The *IESO* shall use the most current valid information in accordance with Appendix 7.5 as inputs to the *day-ahead market calculation engine*.

4.6 Passes of the Day-Ahead Market Calculation Engine

- 4.6.1 The *day-ahead market calculation engine* shall determine commitments, schedules, and prices over a 24-hour period for *energy* and *operating reserve*. The *day-ahead market calculation engine* shall execute three passes, which shall include the:
- 4.6.1.1 Market Commitment and Market Power Mitigation Pass in accordance with section 7 of Appendix 7.5;

- 4.6.1.2 Reliability Scheduling and Commitment Pass in accordance with section 17 of Appendix 7.5; and
- 4.6.1.3 DAM Scheduling and Pricing Pass in accordance with section 19 of Appendix 7.5.

4.7 Publishing Day-Ahead Market Information

Daily information

- 4.7.1 Prior to the *day-ahead market restricted window* or as soon as practicable thereafter, the *IESO* shall *publish* the following information for the next *dispatch day*:
 - 4.7.1.1 *intertie* scheduling limits; and
 - 4.7.1.2 area *operating reserve* constraints.
- 4.7.2 As soon as practicable after the *day-ahead market calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *day-ahead market calculation engine*, the *IESO* shall *publish* the following hourly information for the *day-ahead market* results for the next *dispatch day*:
 - 4.7.2.1 any area *operating reserve* shortfalls;
 - 4.7.2.2 the forecast of expected total system load, total system losses, available *energy*, and *operating reserve* requirements;
 - 4.7.2.3 binding *security* constraints;
 - 4.7.2.4 aggregated *energy offers* and *bids* submitted and cleared for each *virtual transaction zone*;
 - 4.7.2.5 *locational marginal prices* for *energy* and *operating reserve* in the *IESO control area*;
 - 4.7.2.6 *virtual zonal prices*;
 - 4.7.2.7 the *day-ahead market Ontario zonal price*; and
 - 4.7.2.8 *locational marginal prices* for *energy* and *operating reserve* for each *intertie zone*.

Other information

- 4.7.3 The *IESO* shall *publish* the daily *dispatch* order determined randomly by the *IESO* in accordance with section 3A.1.1 for *variable generation resources* at least once each calendar month in accordance with the applicable *market manual*.
- 4.7.4 The *IESO* shall *publish* the shadow prices for each binding *security* constraint that are used to generate *locational marginal prices* by the *day-ahead market calculation engine* no sooner than five calendar days after the *trading day*.
- 4.7.5 As soon as practicable after the *day-ahead market calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *day-ahead market calculation engine*, and the conditions set out in section 10.5.1 of Appendix 7.5 are met, the *IESO* shall *publish* a summary of the hours in the study period related to global market power conditions for *energy*.

4.8 Issuing Market Participant-Specific Day-Ahead Information

- 4.8.1 As soon as practicable after the *day-ahead market calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *day-ahead market calculation engine*, the *IESO* shall issue daily the following information to any appropriate *market participants* for the applicable *resources*:
- 4.8.1.1 a summary of the *dispatch data* submitted for the *day-ahead market* for the associated *resources*;
 - 4.8.1.2 the calculated modelled data for *combined cycle plants*;
 - 4.8.1.3 *day-ahead schedules* for *energy* and *operating reserve*;
 - 4.8.1.4 *day-ahead operational commitments*;
 - 4.8.1.5 schedules to provide *contracted ancillary services*;
 - 4.8.1.6 any requirements to submit an *offer* or *bid* under a *reliability must-run contract*;
 - 4.8.1.7 the *availability declaration envelopes*; and
 - 4.8.1.8 a notice that there has been a failure of the conduct test and price impact test in accordance with section 14 of Appendix 7.5, if applicable.

5. The Pre-Dispatch Process

5.1 Pre-Dispatch Scheduling Process

- 5.1.1 The *IESO* shall determine *pre-dispatch schedules* in order to provide itself and *market participants* with advance information and projections necessary to plan the physical operation of the *electricity system*.
- 5.1.2 The *IESO* shall prepare a revised *pre-dispatch schedule* for each *dispatch day* whenever the *IESO* determines that changed circumstances have made the previous *pre-dispatch schedule* materially incorrect. A revised *pre-dispatch schedule* shall be determined only for *dispatch hours* following the changes that make it necessary.
- 5.1.3 Each time the *IESO* determines a *pre-dispatch schedule*, it shall also determine the associated projected *market prices* for *energy* and *operating reserve*.

5.2 Determining the Pre-Dispatch Schedule

- 5.2.1 The *IESO* shall use the *pre-dispatch calculation engine* with revised inputs reflecting the changes in conditions or projections to determine each *pre-dispatch schedule*.
- 5.2.2 The quantity for *energy* or *operating reserve* in a *registered market participant's pre-dispatch schedule* for a *boundary entity resource*, for any hour after the first two hours relative to the current *dispatch hour*, shall not exceed the corresponding quantity for that hour in the *registered market participant's day-ahead schedule* for the *boundary entity resource*. Notwithstanding the foregoing, the *IESO* may permit the quantity of any *energy* or *operating reserve* in a *registered market participant's pre-dispatch schedule* for a *boundary entity resource* to exceed the corresponding quantity for the hour in the *registered market participant's day-ahead schedule* for the *boundary entity resource*, in the following circumstances:
- 5.2.2.1 if the *IESO* determines that it is necessary to maintain *reliability*;
 - 5.2.2.2 if the *IESO* declares a failure of the *day-ahead market*;
 - 5.2.2.3 for *energy* scheduled to carry out (a) an *energy import* that is supported by a *system-backed capacity import resource* or a *generator-backed capacity import resource*, or (b) *called capacity export*; or

5.2.2.4 for the purpose of mitigating an over-generation condition.

5.2.3 Subject to sections 10.3.1 and 11.4.1, the *IESO* shall ensure that the scheduled output for a *resource* will meet or exceed its *minimum loading point* for all hours of its *day-ahead operational commitment*, or previous *pre-dispatch operational commitment* in future iterations of the *pre-dispatch schedule* in accordance with section 4.3.6 of Appendix 7.5A.

5.3 Pre-Dispatch Scheduling Process Failure

5.3.1 If the *IESO* fails to produce valid results, the *IESO* may revise inputs to the *real-time calculation engine* as it considers appropriate based on the best available information, which may include but is not limited to:

5.3.1.1 the most recent valid *pre-dispatch schedule*; or

5.3.1.2 the most recent valid *day-ahead schedule*.

5.3.2 If the *IESO* fails to produce valid results, the *IESO* may direct and instruct *resources* to carry out actions consistent with the objectives of the *pre-dispatch process*, based on the best available information. Without limiting the generality of the foregoing, the *IESO* may issue *start-up notices*, notices of decommitment, and *pre-dispatch operational commitments*.

5.4 Administration of the Pre-Dispatch Calculation Engine

5.4.1 The *IESO* shall administer the *pre-dispatch calculation engine* in accordance with Appendix 7.5A.

5.5 Information Used by the Pre-Dispatch Calculation Engine

5.5.1 The *IESO* shall use the most current valid information in accordance with Appendix 7.5A and the applicable *market manuals* as inputs to the *pre-dispatch calculation engine*.

5.6 Passes of the Pre-Dispatch Calculation Engine

5.6.1 The *pre-dispatch calculation engine* shall determine commitments, schedules and prices over the pre-dispatch look-ahead period for *energy* and *operating reserve* in accordance with section 2.1 of Appendix 7.5A. The *pre-dispatch calculation engine* shall execute the Pre-Dispatch Scheduling Process Pass as described in section 7 of Appendix 7.5A.

5.7 Publishing Pre-Dispatch Information

Hourly Information

- 5.7.1 As soon as practicable after the *pre-dispatch calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *pre-dispatch calculation engine*, the *IESO* shall *publish* hourly the following information in respect of the *pre-dispatch process*:
- 5.7.1.1 *locational marginal prices* for *energy* and *operating reserve* in the *IESO control area*;
 - 5.7.1.2 *virtual zonal prices*;
 - 5.7.1.3 the pre-dispatch *Ontario zonal price*;
 - 5.7.1.4 *locational marginal prices* for *energy* and *operating reserve* for each *intertie zone*;
 - 5.7.1.5 the forecast of expected total system load, total system losses, available *energy*, and *operating reserve* requirements for the forecast period;
 - 5.7.1.6 any area *operating reserve* shortfalls;
 - 5.7.1.7 a list of the network constraints and *security* constraints that affected the *pre-dispatch schedule*;
 - 5.7.1.8 area *operating reserve* constraints; and
 - 5.7.1.9 *intertie* scheduling limits.

Daily Reports

- 5.7.2 The *IESO* shall *publish* daily the updated cumulative *locational marginal prices* for hourly *energy* and *operating reserve* in respect of the *pre-dispatch process*.

Other Information

- 5.7.3 The *IESO* shall *publish* the daily *dispatch* order determined randomly by the *IESO* in accordance with section 3A.1.1 for *variable generation resources* at least once each calendar month in accordance with the applicable *market manual*.
- 5.7.4 The *IESO* shall *publish* a summary of the hours in the day prior to the relevant *dispatch day* related to global market power conditions for *energy* that meet the conditions in section 10.5.1 of Appendix 7.5A on the day following the relevant *dispatch day*.

5.8 Issuing Market Participant-Specific Pre-Dispatch Information

- 5.8.1 The most recently issued *pre-dispatch schedule* shall supersede all previous *pre-dispatch schedules* for the same *dispatch hours*.

Hourly Information

- 5.8.2 As soon as practicable after the *pre-dispatch calculation engine* produces valid results, and, for the avoidance of doubt, there is not a failure of the *pre-dispatch calculation engine*, the *IESO* shall issue hourly the following information in respect of the *pre-dispatch process* to any appropriate *market participants* for the applicable *resources*:
- 5.8.2.1 the *interchange schedules* for *energy* and *operating reserve*;
 - 5.8.2.2 *extended pre-dispatch operational commitments*;
 - 5.8.2.3 the *pre-dispatch schedules* for *energy* and *operating reserve*;
 - 5.8.2.4 *stand-alone pre-dispatch operational commitments*;
 - 5.8.2.5 *advanced pre-dispatch operational commitments*;
 - 5.8.2.6 the *minimum generation block down-times* used by the *pre-dispatch calculation engine* to infer the *thermal state*;
 - 5.8.2.7 for each *dispatch hour*, the aggregate *reliability must-run resources* that the *IESO* has directed to submit *offers* or *bids*;
 - 5.8.2.8 schedules to provide *contracted ancillary services*;
 - 5.8.2.9 any requirements to submit an *offer* or *bid* under a *reliability must-run contract*;
 - 5.8.2.10 the calculated modelled data for *combined cycle plants*;
 - 5.8.2.11 a notice that there has been a failure of the conduct test and price impact test in accordance with section 14 of Appendix 7.5A, if applicable;
 - 5.8.2.12 the cumulative *energy* schedules relative to the *minimum daily energy limit* and *maximum daily energy limit*; and
 - 5.8.2.13 the actual and forecast number of starts.

Other Information

- 5.8.3 The *IESO* shall issue to any appropriate *market participants* as soon as practicable, the approval or rejection of an *availability declaration envelope* expansion request pursuant to section 3.1.14.

6. The Real-Time Market

6.1 Real-Time Market Scheduling Process

- 6.1.1 The *IESO* shall determine *real-time schedules* and use these as the primary determinant for the physical operation of *resources* specified in section 7.1.1A.
- 6.1.2 The *IESO* shall determine a *real-time schedule*, for *dispatchable generation resources*, *dispatchable electricity storage resources*, and *dispatchable loads*, for every *dispatch interval* two minutes before the *dispatch interval* to which it applies.
- 6.1.3 The *IESO* shall determine, for a *registered market participant*, the *real-time schedule* for a *boundary entity resource*, consisting of an *interchange schedule* for each *dispatch hour* using the outcome of the *pre-dispatch schedule* determined as at the preceding *dispatch hour* and modified as required by the *IESO*.
- 6.1.4 Where the *IESO* modifies an *interchange schedule* during the *dispatch hour*, it shall assign an *interchange schedule* value for each *dispatch interval* of the impacted *dispatch hour* to reflect any modifications.

6.2 Determining the Real-Time Schedule

- 6.2.1 The *IESO* shall use the information described in greater detail in the applicable *market manual* and Appendix 7.6 to determine a *real-time schedule* for each *dispatch interval* as follows:
- 6.2.1.1 *interchange schedule data* shall be input as constant values for the given *dispatch hour* unless otherwise specified by the *IESO* and shall be derived in accordance with the outputs of *the pre-dispatch calculation engine* for each *dispatch hour* as determined under Appendix 7.5A;
- 6.2.1.2 *inertie* flows at the beginning of each *dispatch interval* shall be set at the *IESO's* best estimate of their actual values, as determined from real-time system data or applicable *interchange schedules* to reflect actual unscheduled flows; and

6.2.1.3 *intertie* flows at the end of each *dispatch interval* shall be set at the value ascribed to such flows in the relevant *interchange schedule*.

6.3 Administration of the Real-Time Calculation Engine

6.3.1 The *IESO* shall administer the *real-time calculation engine* in accordance with Appendix 7.6.

6.4 Information Used by the Real-Time Calculation Engine

6.4.1 The *IESO* shall use the most current valid information in accordance with Appendix 7.6 and the applicable *market manuals* as inputs to the *real-time calculation engine*.

6.5 Passes of the Real-Time Calculation Engine

6.5.1 The *real-time calculation engine* shall determine schedules and prices over the real-time look-ahead period for *energy* and *operating reserve*. The *real-time calculation engine* shall execute the Real-Time Scheduling and Pricing Pass as described in section 7 of Appendix 7.6;

6.6 Publishing Real-Time Information

Five-minute Information

6.6.1 As soon as practicable after the *real-time calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *real-time calculation engine*, the *IESO* shall *publish* the following information:

6.6.1.1 *locational marginal prices* for *energy* and *operating reserve* in the *IESO control area*;

6.6.1.2 *virtual zonal prices*;

6.6.1.3 the *real-time market Ontario zonal price*;

6.6.1.4 *locational marginal prices* for *energy* and *operating reserve* for each *intertie zone*; and

6.6.1.5 the total *energy* and *operating reserve* in *real-time schedules*, the total system load and total system losses, and Ontario *demand*.

Hourly Information

- 6.6.2 As soon as practicable after the start of the next *dispatch hour* after the *real-time calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *real-time calculation engine*, the *IESO* shall *publish* the following information for each *dispatch interval* of that *dispatch hour*:
- 6.6.2.1 any area *operating reserve* shortfalls;
 - 6.6.2.2 a list of network and *security* constraints that affected the *real-time schedule*;
 - 6.6.2.3 the total import and export schedules and actual flows of *energy* between the *IESO-controlled grid* and each *intertie zone*; and
 - 6.6.2.4 total *operating reserve* scheduled, and total *energy* from such *operating reserve*, by area.
- 6.6.3 The *IESO* shall, within one hour after each *dispatch hour*, *publish* information concerning system results and events during that *dispatch hour*. This information shall include, but is not limited to:
- 6.6.3.1 transmission capacity between the *IESO-controlled grid* and each *intertie zone*; and
 - 6.6.3.2 any *outages* of transmission *facilities*.

Other information

- 6.6.4 The *IESO* shall *publish* the shadow prices for the binding constraints that are used to generate *locational marginal prices* by the *real-time calculation engine* no sooner than five days after the *trading day*.

Monthly Reports

- 6.6.5 The *IESO* shall no less than once in each calendar month, *publish* a report listing and giving reasons for all significant differences between *dispatch instructions* issued and the results of the *real-time calculation engine*.
- 6.6.6 The *IESO* shall *publish* the daily *dispatch* order determined randomly by the *IESO* in accordance with section 3A.1.1 for *variable generation resources* at least once each calendar month in accordance with the applicable *market manual*.

6.7 Issuing Market Participant-Specific Real-Time Information

Five-minute Information

6.7.1 As soon as practicable after the *real-time calculation engine* produces valid results, and for the avoidance of doubt, there is not a failure of the *real-time calculation engine*, the *IESO* shall issue:

6.7.1.1 *real-time schedules* for *energy* and *operating reserve* for each *dispatch interval*; and

6.7.1.2 the schedule to provide *contracted ancillary services*.

Hourly Information

6.7.2 The *IESO* shall, within one hour after each *dispatch hour*, issue the following information to any appropriate *market participants* for the applicable *resources*:

6.7.2.1 a summary of *dispatch instructions* for that *dispatch hour* related to *energy* and *operating reserve*; and

6.7.2.2 the calculated modelled data for *combined cycle plants* used by the *real-time calculation engine*.

6.7.3 For each *boundary entity resource* in respect of which the *dispatch instructions* for a given *dispatch hour* provides for the *dispatch* of more than 0 MW or for a reduction to 0 MW relative to the previous *dispatch hour*, the *IESO* shall, as soon as practical and consistent with relevant *reliability standards*, but no later than the start of the *dispatch hour* to which it relates, issue the following information for each such *boundary entity resource* to the appropriate *registered market participant* for that *boundary entity resource*:

6.7.3.1 the *interchange schedule* for *energy* and *operating reserve* for that *resource*; and

6.7.3.2 any request of that *resource* to submit an *offer* or *bid* under a *reliability must-run contract* and the schedule to provide *contracted ancillary services*.

Daily Information

6.7.4 The *IESO* shall issue daily to any appropriate *market participants*, following the *dispatch day*, the summary of the *dispatch data* used by the *real-time calculation engine*.

7. IESO Dispatch Instructions

7.1 Purpose and Timing of Dispatch Instructions

- 7.1.1 The *IESO* shall determine *dispatch instructions* for each *resource* as described in this section 7, as the primary means of coordinating the real-time operation of the *electricity system*.
- 7.1.1A The *IESO* shall only issue *dispatch instructions* for a *physical service* to *dispatchable generation resources, dispatchable loads, or dispatchable storage resources*, and, to the extent authorized by the *market rules, resources* other than *boundary entity resources* for a given *dispatch interval* when there is a change in the quantity of a *physical service* to be scheduled from that *resource* during that *dispatch interval* relative to the last *dispatch instruction* issued to the *resource* and with which the *registered market participant* has confirmed compliance with the last *dispatch instruction* in accordance with section 7.1.2 and 7.1.2A
- 7.1.1B Where the *IESO*:
- 7.1.1B.1 is not required to issue a *dispatch instruction* to a *resource* specified in section 7.1.1A for a given *dispatch interval* by virtue of section 7.1.1A or 7.2.1A; or
- 7.1.1B.2 for any reason fails to issue a *dispatch instruction* to a *resource* specified in section 7.1.1A for a given *dispatch interval*,
- subject to section 7.1.1B1, the last *dispatch instruction* issued to the *resource* and with which the *registered market participant* has confirmed compliance in accordance with sections 7.1.2 and 7.1.2A shall, for all purposes under these *market rules* but subject to section 7.1.4 and 7.4.3, be deemed to be the *dispatch instruction* issued for that *dispatch interval* for that *resource*.
- 7.1.1B1 Section 7.1.1B shall apply until the *registered market participant* for a *variable generation resource* is issued a *release notification* for that *resource*.
- 7.1.1C Notwithstanding the identification of a portion of the *energy* to be consumed by a *dispatchable load* as a *non-dispatchable load* under section 3.3.3.1, the *IESO* shall issue *dispatch instructions* in accordance with the applicable *market manual* to that *resource* including that portion that has been identified pursuant to section 3.3.3.1.
- 7.1.2 Subject to section 7.1.1A, the *IESO* shall issue *dispatch instructions* for each *resource* specified in section 7.1.1A, for which a *dispatch instruction* is required

no later than the start of each *dispatch interval* or, where section 7.1.4 or 7.4.3 applies, within a *dispatch interval*. The *IESO* shall:

7.1.2.1 issue such *dispatch instructions* using the systems and protocols defined in the applicable *market manual*; and

7.1.2.2 record and time-stamp all such *dispatch instructions*, store such records for at least seven years and make such records available for purposes of audit and dispute resolution in accordance with these *market rules*.

7.1.2A Each *registered market participant* shall:

7.1.2A.1 acknowledge receipt of; and

7.1.2A.2 confirm its intention to comply or not to comply with,

each *dispatch instruction* issued to it in accordance with section 7.1.2 in respect of each of its *resources*, using the systems and protocols defined in the applicable *market manual* and within the time required by such *market manual*.

7.1.2A1 The *IESO* shall issue a *release notification* to a *registered market participant* for a *variable generation resource* if the *resource* is not required to be at or below forecasted output. Each *registered market participant* for a *variable generation resource* shall acknowledge receipt of each *release notification* using the systems and protocols defined in the applicable *market manual* and within the time required by such *market manual*.

7.1.2B Confirmation by a *registered market participant* of its intention not to comply with a *dispatch instruction* pursuant to section 7.1.2A shall constitute non-compliance with the *dispatch instruction* by the *registered market participant* for all purposes under these *market rules*, including but not limited to section 7.5.

7.1.2C Where a *registered market participant* associated with a *dispatchable load* has identified all or a portion of the *energy* to be consumed at that *resource* as *non-dispatchable load* under section 3.3.3.1 and the *IESO* has issued a *dispatch instruction* requiring a reduction of such non-dispatchable consumption pursuant to section 7.1.1C, the *registered market participant* shall confirm its intention not to comply with each such *dispatch instruction* in accordance with section 7.1.2A and the applicable *market manual*.

7.1.2D Confirmation by a *registered market participant* of its intention not to comply with a *dispatch instruction* pursuant to section 7.1.2C shall not constitute non-compliance with the *dispatch instruction* by the *registered market participant* for all purposes under these *market rules*, including but not limited to section 7.5.

- 7.1.3 The *IESO* shall issue *dispatch instructions*, for greater certainty, in the form of *interchange schedules*, for each *boundary entity resource*, for which a *dispatch instruction* is required prior to each *dispatch hour*. The *IESO* shall:
- 7.1.3.1 [Intentionally left blank]
 - 7.1.3.2 issue such *dispatch instructions* using the systems and protocols defined in the applicable *market manual*; and
 - 7.1.3.3 record and time-stamp all such *dispatch instructions*, store such records for at least seven years and make such records available for purposes of audit and dispute resolution in accordance with these *market rules*.
- 7.1.3A Each *registered market participant* shall acknowledge receipt of each *dispatch instruction* issued to it in accordance with section 7.1.3 in respect of each of its *boundary entity resources* using the systems and protocols defined in the applicable *market manual* and within the time required by such *market manual*.
- 7.1.4 The *IESO* may issue *dispatch instructions* within the *dispatch interval*, instructing any *resource* with a valid *energy offer* or *bid*, to increase or decrease *energy* production or consumption as specified in its *offers* or *bids* for *energy*. When a *dispatch instruction* is issued within a *dispatch interval* pursuant to this section 7.1.4, the last *dispatch instruction* for *energy* or each class of *operating reserve*, as the case may be, shall be the sole *dispatch instruction* used for *settlement* purposes for that *dispatch interval*.
- 7.1.5 Where a *contingency event* is occurring or has occurred, the *IESO* may temporarily cease issuing *dispatch instructions* in the manner otherwise required by section 7.1.2. In such cases, *registered market participants* shall comply with section 7.1.1B or 7.4.3, as the case may be.
- 7.1.6 The *IESO* shall, on a reasonable efforts basis, determine and issue *dispatch* advisories for each *dispatchable resource*, for information purposes only. *Dispatch* advisories are determined and issued every 5 minutes to each *dispatchable resource* to provide an indication of potential future *dispatch instructions* and *operating reserve* schedules.

7.2 Information Used to Determine Dispatch Instructions

- 7.2.1 Subject to 7.2.1A, the *IESO* shall use reasonable efforts to ensure that the *dispatch instructions* issued with respect to each *resource* specified in section 7.1.1A, for each *dispatch interval*, are consistent with the most recent *real-time schedule* for that *resource* and *dispatch interval*.

- 7.2.1A The *IESO* shall not be required to issue *dispatch instructions*, or, in the event that the *IESO* does issue *dispatch instructions*, shall not be required to satisfy the requirements of section 7.2.1 if:
- 7.2.1A.1 the *security* and *adequacy* of the system would be endangered by implementing the most recent *real-time schedule*;
 - 7.2.1A.2 the *real-time calculation engine* has failed, or has produced a *real-time schedule* that is clearly and materially in error;
 - 7.2.1A.3 material changes have occurred subsequent to the *IESO's* determination of the most recent *real-time schedule*, including a failure of an element of a *transmission system* or failure of a *resource* to follow *dispatch instructions*; or
 - 7.2.1A.4 the operation of all or part of the *IESO-administered markets* has been suspended pursuant to section 13.
- 7.2.2 If the *IESO* anticipates that an over-generation or an under-generation condition may occur, it shall issue advisory notices in accordance with section 12.1 but shall continue using the procedures described in sections 4, 5 and 6 to determine *day-ahead schedules*, *pre-dispatch schedules*, *real-time schedules* and the associated *market prices*.
- 7.2.3 If the *IESO* determines prior to issuing *dispatch instructions* that the market responses to the *market prices* will be sufficient to eliminate the over-generation or under-generation condition, the *IESO* shall take no *emergency* action and shall issue advisory notices so indicating.
- 7.2.4 If the *IESO* determines prior to issuing *dispatch instructions* that market responses will not eliminate the over-generation or under-generation condition, it shall declare an *emergency operating state* to resolve the conditions in accordance with section 7.7.
- 7.2.5 Subject to section 7.2.5A, the *IESO* shall use reasonable efforts to ensure that the *dispatch instructions* issued with respect to each *boundary entity resource*, for each *dispatch hour* are consistent with the *pre-dispatch schedule* for that *dispatch hour* as determined in accordance with section 6.1.3.
- 7.2.5A The *IESO* shall not be required to issue *dispatch instructions*, or, in the event that the *IESO* does issue *dispatch instructions*, shall not be required to satisfy the requirements of section 7.2.5 if:
- 7.2.5A.1 the *security* and *adequacy* of the system would be endangered by implementing the *pre-dispatch schedule*;

- 7.2.5A.2 the *pre-dispatch calculation engine* has failed, or has produced a *pre-dispatch schedule* that is clearly and materially in error;
- 7.2.5A.3 material changes have occurred subsequent to the *IESO's* determination of the *pre-dispatch schedule*, including a failure of an element of a *transmission system* or failure of a *resource* to follow *dispatch instructions*;
- 7.2.5A.4 the operation of all or part of the *IESO-administered markets* has been suspended pursuant to section 13;
- 7.2.5A.5 an external *control area operator* calls a *called capacity export* in accordance with section 20; or
- 7.2.5A.6 the *interchange schedule* violates the net *interchange schedule* limit.

7.3 The Content of Dispatch Instructions

- 7.3.1 The *IESO* shall, subject to section 7.1.1A, issue *dispatch instructions* for each *dispatch interval* to each *resource* specified in section 7.1.1A indicating for that *dispatch interval*:
 - 7.3.1.1 the rate at which *energy* is to be injected into or withdrawn from the *IESO-controlled grid* (in MW) at the end of the *dispatch interval*;
 - 7.3.1.2 the amount of each class of *operating reserve* that is to be in a condition to respond to a *dispatch instruction* issued pursuant to section 7.4.3 calling for additional *energy* production or reductions of *energy* withdrawals; and
 - 7.3.1.3 the amount of *reactive support* and *regulation* that is to be provided under *contracted ancillary service* contracts or *reliability must-run contracts* or as a consequence of any requirement to provide *reactive support* and *regulation* which derives from the application of these *market rules*.
- 7.3.2 The *dispatch instructions* for any *resource* specified in section 7.1.1A shall:
 - 7.3.2.1 be consistent with the current operating status of that *resource* and with any operational constraints described in the most recent *dispatch data* submitted by the *registered market participant* for that *resource*; and
 - 7.3.2.2 be used by the *IESO* for the purpose of declaring the *resource* as non-conforming in accordance with section 7.5.4.

- 7.3.3 [Intentionally left blank – section deleted]
- 7.3.4 The *IESO* shall issue *dispatch* instructions for each *dispatch hour* to each *boundary entity resource*, indicating for that *dispatch hour*:
- 7.3.4.1 the rate at which *energy* is to be injected into or withdrawn from the *IESO-controlled grid* (in minutes) from the specified *intertie zone*, which rate shall be consistent with all relevant *reliability standards*;
 - 7.3.4.2 the amount of each class of *operating reserve* that is scheduled and the ramp rates associated with the *energy* if called on; and
 - 7.3.4.3 the amount of *reactive support* and *regulation* that is to be provided under *reliability must-run contracts* or as a consequence of any requirement to provide same which derives from the application of these *market rules*.
- 7.3.5 The *dispatch instructions* for any *boundary entity resource* shall:
- 7.3.5.1 be consistent with the current *dispatch data* for that *resource* and with any *interconnection* limitations associated with the *resource*.

7.4 IESO Dispatch of Operating Reserve

- 7.4.1 The *IESO* shall:
- 7.4.1.1 subject to section 7.1.1A, issue to each *resource* specified in section 7.1.1A, which has made an *offer* for the delivery of *operating reserve* for a particular *dispatch hour*, *dispatch instructions* for each *dispatch interval* consistent with the results of the *real-time calculation engine* and the procedures detailed in section 6, instructing the *registered market participant* responsible for that *resource* as to the quantity of *operating reserve* that is to be provided by that *resource* in that *dispatch interval*; and
 - 7.4.1.2 issue to each *boundary entity resource*, which has made an *offer* for the delivery of *operating reserve* for a particular *dispatch hour*, *dispatch instructions* for that *dispatch hour* consistent with the results of the *pre-dispatch calculation engine* and the procedures detailed in section 6, instructing the *registered market participant* responsible for that *resource* as to the quantity of *operating reserve* to be provided by that *resource* in that *dispatch hour*.
- 7.4.2 Each *resource* to which section 7.4.1 applies shall maintain unused *generation capacity*, *electricity storage capacity*, or load reduction capacity during that

dispatch interval, consistent with the *dispatch instructions* issued to it under these *market rules*, so as to be able to increase *energy* production or reduce *energy* withdrawal as soon as possible upon being instructed to do so by the *IESO* pursuant to section 7.4.3.

7.4.2.1 A *market participant* shall be subject to the *operating reserve* non-accessibility charge *settlement amount* in accordance with MR Ch.9 s.3.10 if it fails to maintain unused *generation capacity*, *electricity storage capacity*, or load reduction capacity equal to or greater than its total amount of scheduled *operating reserve* during any *interval* in which it is scheduled to provide *operating reserve* but is not *dispatched* to increase *energy generation* or reduce *energy* withdrawal pursuant to section 7.4.3. The *market participant* may also be subject to compliance actions in accordance with MR Ch.3 s.6.

7.4.3 Where a *contingency event* has occurred or is occurring, the *IESO* may issue *dispatch instructions* within the *dispatch interval*, instructing a *resource* specified in section 7.1.1A, providing *operating reserve* to begin increasing *energy* production or reducing *energy* withdrawal as specified in its *offers* of *operating reserve*. *Dispatch instructions* issued in respect of a *boundary entity resource* providing *operating reserve* shall be such as to ensure that the *energy* associated with each *offer* of *operating reserve* is scheduled by the *IESO* in a manner consistent with all relevant *reliability standards* for activation of *operating reserve* and as agreed upon by the entity scheduling the resulting *energy* transfer.

7.4.4 The *IESO* shall, when *dispatching resources* providing *operating reserve* to produce *energy* pursuant to section 7.4.3, call first on the *resource* in each area that has *offered* the lowest price (in \$/MWh) for *energy* produced from scheduled *operating reserve* in that area. If such *resource* is instructed to produce *energy* but does not do so as rapidly as instructed, or if the *IESO* needs additional *energy* from *operating reserve* in that area, the *IESO* shall call upon the *resource* offering the next-lowest price for *energy* from *operating reserve*. If the *IESO* determines that calling upon *resources* in strict order of increasing price of *energy* would mean that it would be unable to respond in a timely fashion to a contingency for which the *IESO* would issue a *dispatch instruction* pursuant to section 7.4.3, the *IESO* may call upon *resources* out of such strict order but shall as far as is practical call *resources* to reflect the intent of this section 7.4.4.

7.4.5 When *operating reserves* are activated as a result of a *contingency event*, the otherwise applicable *ten-minute operating reserve* requirements shall be reduced by a corresponding amount and shall subsequently be recovered to pre-contingency levels in a manner consistent with MR Ch.5 ss.4.5.10 and 4.5.21.

7.4.6 A *market participant* that failed to maintain unused *generation* (or load reduction) *capacity* equal to or greater than their total amount of scheduled

operating reserve shall be subject to the real-time make-whole payment reversal *settlement amount* and the real-time *generator offer* guarantee claw back *settlement amount* in accordance with MR Ch.9 s.3.10.

7.5 Compliance with Dispatch Instructions

- 7.5.1 Each *registered market participant* shall ensure that each of its *resources* complies with *dispatch instructions* issued to it under these *market rules*. Without limiting the generality of MR Ch.3 s.6.2, non-compliance with *dispatch instructions* other than for the reasons referred to in section 7.5.3 shall be a breach of the *market rules* and may be sanctioned in accordance with MR Ch.3 s.6.2 and with this section 7.5.
- 7.5.2 A *registered market participant* that expects its *resource* specified in section 7.1.1A, to operate in a manner that, for any reason, differs materially from the *dispatch instructions* issued to it in accordance with these *market rules* shall so notify the *IESO* as soon as possible. The *IESO* shall *publish* guidelines defining when a difference is material and how notice shall be provided for the purposes of this section 7.5.2 and of section 7.5.3.
- 7.5.3 Compliance with a *dispatch instruction* for a *resource* specified in section 7.1.1A, is not required if such compliance would endanger the safety of any person, damage equipment, or violate any *applicable law*. A *market participant* that departs from *dispatch instructions* for any such reason shall so notify the *IESO* in accordance with section 7.5.2.
- 7.5.4 If failure by a *resource* specified in section 7.1.1A, to comply with a dispatch instruction endangers *electricity system reliability*, the *IESO* shall declare the *resource* to be non-conforming and shall take any actions allowed by sections 7.5.6 to 7.5.7 or any other provisions of these *market rules* which the *IESO* determines appropriate.
- 7.5.5 [Intentionally left blank – section deleted]
- 7.5.6 If the *IESO* declares a *resource* to be non-conforming under section 7.5.4:
- 7.5.6.1 the *IESO* shall require the *registered market participant* for that *resource* to explain the reason for the non-compliance and shall record the response;
 - 7.5.6.2 if the *IESO* determines that the *resource* is physically incapable of implementing the *dispatch instructions*, the *IESO* may require revision in the registration information for the non-conforming *resource*; and

- 7.5.6.3 if the *IESO* is not satisfied that the *resource* will respond to future *dispatch instructions*, the *IESO* may direct the *resource* to follow, as closely as practicable, an output or withdrawal profile specified by the *IESO*, and shall thereafter represent the *resource* as a *self-scheduling generation resource*, *self-scheduling electricity storage resource* or *non-dispatchable load* having the specified profile until the non-conforming *resource* satisfies the *IESO* that it has remedied the conditions causing the non-conformance.
- 7.5.7 Until the *registered market participant* for a non-conforming *resource* responds to the requirements of this section 7.5 to the satisfaction of the *IESO*, such *resource* shall continue to be designated as non-conforming, and such failure to respond on the part of that *registered market participant* may be referred by the *IESO* to the *market surveillance panel* at any time.
- 7.5.8 The *IESO* shall assume that a *boundary entity resource* will comply fully with all *dispatch instructions* for *energy* or *operating reserves* upon confirmation of the relevant *interchange schedule* with the appropriate scheduling entity.
- 7.5.8A A *registered market participant* associated with a *boundary entity resource* shall, other than for the bona fide and legitimate reasons referred to in section 7.5.8B, schedule *energy* and *operating reserve*, in accordance with section 6.1.3, with the appropriate scheduling entity, or scheduling entities as the case may be.
- 7.5.8B The *IESO* may take actions pursuant to MR Ch.3 s.6.6.10A and shall assess a real-time import or export failure charge as determined in MR Ch.9 s.3.7 where a *registered market participant* associated with a *boundary entity resource* fails to schedule *energy* or *operating reserve*, in accordance with section 6.1.3, with the appropriate scheduling entity, or scheduling entities as the case may be, according to the applicable *interchange schedule*, other than for bona fide and legitimate reasons as determined by the *IESO*. Bona fide and legitimate reasons shall include failures caused by actions and circumstances beyond the control of the *market participant* or due to *IESO* or external scheduling entity error or action, including those reasons specified in the applicable *market manual*.
- 7.5.9 In addition to any other sanction or consequence provided for in these *market rules*, the *IESO* may disqualify from future participation in the *operating reserve market* any *resource* that consistently fails to increase *energy* generation or reduce *energy* withdrawal when called upon in accordance with Chapter 7.

7.6 Dispatch Scheduling Errors

- 7.6.1 A *dispatch scheduling error* shall be deemed to have occurred if either:

- 7.6.1.1 an *arbitrator* determines that the *IESO* has made a *dispatch scheduling error*, or
 - 7.6.1.2 the *IESO* declares that it has made a *dispatch scheduling error*, on its own initiative, including pursuant to MR Ch.9 s.6.9 or further to a *notice of disagreement* filed or other *settlement* dispute initiated by a *market participant* pursuant to MR Ch.9 ss.6.8 or 6.10.
- 7.6.2 When a *dispatch scheduling error* has occurred, the *IESO* shall not adjust *market prices* but shall, subject to section 7.6.3 and notwithstanding MR Ch.1 s.13.1.2, be strictly liable to compensate a *market participant* for damages suffered by the *market participant* as a result of the *dispatch scheduling error*, assessed in accordance with MR Ch.1 s.13.1.4.
- 7.6.3 A *market participant* that wishes to claim compensation pursuant to section 7.6.2 shall:
- 7.6.3.1 where the *dispatch scheduling error* was determined to have been made pursuant to section 7.6.1.1, request the *arbitrator* to determine the *market participant's* entitlement to and amount of, if any, such compensation; and
 - 7.6.3.2 where the *dispatch scheduling error* was determined to have been made pursuant to section 7.6.1.2, request that the *IESO* determine the *market participant's* entitlement to and amount of, if any, such compensation,
- with the amount, if any, in either case being determined in accordance with section 7.6.4.
- 7.6.4 Any amount determined by an *arbitrator* or by the *IESO*, as the case may be, pursuant to section 7.6.3 or 7.6.5 shall be assessed in accordance with MR Ch.1 s.13.1.4 and shall only include such amount as may be required to account for *settlement amounts* outlined in MR Ch.9 ss.3.1, 3.2, 3.8, 4.7 and 4.8.
- 7.6.5 If a *market participant* wishes to dispute a determination made by the *IESO* pursuant to section 7.6.3.2, it shall submit the matter to the dispute resolution process set forth in MR Ch.3 s.2 and shall, if the good faith negotiations referred to in MR Ch.3 ss.2.5.3A and 2.5.3B fail to resolve the matter, request in the *notice of dispute* that the *arbitrator* determine the *market participant's* entitlement to the compensation referred to in section 7.6.2, the amount, if any, of such compensation or both, as the case may be.

7.7 Additional IESO Powers in Emergency and High-Risk Conditions

- 7.7.1 During real-time operations, the *IESO* is responsible for declaring an *emergency operating state* or a *high-risk operating state* under circumstances described in MR Ch.5 ss.2.3 and 2.4.
- 7.7.2 The *IESO's* primary responsibility in an *emergency operating state* or a *high-risk operating state* is to preserve system *reliability*, with a secondary responsibility to restore normal system conditions and operation of the *IESO-administered markets* as soon as practicable.
- 7.7.3 Where an *emergency operating state* or a *high-risk operating state* has been declared, the *IESO* may implement any of the actions detailed in MR Ch.5 ss.2.3, 2.4, 5.8 and 5.9.
- 7.7.4 The *IESO* may determine any additional compensation payable in respect of *physical services* acquired during an *emergency operating state* or a *high-risk operating state*.

8. Determining Market Prices and Economic Operating Points

8.1 Purpose and Timing of Determining Market Prices

- 8.1.1 The *IESO* shall use the procedures in this section 8 to determine the *market prices* for *energy* and *operating reserve* in the *IESO control area* and the *intertie zones* that are used for the market *settlement process* pursuant to the provisions of MR Ch.9.
- 8.1.2 Subject to section 8.4A, the *IESO* shall determine *market prices* for *energy* and *operating reserve* in accordance with sections 8.2 and 8.3, and *publish* such *market prices* in accordance with sections 4, 5 and 6, respectively.

8.2 Market Prices for the Day-Ahead Market and the Real-Time Market

- 8.2.1 The *IESO* shall determine *market prices* for *energy* and *operating reserve* (a) for the *day-ahead market* using the *day-ahead market calculation engine*, and (b) for the *real-time market*, using the *pre-dispatch calculation engine* and *real-time calculation engine*.

8.2.2 The *market prices* produced in accordance with section 8.2.1 may be the prices that are used for *settlement* purposes, subject to MR Ch.9 s.2.12.1.

8.3 Ex-Post Determination of Economic Operating Points

8.3.1 For the purposes of calculating *day-ahead market* and *real-time market* make-whole payment *settlement amounts* in accordance with MR Ch.9 ss.3.4 and 3.5, the *IESO* shall determine economic operating points within six calendar days of the applicable *dispatch day* in accordance with sections 8.3.2, 8.3.3 and 8.3.4.

8.3.2 For each *resource* eligible to receive a *day-ahead market* make-whole payment *settlement amount* in accordance with MR Ch.9 s.3.4.1, the *IESO* shall determine lost cost economic operating points for *energy* and *operating reserve* for each hour of the *day-ahead market* in accordance with Appendix 7.8.

8.3.3 For each *resource* eligible to receive a *real-time market* make-whole payment *settlement amount* in accordance with MR Ch.9 s.3.5.1, the *IESO* shall determine lost cost economic operating points and lost opportunity cost economic operating points for *energy* and *operating reserve* for each *dispatch interval* of the *real-time market* in accordance with Appendix 7.8.

8.3.4 If the *IESO* has established an *administrative price* in accordance with section 8.4A, the economic operating points determined in accordance with section 8.3.2 and 8.3.3 shall be calculated using the *administrative price*, as applicable.

8.4 [Intentionally left blank]

8.4A Administrative Pricing

8.4A.1 This section 8.4A applies only in respect of the establishment of *administrative prices* for *energy* and *operating reserve* for the *day-ahead market* and *real-time market*.

8.4A.2 Subject to section 8.4A.3, the *IESO* shall establish *administrative prices* for the *real-time market* and the *day-ahead market*, where applicable, within four *business days* of the affected *dispatch day* when:

8.4A.2.1 the *real-time market* for *energy* or *operating reserve* has been suspended in accordance with section 13;

8.4A.2.2 the *IESO* is unable to *publish* a *market price* for *energy* or *operating reserve* for the *real-time market* in accordance with section 8.1.2 due to a failure in or *planned outage* of the software, hardware or

communications systems that supports the operation of the *real-time calculation engine*;

8.4A.2.3 the *IESO* determines, pursuant to the price error materiality thresholds established by the *IESO*, that a *published market price* for *energy* or *operating reserve* for the *real-time market* is incorrect due to circumstances provided for in section 8.4A.3B; or

8.4A.2.4 the *IESO* determines, pursuant to the price error materiality thresholds established by the *IESO*, that a *published market price* for *energy* or *operating reserve* for the *day-ahead market* is incorrect due to circumstances provided for in section 8.4A.3C and the error is isolated to *market price* calculations or *publishing*, and has not impacted *day-ahead schedules*;

and all such *administrative prices* shall be the *market prices* for *energy* and *operating reserve* for the applicable *dispatch hour* in the *day-ahead market* or *dispatch interval* in the *real-time market* for all purposes under these *market rules*.

8.4A.3 The *IESO* is not required to establish *administrative prices* in the circumstances provided by sections 8.4A.2.3 or 8.4A.2.4 if the *IESO* is not aware of those circumstances before such time as is practicable for the *IESO* to establish *administrative prices* within four *business days* of the affected *dispatch day*.

8.4A.3A The *IESO* shall inform *market participants* as soon as practicable whenever a *published market price* is an *administrative price*.

8.4A.3B For the purposes of section 8.4A.2.3, a published *energy* or *operating reserve market price* will be subject to *administrative prices* if it is incorrect due to an input in the *real-time calculation engine* and relates to any of the following:

8.4A.3B.1 the formation of an *electrical island*

8.4A.3B.2 the loss or corruption of inputs to the *pre-dispatch calculation engine* or *real-time calculation engine* due to an:

(a) operational telemetering failure;

(b) *IESO-administered markets* software failure; or

(c) *IESO* business process failure.

8.4A.3C For the purposes of section 8.4A.2.4, a published *energy* or *operating reserve market price* will be subject to *administrative prices* if it is incorrect due to the

loss or corruption of the *day-ahead market calculation engine* data due to an *IESO* business process failure.

Administration of Prices Due to Failures or Planned Outages of Market Systems, Publication of Incorrect Prices, Implementation of an Emergency Control Action

- 8.4A.4 In circumstances where *administrative prices* are required under sections 8.4A.2.2, 8.4A.2.3, or 8.4A.2.4 the *IESO* shall use the best available *dispatch data* to establish *administrative prices* that would, to the extent practical, reflect the *market prices* that would have otherwise been produced by the *day-ahead market* or *real-time market*, but for the event causing *market prices* to be administered.
- 8.4A.5 Where the *IESO* establishes *administrative prices* pursuant to sections 8.4A.2.2, 8.4A.2.3, or 8.4A.2.4, the *market prices* for the applicable *dispatch hour* in the *day-ahead market* or *dispatch interval* in the *real-time market* shall be as the *IESO* determines appropriate consistent with the principle stated in section 8.4A.4, and shall be the *market prices* from one, or a combination of, the following methods to establish *administrative prices*:
- 8.4A.5.1 the recalculated *market prices* determined using software that replicates the applicable calculation engine;
 - 8.4A.5.2 the hourly *market prices* determined by the *day-ahead market calculation engine* that correspond to the same hour and *dispatch day* that the *IESO* is administering *real-time market prices*;
 - 8.4A.5.3 the *market prices* for an electrically similar *delivery point* or *inertie metering point* in the same *dispatch interval* where the *market price* has not been administered;
 - 8.4A.5.4 the *market prices* from the closest preceding *dispatch interval* that has not been administered, up to a maximum of 12 *dispatch intervals*;
 - 8.4A.5.5 the *market prices* from the closest subsequent *dispatch interval* that has not been administered, up to a maximum of 12 *dispatch intervals*;
or
 - 8.4A.5.6 using an hourly average *market price* for *energy* and *operating reserve* for the applicable *dispatch intervals* from the corresponding hour or hours of the four immediately preceding *business days* or *non-business days*, as the case may be, excluding those hours from any day in which an *administrative price* has been established under this section. Prices for the excluded hours shall be replaced by prices

that have not been administered under this section from the corresponding hours of the most recent earlier *business days* or non-*business days*, as the case may be. For greater certainty, where the *IESO* is determining the *administrative price* for a *business day*, it shall use the immediately preceding *business days* and where the *IESO* is determining the *administrative price* for a non-*business day*, it shall use the immediately preceding non-*business days*.

Administration of Prices Due to Market Suspension

8.4A.6 Where the *IESO* establishes *administrative prices* during a market suspension pursuant to section 8.4A.2.1, it shall establish the *administrative price* as one of the following, as the *IESO* determines appropriate:

8.4A.6.1 where *market operations* have been suspended for reasons other than a failure in the software that generates *market prices* and operations of the *IESO-controlled grid* are based to some extent on market-based information and signals, a *market price* calculated using that software; or

8.4A.6.2 where operations of the *IESO-controlled grid* are being conducted without regard to the market, for the *IESO control area* and the *intertie zones*, using the method to establish *administrative prices* detailed in section 8.4A.5.6.

Make-Whole Payments and Administrative Prices

8.4A.7 Where the *IESO* has established an *administrative price* pursuant to section 8.4A.2, the *IESO* shall determine any applicable *day-ahead market* and *real-time market* make-whole payment *settlement amounts* in accordance with MR Ch.9 ss.3.4 and 3.5 using the *administrative price*.

Conditions to Cease the Administration of Prices

8.4A.8 The *IESO* shall cease to apply *administrative prices*:

8.4A.8.1 where section 8.4A.2.1 applies, from the commencement of the first *dispatch interval* in the *dispatch hour* referred to in section 13.7.1.2;

8.4A.8.2 where section 8.4A.2.2 applies due to a failure in software, hardware or communications systems, from the commencement of the first *dispatch interval* after the failure referred to in that section has been rectified;

8.4A.8.3 where section 8.4A.2.2 applies due to a *planned outage* of software, hardware or communications systems, from the commencement of

the first *dispatch interval* after the *planned outage* referred to in that section has been completed; and

8.4A.8.4 where section 8.4A.2.3 or 8.4A.2.4 applies, from the commencement of the first *dispatch interval* after the cause of the incorrect *market prices* referred to in those sections have been corrected.

9. IESO Procurement Markets

9.1 Introduction

9.1.1 The *IESO* shall procure, primarily through contracts, certain *physical services* that are needed to maintain *reliable* system operations but that are not *offered* in the *day-ahead market* or *real-time market*. The *IESO* may also enter into contracts allowing it to direct the operations of specific *generation facilities*, *electricity storage facilities* or *load facilities* that are critical to system *reliability* under certain conditions. This section 9 describes such *physical services* and the manner in which the *IESO* shall procure them.

9.2 Definition of Contracted Ancillary Services

9.2.1 Subject to sections 9.4 and 9.5.2, the *IESO* shall procure *contracted ancillary services* through contracts between the *IESO* and *ancillary service providers* that are *registered market participants* who have demonstrated the ability to provide such *contracted ancillary services* from *facilities* or *resources* in accordance with the performance standards and other applicable requirements of MR Ch.5 s.4. *Contracted ancillary services* shall meet all applicable standards set forth in MR Ch.5 s.4 and shall be procured such as to enable the *IESO* to meet its obligations thereunder.

9.2.2 The principal *contracted ancillary services* that the *IESO* will procure pursuant to section 9.2.1 are:

9.2.2.1 *regulation*: this *ancillary service* allows total system generation to match total system load (plus losses) minute-by-minute or even second-by-second as required on an electricity grid;

9.2.2.2 *voltage control* and *reactive support*: this *ancillary service* involves the control and maintenance of prescribed voltages at specific locations, using defined reactive capacity, *energy* and manoeuvrability to support system operations. *Reactive support* is provided by *generation units*, *electricity storage units* as well as by synchronous

condensers, capacitors and other electrostatic equipment that is often owned and operated by *transmitters*; and

9.2.2.3 *black start capability*: this *ancillary service* involves *generation facilities* that are tested and/or assessed for their ability to be a *certified black start facility*, and from which the *IESO* may direct the delivery of power without assistance from the electrical system.

9.2.2.4 [Intentionally left blank – section deleted]

9.2.3 The *IESO* shall procure each *contracted ancillary service*:

9.2.3.1 in sufficient quantities and at the appropriate locations to enable the *IESO* to meet its obligations under MR Ch.5 to ensure *reliable* operation of the *electricity system*, in accordance with all applicable *reliability standards*; and

9.2.3.2 using, to the extent practicable, competitive processes appropriate to the specific technical and market characteristics of each *contracted ancillary service*, to acquire each *contracted ancillary service* at competitively determined prices.

9.3 Contracted Ancillary Service Contracts

9.3.1 The *IESO* shall enter into *contracted ancillary service* contracts with *ancillary service providers*. Such agreements shall, subject to sections 9.3.4 and 9.3.6:

9.3.1.1 [Intentionally left blank – section deleted]

9.3.1.2 compensate any *ancillary service provider* for levels of service above those required to be provided by the *connection* requirements of MR Ch.4.

9.3.2 Subject to section 9.3.6, the *IESO* shall use one or a combination of the following processes to conclude *contracted ancillary service* contracts with *ancillary service providers*:

9.3.2.1 where practical, the *IESO* shall employ a competitive tendering or negotiation process to identify multiple potential *ancillary service providers* and to determine competitive prices and other terms for the *contracted ancillary service* contracts; or

9.3.2.2 the *IESO* may negotiate *contracted ancillary service* contracts with a single potential *ancillary service provider* where the *IESO* determines that this will result in reasonable prices and other terms.

- 9.3.3 [Intentionally left blank]
- 9.3.4 The provisions of sections 9.3.1 and 9.5.1 shall be subject to any contrary provisions contained in:
- 9.3.4.1 any *licence*; or
 - 9.3.4.2 the terms of any *contracted ancillary service* contract the terms of which are required by a *licence* to be, and have been, approved by the *Ontario Energy Board*.
- 9.3.5 Each person that:
- 9.3.5.1 has entered into a *contracted ancillary service* contract with the *IESO*; and
 - 9.3.5.2 is not, at any time during the term of such *contracted ancillary service* contract, the *registered market participant* for that *facility* or *resource*,
- shall ensure that the *registered market participant* for that *facility* or *resource* complies with the provisions of the *contracted ancillary service* contract.
- 9.3.6 Where the *IESO* and the *ancillary service provider* are unable to reach agreement upon the terms and condition of a proposed *ancillary service* contract, or an amendment to an *ancillary service* contract, the matter shall be determined by the *Ontario Energy Board*.

9.4 The Effect of Grid Connection Requirements

- 9.4.1 The *IESO* may at any time direct a *facility* or *resource* to provide the level of any *ancillary service* that the *facility* or *resource* is required to provide as a condition of any *licence* or as a result of any *connection* requirements provided for in MR Ch.4.
- 9.4.2 Subject to section 9.4.4, a *facility* or *resource* shall not be entitled to compensation from the *IESO* for any *ancillary service* that must be provided pursuant to the *connection* requirements provided for in MR Ch.4 unless and until the *IESO* develops a market for such *ancillary service* that pays all providers of the *ancillary service* and/or that requires any *facility* or *resource* to pay for the failure to supply up to some standard that may be less than that attributable to the *connection* requirement.
- 9.4.3 If the *IESO* directs a *facility* or *resource* to provide a level of any *ancillary service* above the levels required by the *licence* applicable to that *facility* or *resource* or any *connection* requirements provided for in MR Ch.4 and the *facility* or *resource*

is not otherwise subject to a *contracted ancillary service* contract with the *IESO*, the *IESO* shall compensate the *facility* or *resource* for any costs, including lost opportunity costs, incurred by the *facility* or *resource* in complying with the *IESO*'s direction.

- 9.4.4 If the *IESO* directs a *facility* associated with a *generation unit* or an *electricity storage unit* to provide *reactive support* within the range required by the *connection* requirements provided for in MR Ch.4, the *IESO* shall only be required to compensate the associated *market participant* for a *generation unit* or *electricity storage unit* to the extent that the *generation unit* or *electricity storage unit* incurs additional costs, provided that such additional costs are demonstrated to the satisfaction of the *IESO* to have been incurred in order to comply with the *IESO*'s direction.
- 9.4.5 If the *IESO* directs a *facility* associated with a *generation unit* or an *electricity storage unit* to provide *reactive support* within the range required by the *connection* requirements provided for in MR Ch.4 or as stipulated in the applicable *contracted ancillary service* contract, and that *generation unit* or *electricity storage unit* has to reduce its active power output in order to comply with the *IESO*'s direction, the associated *market participant* for a *generation unit* or *electricity storage unit* shall not be entitled to a *real-time market* make-whole payment *settlement amount* for that reduction in active power output.

9.5 Payment for Ancillary Services and Recovery of Costs

- 9.5.1 Subject to sections 9.3.4 and 9.3.6, the price payable by the *IESO* under a *contracted ancillary service* contract may cover any of the following:
- 9.5.1.1 the cost of being available to provide a *contracted ancillary service* if instructed by the *IESO* to do so;
 - 9.5.1.2 the out-of-pocket costs and the opportunity costs of actually providing the *contracted ancillary service* when instructed by the *IESO* to do so; and
 - 9.5.1.3 such other compensation as the *IESO* determines to be fair and reasonable under the circumstances.
- 9.5.2 The *IESO* is authorized, when necessary to maintain system *reliability* or when the *IESO-controlled grid* is in an *emergency operating state* to direct a *facility* or *resource* to provide any class of *contracted ancillary services* even though the *IESO* does not have a *contracted ancillary service* contract with that *facility* or *resource*. When this occurs:

- 9.5.2.1 the *IESO* shall compensate the associated *market participant* for a *facility* or *resource* for any costs, including opportunity costs, it incurs in complying with the *IESO's* direction; and
- 9.5.2.2 any dispute about the compensation payable pursuant to section 9.5.2.1 shall be resolved using the dispute resolution process set forth in MR Ch.3 s.2.
- 9.5.3 The *IESO* shall, in accordance with MR Ch.9 s.4.2, recover from *market participants* any costs it incurs in procuring *ancillary services*.

9.6 Definition and Principles of Must-Run Contracts

- 9.6.1 The *IESO* may, under the conditions and in accordance with the processes specified in this section 9.6, enter into a *reliability must-run contract* with the *registered market participant* or the prospective *registered market participant* for a *reliability must-run resource*. Where the *IESO* and a *registered market participant* or prospective *registered market participant* enter into a *reliability must-run contract* with respect to a given *reliability must-run resource*, the *IESO* may direct that *reliability must-run resource* to operate in specific ways for reasons of *reliability*, other than for reasons of a lack of overall *adequacy* of the *IESO-controlled grid*, regardless of whether *dispatch data* has been submitted with respect to that *reliability must-run resource*. Nothing in this section shall be construed as preventing the *IESO* from taking such other action in respect of such *reliability must-run resource* as may be permitted by these *market rules* to address a concern for overall *adequacy*.
- 9.6.2 Subject to section 9.6.4, the *IESO* may enter into a *reliability must-run contract* based on studies performed by the *IESO* that indicate:
 - 9.6.2.1 in accordance with section 9.6.3, that a *reliability must-run resource* is required to be available for the purposes of *reliability*, other than in situations of overall *adequacy* of the *IESO-controlled grid*; or
 - 9.6.2.2 a *reliability must-run resource* is likely to be *dispatched* to supply more or less *energy* than otherwise required to assist in addressing a transmission flow constraint on the *IESO controlled-grid* or a *security limit* and that such a contract would avail to the mutual benefit of the parties.
- 9.6.3 The studies referred to in section 9.6.2.1 shall include a consideration of whether concerns regarding *reliability*, other than regarding a lack of overall *adequacy* of the *IESO-controlled grid*, can be addressed by means of the process for directing the submission of *dispatch data* or for imposing a restriction on the revision of

dispatch data referred to in sections 3.3.10 to 3.3.17 or of the process by which the *IESO* approves *outages* pursuant to MR Ch.5 s.6.

9.6.4 The *IESO* shall enter into a *reliability must-run contract* pursuant to section 9.6.2.2 in respect of a *reliability must-run resource* only where the *registered market participant* or the prospective *registered market participant* for the *reliability must-run resource* so agrees.

9.6.5 Where:

9.6.5.1 the *IESO* would be required to reject, revoke *advance approval* of, or recall the *planned outage* of a *resource* pursuant to MR Ch.5 s.6 but for the availability of a *reliability must-run resource*; and

9.6.5.2 the *reliability must-run resource* referred to in section 9.6.5.1 has planned a temporary reduction in staff that would restrict or prevent operation of that other *resource*,

the *IESO* may enter into a *reliability must-run contract* in respect of the *reliability must-run resource* referred to in section 9.6.5.1 provided that:

9.6.5.3 staffing adequate to permit that *reliability must-run resource* to operate under the *reliability must-run contract* can be arranged by that *reliability must-run resource* within the time required; and

9.6.5.4 the conclusion of the *reliability must-run contract* referred to in section 9.6.5.3 would avoid the need for the *IESO* to reject, revoke *advance approval* of, or recall the *planned outage* referred to in section 9.6.5.1.

9.6.6 The *IESO* may call upon a *reliability must-run resource* that is subject to a *reliability must-run contract* if and only if the *IESO* determines that *market participants* will not *offer sufficient physical services* into the *real-time markets* to enable the *IESO* to maintain *reliability*, other than in respect of a lack of overall *adequacy* of the *IESO-controlled grid*.

9.6.7 Subject to section 9.6.13, the *IESO* shall use one or a combination of the following processes to conclude *reliability must-run contracts* pursuant to section 9.6.2:

9.6.7.1 where practical, the *IESO* shall employ a competitive tendering or negotiation process to identify multiple potential suppliers and to determine competitive prices and other terms for the *reliability must-run contract*; or

- 9.6.7.2 the *IESO* may negotiate *reliability must-run contracts* with a single potential supplier where the *IESO* determines that this will result in reasonable prices and other terms.
- 9.6.8 Subject to sections 9.6.11 and 9.6.13:
- 9.6.8.1 the *IESO* may develop standard forms of *reliability must-run contracts* for use in conjunction with sections 9.6 and 9.7,
- provided that
- 9.6.8.2 a standard form *reliability must-run contract* developed for use in conjunction with a *reliability must-run resource* that has planned a temporary reduction in staff that would restrict or prevent its operation, including but not limited to the circumstances described in section 9.6.5, shall provide compensation only for the out-of-pocket costs including, but not limited to, the costs of providing adequate staffing, incurred solely to permit the *reliability must-run resource* to be prepared to provide *physical services* if *dispatched* to do so, but no such compensation shall be payable in respect of *dispatch intervals* when the *reliability must-run resource* is *dispatched* to provide such *physical services* and is entitled to payment therefore as a result of such *dispatch*.
- 9.6.9 Subject to sections 9.6.11 and 9.6.13, the *IESO* may include in any *reliability must-run contract*, other than a standard form *reliability must-run contract* referred to in section 9.6.8.2, the compensation provisions referred to in section 9.6.8.2 or such other compensation provisions as the *IESO* determines appropriate.
- 9.6.10 [Intentionally left blank]
- 9.6.11 The provisions of sections 9.6.8, 9.6.9 and 9.7.1 shall be subject to any contrary provisions contained in:
- 9.6.11.1 any *licence*; or
- 9.6.11.2 the terms of any *reliability must-run contract* the terms of which are required by a *licence* to be, and have been, approved by the *Ontario Energy Board*.
- 9.6.12 [Intentionally left blank]
- 9.6.13 Where the *IESO* and the *registered market participant* or prospective *registered market participant* are unable to reach agreement upon the terms and condition

of a *proposed reliability must-run contract*, or an amendment to a *reliability must-run contract*, the matter shall be determined by the *Ontario Energy Board*.

9.7 Terms and Conditions of Must-Run Contracts

- 9.7.1 Subject to sections 9.6.11 and 9.6.13, the *IESO* shall include in each *reliability must-run contract* terms and conditions that address, at a minimum, the following:
- 9.7.1.1 the duration of the *reliability must-run contract*, which shall not exceed 1 year;
 - 9.7.1.2 the situations in which the *reliability must-run resources* may be called;
 - 9.7.1.3 the situations under which some or all of the terms of the *reliability must-run contract* may be suspended;
 - 9.7.1.4 the nature and timing of any advance notice required for the *IESO* to call upon the *reliability must-run resources*;
 - 9.7.1.5 payment terms, including the amount and timing of any availability payment;
 - 9.7.1.6 agreed *dispatch data* that the *IESO* shall use to *dispatch* the *reliability must-run resource* when it is called by the *IESO* to operate in various modes under the *reliability must-run contract*, and provisions for the revision of such *dispatch data*, when necessary;
 - 9.7.1.7 the process for amending the terms of the *reliability must-run contract*; and
 - 9.7.1.8 any penalties payable by either party for failure to satisfy its obligations under the *reliability must-run contract*.
- 9.7.2 The *IESO* shall, in accordance with MR Ch.9 s.4.2, recover through charges on *market participants* the incremental costs of its *reliability must-run contracts* above any normal payments for *energy* and *operating reserves* recovered in the *real-time market*.

9.8 Publication of Procurement Contract Information

- 9.8.1 The *IESO* shall treat information relating to the procurement of *contracted ancillary services* and *reliability must-run contracts* as follows:

- 9.8.1.1 the *IESO* shall *publish* annually the total costs of all contracted *ancillary services* subject to contracted *ancillary service* contracts and of all *reliability must-run contracts*;
- 9.8.1.2 the *IESO* shall *publish* annually the quantities of each *contracted ancillary service* covered under *contracted ancillary service* contracts and the quantities of each *physical service* provided under *reliability must-run contracts*, together with estimates of any additional quantities the *IESO* expects to acquire during the next 12 months;
- 9.8.1.3 where the *IESO* obtains *contracted ancillary services* or *reliability must-run contracts* in the absence of market power, the commercial terms of the *contracted ancillary service* contracts and of the *reliability must-run contracts* shall be treated as *confidential information*; and
- 9.8.1.4 where the *IESO* obtains *contracted ancillary services* or *reliability must-run contracts* in the presence of market power, as confirmed by the *market surveillance panel*, the *IESO* shall *publish* the relevant terms and conditions of the contracts, except for price which shall not be disclosed, in order to encourage competition.

9.9 Dispute Resolution

- 9.9.1 Subject to the *licence* of the *IESO* and of the relevant *market participant*, all disputes arising pursuant to a *contracted ancillary services* contract or a *reliability must-run contract* shall be resolved using the dispute resolution process set forth in MR Ch.3 s.2.

10. Instructions for Generator Offer Guarantee Eligible Resources

10.1 Start-Up Notice

- 10.1.1 Subject to section 10.1.7, the *IESO* shall issue a *start-up notice* for (a) a *day-ahead operational commitment* other than those issued under section 10.1.2, or (b) *pre-dispatch operational commitment*, no later than 30 minutes after the hour corresponding to the applicable *pre-dispatch calculation engine* run that is immediately prior to the *resource's* start up procedures as required by its *lead time*.

- 10.1.2 Subject to section 10.1.7, the *IESO* shall issue a *start-up notice* prior to the first run of the *pre-dispatch calculation engine* for the relevant *dispatch day* if the *lead time* of a *day-ahead operational commitment* requires a *generation resource* to start-up in advance of the *pre-dispatch process*.
- 10.1.3 The *IESO* may issue a *start-up notice* for a *reliability* commitment at any time, if the *IESO* determines that it is necessary to maintain system *reliability*.
- 10.1.4 A *registered market participant* for a *GOG-eligible resource* shall acknowledge receipt of a *start-up notice* and shall indicate whether it reasonably expects the *resource* to operate in accordance with the *start-up notice*:
- 10.1.4.1 if the *start-up notice* has been issued in accordance with section 10.1.1, no later than 15 minutes prior to the start of the next *dispatch hour*, or
 - 10.1.4.2 in circumstances other than those described in section 10.1.4.1, as soon as reasonably practicable after the receipt of such *start-up notice*.
- 10.1.5 If a *registered market participant* for a *GOG-eligible resource* indicates that it reasonably expects to operate in accordance with a *start-up notice* in accordance with section 10.1.4, the *registered market participant* shall immediately notify the *IESO* as soon as possible if it expects its *resource* to operate in a manner that, for any reason, differs materially from the *start-up notice*.
- 10.1.6 Subject to section 10.1.7, the *IESO* shall use reasonable efforts to ensure that a *start-up notice* issued:
- 10.1.6.1 in accordance with section 10.1.1(a), is consistent with the *resource's* most recent *pre-dispatch schedule*;
 - 10.1.6.2 in accordance with section 10.1.1(b), is consistent with the *resource's* most recent *binding pre-dispatch advisory schedule*; or
 - 10.1.6.3 in accordance with section 10.1.2, is consistent with the *resource's* *day-ahead schedule*.
- 10.1.7 The *IESO* shall not be required to issue a *start-up notice*, or, in the event that the *IESO* does issue a *start-up notice*, shall not be required to satisfy the requirements of section 10.1.6 if:
- 10.1.7.1 the *security* and *adequacy* of the system would be endangered by implementing the *day-ahead schedule*, *pre-dispatch schedule* or *binding pre-dispatch advisory schedule*;

- 10.1.7.2 the *day-ahead market calculation engine* or *pre-dispatch calculation engine* has failed, or has produced a *day-ahead schedule*, *pre-dispatch schedule* or *binding pre-dispatch advisory schedule* that is clearly and materially in error;
 - 10.1.7.3 material changes have occurred subsequent to the *IESO's* determination of the *day-ahead schedule*, *pre-dispatch schedule* or *binding pre-dispatch advisory schedule*, including a failure of an element of a *transmission system* or failure of a *resource* to follow *dispatch instructions*; or
 - 10.1.7.4 the operation of all or part of the *IESO-administered markets* has been suspended pursuant to section 13.
- 10.1.8 Notwithstanding sections 10.1.1 and 10.1.4.1, if there is a failure of *IESO* software, hardware or communication systems during the *pre-dispatch process*:
- 10.1.8.1 the *IESO* shall issue *start-up notices* as soon as reasonably practicable after the hour corresponding to the applicable *pre-dispatch calculation engine* run that is immediately prior to the *resource's* start-up procedures as required by its *lead time*; and
 - 10.1.8.2 the *registered market participant* shall, as soon as reasonably practicable, acknowledge receipt of such *start-up notice* and shall indicate whether it reasonably expects the *resource* to operate in accordance with the *start-up notice*.

10.2 Notice of Decommitment

- 10.2.1 Subject to section 10.2.6, the *IESO* shall issue a notice of decommitment to a *GOG-eligible resource* no later than 30 minutes after the hour corresponding to the applicable *pre-dispatch calculation engine* run that has not scheduled the *resource* above its *minimum loading point* for the next *dispatch hour*.
- 10.2.2 The *IESO* may issue a notice of decommitment to a *GOG-eligible resource* at any time, if the *IESO* determines that it is necessary to maintain system *reliability*.
- 10.2.3 Subject to section 10.2.6, a *registered market participant* for a *GOG-eligible resource* shall acknowledge receipt of a notice of decommitment and shall indicate whether it reasonably expects the *resource* to operate in accordance with the notice of decommitment, no later than 15 minutes prior to the start of the next *dispatch hour*.
- 10.2.4 If a *registered market participant* indicates that it reasonably expects to operate in accordance with a notice of decommitment in accordance with section 10.2.3,

the *registered market participant* shall immediately notify the *IESO* as soon as possible if it expects its *resource* to operate in a manner that, for any reason, differs materially from the notice of decommitment.

- 10.2.5 The *IESO* shall use reasonable efforts to ensure that the instructions contained in a notice of decommitment issued in accordance with this section 10.2 with respect to each *GOG-eligible resource*, is consistent with the *pre-dispatch schedule*.
- 10.2.6 The *IESO* shall not be required to issue a notice of decommitment, or, in the event that the *IESO* does issue a notice of decommitment, shall not be required to satisfy the requirements of section 10.2.5 if:
- 10.2.6.1 the *security* and *adequacy* of the system would be endangered by implementing the *pre-dispatch schedule*;
 - 10.2.6.2 the *pre-dispatch calculation engine* has failed, or has produced a *pre-dispatch schedule* that is clearly and materially in error;
 - 10.2.6.3 material changes have occurred subsequent to determination of the *pre-dispatch schedule*, including a failure of an element of a *transmission system* or failure of a *resource* to follow *dispatch instructions*; or
 - 10.2.6.4 the operation of all or part of the *IESO-administered markets* has been suspended pursuant to section 13.
- 10.2.7 Notwithstanding sections 10.2.1 and 10.2.3, if there is a failure of *IESO* software, hardware or communication systems during the *pre-dispatch process*:
- 10.2.7.1 the *IESO* shall issue notices of decommitment to a *GOG-eligible resource* as soon as reasonably practicable after the hour corresponding to the applicable *pre-dispatch calculation engine* run that has not scheduled the *resource* above its *minimum loading point* for the next *dispatch hour*; and
 - 10.2.7.2 the *registered market participant* shall as soon as reasonably practicable acknowledge receipt of such notice of decommitment and shall indicate whether it reasonably expects the *resource* to operate in accordance with the notice of decommitment.

10.3 Day-Ahead Operational Commitment and Pre-Dispatch Operational Commitment

- 10.3.1 Without limiting the generality of MR Ch.5 s.1.2.1, the *IESO* may, at any time, cancel a *day-ahead operational commitment* or a *pre-dispatch operational commitment* if the cancellation is necessary to maintain the *reliability* of the *IESO-controlled grid*. The *IESO* shall, as soon as practicable, notify the relevant *market participant* of this cancellation.
- 10.3.2 If a *registered market participant* for a *GOG-eligible resource* expects that satisfying a *day-ahead operational commitment* or a *pre-dispatch operational commitment* would endanger the safety of any person, cause equipment damage, or violate any *applicable law*, the *registered market participant* shall immediately notify the *IESO* of that expectation, and shall withdraw from the *day-ahead operational commitment* or *pre-dispatch operational commitment*.
- 10.3.3 If a *registered market participant* for a *GOG-eligible resource* with a *day-ahead operational commitment* or a *pre-dispatch operational commitment* expects, for any reason other than those set out in section 10.3.2, that the *resource* will not satisfy the commitment, the *registered market participant* shall immediately notify the *IESO* of its request to withdraw from the *day-ahead operational commitment* or *pre-dispatch operational commitment*. If, in the *IESO's* judgment, the withdrawal will impair the ability of the *IESO* to maintain the *security* or *adequacy of the electricity system*, the *IESO* may refuse such request.
- 10.3.4 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource* shall submit an *offer* for any remaining *dispatch hours* of its *minimum generation block run-time* for a *day-ahead operational commitment* or a *pre-dispatch operational commitment* carried over from the previous *dispatch day*.
- 10.3.5 A *registered market participant* for a *dispatchable generation resource* that is a *non-quick start resource* and is not a nuclear *generation resource* shall submit an *offer* for any *dispatch hours* prior to or following a *day-ahead operational commitment* or a *pre-dispatch operational commitment* in which the *registered market participant* reasonably expects the *dispatchable generation resource* to be injecting at less than its *minimum loading point* in at least one *dispatch interval*.

11. Generation Resource and Electricity Storage Resource Synchronization Procedures

11.1 Introduction

11.1.1 No *generator* or *electricity storage participant*:

11.1.1.1 may *connect* and synchronize a *generation resource* or an *electricity storage resource* to the *IESO-controlled grid* or de-synchronize and disconnect from the *IESO-controlled grid*; or

11.1.1.2 if it is an *embedded generator* or *embedded electricity storage participant*, may *connect* and synchronize a *resource* associated with an *embedded generation unit* or an *electricity storage unit* to the *embedding facility* or de-synchronize and disconnect from the *embedding facility*,

except as provided in MR Ch.4 and in this section 11.

11.1.2 All *generation facilities* located within the *IESO control area* are subject to the provisions of this section 11 except for:

11.1.2.1 *self-scheduling generation facilities* with name-plate ratings of less than 10 MW;

11.1.2.2 *generators* with *intermittent generation resources*;

11.1.2.3 any *generators* classified as *minor generation facilities* or as *small generation facilities*;

11.1.2.4 *generation facilities* that, for the purposes of the application of the provisions of this section 11, have been designated by the *IESO* as not impairing the ability of the *IESO* to maintain the *security* or *adequacy* of the *electricity system*; and

11.1.2.5 any *generators* exempt from the provisions of the Electricity Act, 1998 by regulation made thereunder.

11.1.3 [Intentionally left blank]

- 11.1.4 All *electricity storage facilities* located within the *IESO control area* are subject to the provisions of this section 11 except for:
- 11.1.4.1 *self-scheduling electricity storage facilities* with an *electricity storage facility* size of less than 10 MW;
 - 11.1.4.2 any *electricity storage facilities* classified as *minor electricity storage facilities* or as *small electricity storage facilities*; and
 - 11.1.4.3 *electricity storage facilities* that, for the purposes of the application of the provisions of this section 11, have been designated by the *IESO* as not impairing the ability of the *IESO* to maintain the *security* or *adequacy* of the *electricity system*.

11.2 Process for Synchronization

Quick Start Resources

- 11.2.1 A *registered market participant* for a *quick start resource* that receives a *dispatch instruction* and acknowledges receipt of the *dispatch instruction* in accordance with section 7.1.2A may *connect* and synchronize a *generation resource* or *electricity storage resource* to the *IESO-controlled grid* or *embedding facility*, as the case may be.

Non-Quick Start Resources

- 11.2.2 A *registered market participant* for a *GOG-eligible resource* that receives a *start-up notice* and acknowledges receipt of the *start-up notice* in accordance with section 10.1.4 and that intends to synchronize to the *IESO-controlled grid* or *embedding facility*, as the case may be, shall request the *IESO's* approval for the proposed synchronization plan at least five minutes before the intended synchronization for the *resource*.
- 11.2.2A Subject to section 11.2.2, a *registered market participant* for a *non-quick start resource* that intends to synchronize to the *IESO-controlled grid* or *embedding facility*, as the case may be, shall request the *IESO's* approval for the proposed synchronization plan at least two hours in advance of the intended synchronization time unless an under-generation advisory notice is in force, in which case the *IESO* may reduce the required notification time to that specified in the advisory notice.

Approval of Synchronization Plan

- 11.2.3 The *IESO* shall notify the *registered market participant* for a *non-quick start resource* of the *IESO's* acceptance or rejection of the *non-quick start resource's* synchronization plans within five minutes of receiving such plans. In the event

that the *IESO* does not approve synchronization, the *registered market participant* must revise its *dispatch data* for the *non-quick start resource* in accordance with section 3.

- 11.2.4 Receipt by the *registered market participant* of the notification of acceptance by the *IESO* under section 11.2.3 allows it to synchronize the *non-quick start resource* to the *IESO-controlled grid* or the embedding *facility*, as the case may be. However, the *IESO* may, at any time, require the de-synchronization of a *non-quick start resource* in the event of over-generation.
- 11.2.4A If a *registered market participant* for a *non-quick start resource* does not request the *IESO's* approval in advance of synchronization at the appropriate time in accordance with obligations of this section applicable to it or any shorter interval allowed by an under-generation advisory notice, the *IESO* may approve synchronization only if, in the *IESO's* judgement, synchronization will not impair the ability of the *IESO* to maintain the *security* or *adequacy* of the *electricity system*.

Conditions Attached to Synchronization

- 11.2.5 The exact time of synchronization shall be subject to directions from the *IESO* and to the terms and conditions specified in the *generator's* or *electricity storage participant's connection agreement* or, in the case of a *resource* associated with an embedded *generation unit* or embedded *electricity storage unit*, its connection agreement, in such form as may be prescribed by the *OEB*, with the *distributor* with whom it is *connected*.

Revisions to Synchronization

- 11.2.6 Without limiting the obligation to provide notice under section 10.1.5, each *generator* or *electricity storage participant* shall notify the *IESO* of any revisions to its synchronization plans without delay. Upon receipt of such notice, the *IESO* shall re-assess any prior acceptance of a synchronization plan and shall notify the *generator* or *electricity storage participant* accordingly.

11.3 Process for De-synchronization

Quick Start Resources

- 11.3.1 A *registered market participant* for a *quick start resource* intending to de-synchronize from the *IESO-controlled grid* or embedding *facility*, as the case may be, shall request the *IESO's* approval five minutes in advance of the intended de-synchronization time.

Non-quick Start Resources

- 11.3.1A A *registered market participant* for a *GOG-eligible resource* intending to de-synchronize from the *IESO-controlled grid* or *embedding facility*, as the case may be, that receives a notice of decommitment and acknowledges receipt of the notice of decommitment in accordance with section 10.2.3, shall, once it receives *dispatch instructions* below its *minimum loading point*, request the *IESO's* approval to de-synchronize, unless an advisory notice for over-generation is in effect, in which event the *resource* may de-synchronize at will subject to the conditions of the advisory notice.
- 11.3.2 Subject to 11.3.1A, a *registered market participant* for a *non-quick start resource* intending to de-synchronize from the *IESO-controlled grid* or *embedding facility*, as the case may be, shall request the *IESO's* approval at least one hour in advance of the intended de-synchronization time unless an advisory notice for over-generation is in effect, in which event the *resource* may de-synchronize at will subject to the conditions of the advisory notice.

Approval of De-synchronization

- 11.3.3 The *IESO* shall approve any such request to de-synchronize unless:
- 11.3.3.1 the *generation resource* or *electricity storage resource* is operating under the provisions of a *reliability must-run contract* and the *IESO* has directed it to operate;
 - 11.3.3.2 the *IESO* requires the *generation unit* or *electricity storage unit* to remain synchronized to maintain the *security* or *adequacy* of the *electricity system*; or
 - 11.3.3.3 an under-generation advisory notice is in force.
- 11.3.4 The *IESO* shall notify the *registered market participant* of the *IESO's* acceptance or rejection of the *generation resource's* or *electricity storage resource's* de-synchronization plans within 5 minutes of receiving such plans.
- 11.3.4A If a *registered market participant* for a *generation resource* or *electricity storage resource* does not request the *IESO's* approval prior to its planned de-synchronization at the appropriate time in accordance with the obligations of this section applicable to it or any shorter interval allowed by an over-generation advisory notice, the *IESO* may approve de-synchronization only if, in the *IESO's* judgement, de-synchronization will not impair the ability of the *IESO* to maintain the *security* or *adequacy* of the *electricity system*.
- 11.3.5 The exact time of de-synchronization shall be subject to directions from the *IESO* and to the terms and conditions specified in the *generator's* or *electricity storage*

participant's connection agreement or, in the case of a *resource* associated with an *embedded generation unit*, or *embedded electricity storage unit*, its connection agreement, in such form as may be prescribed by the *OEB*, with the *distributor* with whom it is *connected*.

- 11.3.6 Receipt by the *generator* or *electricity storage participant* of notification of acceptance by the *IESO* under section 11.3.4 gives the *generator* or *electricity storage participant* the right to commence shut-down of the *generation resource* or *electricity storage resource*.
- 11.3.7 Without limiting the obligation to provide notice under section 10.2.4, each *generator* or *electricity storage participant* shall notify the *IESO* of any revisions to its de-synchronization plans without delay. Upon receipt of such notice, the *IESO* shall re-assess any prior acceptance of a de-synchronization plan and shall notify the *generator* or *electricity storage participant* accordingly.

11.4 Reliability

- 11.4.1 Notwithstanding any other provision in this section 11, the *IESO* may, to maintain the reliable operation of the *IESO-controlled grid*, direct a *generation resource* or an *electricity storage resource* to either de-synchronize from or to not synchronize to the *IESO-controlled grid*.

12. Status Reports, Advisories, and Protocols

12.1 IESO System Status Reports and Advisory Notices

- 12.1.1 The *IESO* shall *publish*, in addition to the daily assessments specified in MR Ch.5 s.7.3.1.4, system status reports to:

12.1.1.1 to 12.1.1.5 [Intentionally left blank – sections deleted]

- 12.1.1.6 provide forecasts, with respect to each *dispatch day*, as projected for future *dispatch hours* and as estimated for the current *dispatch hour*, where appropriate, of expected hourly *demand*, *generation capacity*, *electricity storage capacity*, *energy* capability of *generation resources*, exports and imports of *energy*, projected *energy* shortfalls, and *operating reserve* requirements, *published* at the following times:

- a. 05:30 EPT on the day prior to the relevant *dispatch day*

- b. 09:00 EPT on the day prior to the relevant *dispatch day*;
 - c. after a successful run of the *day-ahead market calculation engine*, on the day prior to the relevant *dispatch day*;
 - d. after 20:00 EST, and hourly thereafter, on the day prior to the relevant *dispatch day*; and
 - e. hourly on the *dispatch day*;
- 12.1.1.7 provide forecasts of expected transmission capacity with all elements in-service, *published* daily, as soon as practicable; and
- 12.1.1.8 provide forecasts of expected transmission limits with *outages*, for the *dispatch day* and the two days following the *dispatch day*, *published* twice each hour on the *dispatch day*.
- 12.1.2 Where the *IESO publishes* an advisory notice, it shall do so in one of the following forms, as further specified in the applicable *market manual*:
 - 12.1.2.1 an alert notice, which shall provide situational awareness and time for advanced preparations;
 - 12.1.2.2 a warning notice, which shall indicate the actions the *IESO* intends to take if the *IESO-administered markets* do not or cannot respond sufficiently to eliminate an identified or potential problem; or
 - 12.1.2.3 an action notice, which shall indicate the actions the *IESO* and *market participants* must take in order to eliminate an identified or potential problem.
- 12.1.3 The *IESO* shall *publish*, in accordance with the applicable *market manual*, advisory notices in the following circumstances:
 - 12.1.3.1 if a major change in expected *generation capacity*, *electricity storage capacity* or *transmission capacity* has occurred since the last system status report was issued;
 - 12.1.3.2 if the *IESO* expects over-generation, under-generation or shortfalls in *operating reserve* or *contracted ancillary services*, or an advisory of the total MW of *energy* being directed to submit *bids* or *offers* from the aggregate of *reliability must run resources* under *reliability must run contracts*;
 - 12.1.3.3 if the *IESO* expects an *emergency operating state*, a *high-risk operating state*, or a *conservative operating state*; or

- 12.1.3.4 if the *IESO* is suspending or resuming operation of all or part of the *IESO-administered markets*.
- 12.1.3A The *IESO* may *publish* advisory notices in addition to those in 12.1.3, in accordance with the applicable *market manual*, for any other reason where the *IESO* determines that the *publication* of an advisory notice would be in the interest of the *IESO-administered markets*, *market participants*, or the *IESO-controlled grid*.
- 12.1.4 Where applicable, the corresponding information related to the advisory notices in section 12.1.3 shall be included by the *IESO* in a subsequent *publication* of a scheduled report under section 12.1.1.

12.2 Over-Generation and Under-Generation Advisories

- 12.2.1 If the *IESO* issues an over-generation advisory notice pursuant to section 12.1.3, the *IESO* shall, unless the *IESO* determines that it is not able to do so for operational or system *security* reasons, and notwithstanding any notification requirements or other conditions specified elsewhere in these *market rules*:
- 12.2.1.1 solicit and accept additional or revised *bids* to increase *demand* in response to low prices;
- 12.2.1.2 allow *generation units* or *electricity storage units* or any associated *resources* to de-synchronize from the *IESO-controlled grid* or the embedding *facility*, as the case may be, without penalty, some or all of the *generation units* or *electricity storage units* or any associated *resources* within any *facility* in locations designated by the *IESO*; and/or
- 12.2.1.3 solicit and accept revised *offers* that will decrease generation or injection of *energy* in response to low prices, in locations designated by the *IESO*.
- 12.2.2 If the *IESO* issues an under-generation advisory notice pursuant to section 12.1.3, the *IESO* shall, unless the *IESO* determines that it is not able to do so for operational or system *security* reasons, and notwithstanding any notification requirements or other conditions specified elsewhere in these *market rules*:
- 12.2.2.1 solicit and accept additional or revised *bids* that will decrease *demand* in response to higher prices;
- 12.2.2.2 allow *generation units* or *electricity storage units* or any associated *resources* to synchronize to the *IESO-controlled grid* or the

embedding *facility*, as the case may be, without penalty, some or all of the *generation units* or *electricity storage units* or any associated *resources* within any *facility* in locations designated by the *IESO*; and/or

12.2.2.3 solicit and accept additional or revised *offers* that will increase generation or injections of *energy* in *response* to higher prices, in locations designated by the *IESO*.

12.2.3 If the *IESO* issues an *operating reserve* shortfall advisory notice pursuant to section 12.1.3, the *IESO* shall, within the period specified in the advisory notice, accept additional or revised *offers* for *operating reserve*.

13. Suspension of Market Operations

13.1 Introduction

13.1.1 The *IESO* may, or may be required to, suspend the operation of all or part of the *IESO-administered markets* in accordance with this section 13.

13.1.2 This section 13 sets forth the procedures the *IESO* must follow in:

13.1.2.1 determining whether to declare a suspension of *market operations*;

13.1.2.2 directing the operation of the *IESO-controlled grid* during suspension of *market operations*; and

13.1.2.3 restoring *market operations* once the conditions triggering suspension are eliminated.

13.1.3 This section 13 also sets forth the requirements that *market participants* must meet immediately prior to, during, and immediately after a suspension of *market operations*.

13.2 Market Suspension Events

13.2.1 Subject to section 13.3, the *IESO* may suspend *market operations* if it determines that any of the conditions described in section 13.2.4 exists or is imminent.

13.2.2 As soon as practical the *IESO* shall notify the *IESO Board*, the *OEB* and relevant government authorities of any suspension of *market operations* pursuant to this section 13.

- 13.2.3 Upon being notified under section 13.2.2, the *IESO Board* may determine whether to continue the suspension or to resume normal *market operations* under such conditions as the *IESO Board* may specify.
- 13.2.4 The *IESO* may suspend *market operations* in the event of:
- 13.2.4.1 *market operations* cannot be continued in a normal manner due to a failure in the software, hardware or communication systems that support *market operations*;
 - 13.2.4.2 a major blackout;
 - 13.2.4.2A the *IESO-controlled grid* breaks up into two or more *electrical islands*;
 - 13.2.4.3 an *emergency* situation requiring the *IESO* to evacuate its principal control centre and move to a backup control centre, under conditions and subject to the requirements of MR Ch.5; or
 - 13.2.4.4 a declaration of an emergency by the Premier of Ontario or a direction from the *Minister* to the *IESO* or to a *market participant* to implement an *emergency preparedness plan*.

13.3 Reasons for Market Suspension

- 13.3.1 With respect to sections 13.2.4.1, 13.2.4.2, 13.2.4.3 and 13.2.4.4, the *IESO* may suspend *market operations* in response to an event described in those sections only if the *IESO* determines that its ability to operate the *IESO-administered markets* in accordance with these *market rules* has or will become substantially impaired.
- 13.3.2 The *IESO* shall not suspend *market operations* solely because:
- 13.3.2.1 the *market price* has reached positive or negative *maximum market clearing price*; or
 - 13.3.2.2 some *load* has been *curtailed*.

13.4 IESO Declaration of Market Suspension

- 13.4.1 Only a declaration by the *IESO* may suspend *market operations*. If the *IESO* declares a suspension of *market operations*, the *IESO* shall:
- 13.4.1.1 immediately notify *market participants*; and

- 13.4.1.2 issue to *market participants* a market suspension notice via such means as the *IESO* determines will ensure timely notification, informing *market participants* of the nature and scope of the suspension and its expected duration, if known.
- 13.4.2 Any suspension of *market operations* shall commence at the start of the next *dispatch interval* after the *IESO* makes the declaration, unless the *IESO* suspends *market operations* to protect or restore *reliability*, in which case the suspension shall commence at the time the *IESO* makes the declaration.
- 13.4.3 The *IESO* may not declare a retroactive suspension of *market operations*.

13.5 IESO Responsibilities During Market Suspension

- 13.5.1 While a suspension of *market operations* is in effect, the *IESO* shall:
 - 13.5.1.1 prescribe and apply procedures for restoring and maintaining *reliable* operation of the *electricity system* and restoring *market operations* as rapidly as practical, consistent with the safety of persons and *facilities*;
 - 13.5.1.2 endeavour to continue use of normal market information, scheduling and pricing procedures to the extent practical;
 - 13.5.1.3 subject to section 13.6, prescribe and apply *administrative prices* in accordance with section 8.4A.6;
 - 13.5.1.4 suspend the *day-ahead market* when a suspension of the *real-time market* is expected to be in effect for future *dispatch days*;
 - 13.5.1.5 provide timely information to *market participants* concerning the reasons for the suspension and efforts by the *IESO* to resume normal *market operations*; and
 - 13.5.1.6 issue directions, through market suspension advisory notices to *market participants*, that will enable the *IESO* to continue *reliable* operations, continue non-suspended *market operations* and resume normal *market operations* as soon as practical.

13.6 Participant Responsibilities and Compensation

- 13.6.1 If the *IESO* suspends *market operations*, each *market participant* shall:
 - 13.6.1.1 comply with the *IESO's* market suspension advisory notices and any other directions issued by the *IESO*;

- 13.6.1.2 conduct their operations and interactions with the *IESO* in a manner consistent with such advisory notices and directions; and
 - 13.6.1.3 upon resumption of normal *market operations*, resume normal operations and interactions with the *IESO* pursuant to these *market rules*.
- 13.6.2 The *IESO* may issue *dispatch instructions* while a suspension of *market operations* is in effect and shall, subject to sections 13.6.3 and 13.6.4, compensate *market participants* for following these *dispatch instructions* based on *administrative prices* established in accordance with section 8.4A.6 rather than on market-determined prices.

13.7 Ending and Reporting on Market Suspension

- 13.7.1 The *IESO* shall monitor the conditions which triggered the suspension of *market operations* and, subject to any decision or direction that the *IESO Board* may have given pursuant to section 13.2.3, shall issue a market advisory notice declaring the end of the suspension:
- 13.7.1.1 as soon as the *IESO* determines that normal *market operations* are possible and will maintain *reliable* system operations; and
 - 13.7.1.2 indicating the *dispatch hour* for which normal *market operations* are to resume, providing at least one hour advance notice.
- The *IESO* may, if circumstances warrant and in order to resume normal *market operations* as soon as possible, issue a market advisory declaring the end of the suspension prior to issuing the notice specified in section 13.2.2.
- 13.7.2 The *IESO* shall, immediately following the end of the suspension of *market operations*, begin a review of events leading to and occurring during the suspension. The *IESO* may require *market participants* to submit information regarding their operations immediately prior to and during the suspension and to assist the *IESO* in analyzing the suspension.
- 13.7.3 Within 10 *business days* following the resumption of normal *market operations*, the *IESO Board* shall provide to all *market participants*, the *OEB* and relevant government authorities a preliminary report describing:
- 13.7.3.1 the circumstances that triggered suspension of *market operations*;
 - 13.7.3.2 the date and time period of the suspension of *market operations*;

- 13.7.3.3 the steps taken by the *IESO* during the period of suspension to ensure *reliable* operations and remedy the causes of the suspension;
 - 13.7.3.4 the actions of *market participants* during the suspension; and
 - 13.7.3.5 any conclusions or recommendations for avoiding similar suspensions in the future.
- 13.7.4 The *IESO Board* shall provide a final report containing information in the nature of that described in section 13.7.3 to *market participants* and the public as soon as it is practicable to do so.
- 13.7.5 If the *IESO Board* determines that one or more corrective measures by *market participants* are warranted to avoid the recurrence of a suspension of *market operations*, the *IESO* may direct the affected *market participants* to implement the corrective measures and the affected *market participants* shall implement the corrective measures as soon as practicable.
- 13.7.6 A *market participant* directed by the *IESO* to implement corrective measures under section 13.7.5 may apply for compensation from the *IESO* where compliance with the *IESO's* direction results in costs or damages to the *market participant*.
- 13.7.7 Any disputes regarding the compensation referred to in section 13.7.6 shall be resolved using the dispute resolution process set forth in MR Ch.3 s.2.

14. [Intentionally left blank – section deleted]

15. [Intentionally left blank – section deleted]

16. [Intentionally left blank – section deleted]

17. [Intentionally left blank – section deleted]

18. Capacity Auctions

18.1 Purpose of Capacity Auctions

18.1.1 The *capacity auctions* will acquire *auction capacity* through a competitive auction.

18.1.2 The *IESO* shall specify and *publish* a target capacity amount to be acquired in each *capacity auction*, as specified in the applicable *market manual*.

18.1A Capacity Auction – Transitional Market Rules

18.1A.1 For the purposes of participation in a *capacity auction*, *market rules* and *market manuals* that specifically concern *capacity auction* participation, the satisfaction of *capacity obligations*, or the performance of requirements directly related to that participation, shall remain in effect from the date of the *capacity auction* until the end of its associated *capacity auction commitment period*, except as otherwise provided in sections 18.1A.1.1 and 18.1A.3.

18.1A.1.1 Nothing in this section 18.1A shall limit the effectiveness of a *market rule* amendment or *market manual* amendment that expressly excludes the application of sections 18.1A.1 and 18.1A.2.

18.1A.2 Except as otherwise provided in sections 18.1A.1.1 and 18.1A.3, changes to the *market rules* and applicable *market manuals* that specifically concern *capacity*

auction participation, the satisfaction of *capacity obligations*, or the performance of requirements directly related to that participation, and which are brought into effect between the date of a given *capacity auction* and the end of its associated *capacity auction commitment period*, shall be applicable to subsequent *capacity auctions* and their associated *capacity auction commitment periods*.

18.1A.3 Nothing in this section 18.1A shall limit the effectiveness of an *urgent rule amendment*.

18.1A.4 The *IESO* shall maintain a *published* archive of *market rules* and applicable *market manuals* in effect on the date of a *capacity auction* for a period of two years following the end of its associated *capacity auction commitment period*.

18.2 Participation in Capacity Auctions

18.2.1 No person may participate in a *capacity auction* nor receive a *capacity obligation* unless that person has:

18.2.1.1 been authorized by the *IESO* as a *capacity auction participant* in accordance with MR Ch.2 s.3 and in accordance with the applicable *market manual*;

18.2.1.2 submitted to the *IESO* a *capacity qualification request*, using forms and procedures as may be established by the *IESO* in the applicable *market manual*; and

18.2.1.3 no less than five *business days* prior to the date on which a *capacity auction* is to be conducted, provided to the *IESO* a *capacity auction deposit*, in one or both of the forms set forth in section 18.4.

18.2.2 The following provisions of the *market rules* shall not apply to a *capacity auction participant* that is authorized by the *IESO* to participate only in a *capacity auction* with an *hourly demand response resource*:

18.2.2.1 MR Ch.4, 5, and 6;

18.2.2.2 Chapter 7 other than this section 18; and

18.2.2.3 MR Ch.8 and 10.

18.2.3 A *capacity auction participant* who obtains a *capacity obligation* shall apply to become authorized by the *IESO* as a *capacity market participant* in accordance with MR Ch.2 s.3.

18.2A Capacity Auction - Capacity Qualification

18.2A.1 For each *obligation period* in a *capacity auction*, the *IESO* shall determine the *unforced capacity* of each *capacity auction resource* where:

18.2A.1.1 the *unforced capacity* of a *capacity auction eligible generation resource*, a *capacity auction eligible storage resource*, or a *capacity dispatchable load resource* is calculated as:

$$\text{UCAP} = \text{ICAP} \times \text{availability de-rating factor} \times \text{performance adjustment factor}$$

18.2A.1.2 the *unforced capacity* of a *system-backed capacity auction eligible import resource* is calculated as:

$$\text{UCAP} = \text{ICAP} \times \text{performance adjustment factor}$$

18.2A.1.3 The *unforced capacity* of a *generator-backed import resource* is calculated as:

$$\text{UCAP} = (\text{exUCAP} + \text{esfICAP} \times \text{availability de-rating factor}) \times \text{performance adjustment factor}$$

Where:

- a. 'exUCAP' is the total equivalent capacity (in MW) for all *generator-backed import contributors* that are *generation units*, as determined by the applicable *control area operator* and provided to the *IESO* in accordance with the applicable *market manual*;
- b. 'esfICAP' is the total *ICAP* (in MW) of all *generator-backed import contributors* that are *electricity storage units*, as provided to the *IESO* in accordance with the applicable *market manual*.

18.2A.1.4 the *unforced capacity* of an *hourly demand response resource* is calculated as:

$$\text{UCAP} = \text{ICAP} \times \text{performance adjustment factor}$$

18.2A.2 No *capacity auction resource* may participate in a *capacity auction*, nor receive a *capacity obligation*, in respect of any *obligation period* in relation to which the *capacity auction resource* has an *unforced capacity* of less than one MW.

18.2A.3 The *IESO* shall notify each *capacity auction participant* of the *unforced capacity* for each of the *capacity auction participant's capacity auction resources* on the date specified in accordance with section 18.5.4.1A.

18.3 Calculation of Capacity Auction Deposits

- 18.3.1 Following the determination of *unforced capacity* in accordance with section 18.2A, the *IESO* shall determine for each *capacity auction participant*, a *capacity auction deposit* for a *capacity auction* as specified in the applicable *market manual*.
- 18.3.2 The *IESO* shall review the *capacity auction deposit* and *capacity prudential support* of a *capacity transferee* upon receipt of a request for a *capacity obligation* transfer in accordance with section 18.9.1. As a result of a transfer request, the *IESO* may increase the *capacity auction deposit* or *capacity prudential support* of a *capacity transferee* and the *IESO* shall notify the *capacity transferee* of any such increase.
- 18.3.3 Where the amount of a *capacity auction deposit* provided by a *capacity auction participant* exceeds the amount required by the *IESO*, the *IESO* shall return the excess amount to the *capacity auction participant* within five *business days* of such a request from the *capacity auction participant*. Otherwise, that amount shall be held by the *IESO* and shall form part of that *capacity auction participant's capacity auction deposit* for its participation in a subsequent *capacity auction*.

18.4 Capacity Auction Deposits

- 18.4.1 A *capacity auction deposit* shall be in one or both of the following forms:
- 18.4.1.1 an irrevocable commercial letter of credit provided by a bank named in a Schedule to the *Bank Act*, (Canada), S.C. 1991, c. 46; or
 - 18.4.1.2 a cash deposit made with the *IESO* by or on behalf of the *capacity auction participant*.
- 18.4.2 Where all or part of a *capacity auction deposit* is in the form of a standby letter of credit, the following provisions shall apply:
- 18.4.2.1 the letter of credit shall provide that it is issued subject to either The Uniform Customs and Practice for Documentary Credits, 1993 Revision, ICE Publication No. 500 or The International Standby Practices 1998;
 - 18.4.2.2 the *IESO* shall be named as beneficiary in the letter of credit, the letter of credit shall be irrevocable and partial draws on the letter of credit shall not be prohibited;

- 18.4.2.3 the only condition on the ability of the *IESO* to draw on the letter of credit shall be the delivery of a certificate by an officer of the *IESO* that a specified amount is owing by the *capacity auction participant* to the *IESO* and that, in accordance with the provisions of the *market rules*, the *IESO* is entitled to payment of that specified amount as of the date of delivery of the certificate;
- 18.4.2.4 the letter of credit shall either provide for automatic renewal (unless the issuing bank advises the *IESO* at least thirty days prior to the renewal date that the letter of credit will not be renewed) or be for a term of at least one (1) year. Where the *IESO* is advised that a letter of credit is not to be renewed or the term of the letter of credit is to expire, the *capacity auction participant* shall arrange for and deliver additional *capacity auction deposits* if the *capacity auction participant* intends to continue to participate in a *capacity auction*. If such additional *capacity auction deposits* are not received by the *IESO* ten (10) *business days* before the expiry of a letter of credit, the *IESO* shall be entitled as of that time to payment of the full face amount of the letter of credit which amount, once drawn by the *IESO*, shall be treated as a *capacity auction deposit* in the form of cash; and
- 18.4.2.5 by including a letter of credit as part of a *capacity auction deposit*, the *capacity auction participant* represents and warrants to the *IESO* that the issuance of the letter of credit is not prohibited in any other agreement, including without limitation, a negative pledge given by or in respect of the *capacity auction participant*.
- 18.4.3 Notwithstanding any other provision of these *market rules*, a person that applies for authorization to participate in the *capacity auction* and that has not applied for authorization to participate, or is not participating, in any other *IESO-administered market* shall not be required to comply with any requirements for authorization other than those set forth in sections 18.2.1.1 to 18.2.1.3.
- 18.4.4 In the event a *capacity auction participant* has not satisfied the applicable eligibility requirements specified in sections 19.2, 19.3, 19.6, 19.8, 19.9A, or 19.10 prior to the start of the applicable *obligation period* and has not elected to buy-out the *capacity obligation* in accordance with MR Ch.9 s.4.13.9, the *IESO* shall apply the buy-out for the entirety of the *capacity auction participant's capacity obligation* in accordance with MR Ch.9 s.4.13.9.

18.5 Capacity Auction Parameters

- 18.5.1 The *IESO* shall conduct *capacity auctions* at least on an annual basis to acquire *capacity* for a future one-year *capacity auction commitment period*. In each

capacity auction the *IESO* shall acquire *capacity auction* for each *obligation period* as specified in the applicable *market manual*.

Demand Curve, Zonal Constraints and Pre-Auction Reports

18.5.2 The *IESO* shall, in accordance with the applicable *market manual*, *publish* a pre-auction report in advance of each *capacity auction*, including the following *capacity auction* demand curve reference points:

18.5.2.1 a *target capacity* in accordance with section 18.1.2;

18.5.2.2 a *capacity auction reference price*;

18.5.2.3 a maximum and minimum *capacity auction clearing price*;

18.5.2.4 [Intentionally left blank – section deleted]

18.5.2.5 a maximum auction capacity limit at the maximum *capacity auction clearing price* that a *capacity auction* shall clear; and

18.5.2.6 a maximum auction capacity limit that a *capacity auction* shall clear.

18.5.3 The *IESO* shall define *capacity auction zonal constraints* for each *capacity auction* and the *IESO* shall *publish*, in the pre-auction report, those requirements as specified in the applicable *market manual*.

18.5.4 The *IESO* shall specify and *publish* in the pre-auction report the following timelines associated with a *capacity auction*:

18.5.4.1 the deadline to submit a *capacity qualification request* pursuant to section 18.2.1.2;

18.5.4.1A the date on which the *IESO* shall notify *capacity auction participants* of the *unforced capacity* for each *capacity auction resource*;

18.5.4.2 the deadline for a *capacity auction participant* to submit a *capacity auction deposit* in accordance with section 18.2.1.3;

18.5.4.3 the dates on which a *capacity auction participant* may submit *capacity auction offers* for a *capacity auction*;

18.5.4.4 the period over which the *IESO* shall conduct the *capacity auction*; and

18.5.4.5 the date of *capacity auction* post-auction reporting in accordance with sections 18.8.1 and 18.8.2.

- 18.5.5 The *IESO* shall define the total *auction capacity* that may be provided by all *system-backed capacity import resources* and *generator-backed capacity import resources* in a *capacity auction* for each obligation period. The *IESO* shall publish, in the pre-auction report, these requirements as specified in the applicable *market manual*.
- 18.5.6 The *IESO* shall define the total *auction capacity* that may be provided by all *system-backed capacity import resources* and *generator-backed capacity import resources* on each applicable *intertie* in a *capacity auction* for each obligation period. The *IESO* shall publish, in the pre-auction report, these requirements as specified in the applicable *market manual*.

18.6 Capacity Auction Offers

- 18.6.1 A *capacity auction offer*:
- 18.6.1.1 may be submitted or revised by the *capacity auction participant* on the dates specified in accordance with section 18.5.4 and the applicable *market manual*;
 - 18.6.1.2 shall only be applicable to the *obligation periods* for which a *capacity auction participant* has submitted a *capacity auction offer*, in accordance with the applicable *market manual*; and
 - 18.6.1.3 shall be time stamped by the *IESO* when received.
- 18.6.2 A *capacity auction offer* shall only be submitted in respect of a given *capacity auction* if:
- 18.6.2.1 the *capacity auction participant* complies with the *capacity auction participant* requirements in section 18.2.1; and
 - 18.6.2.2 the *capacity auction participant* has not been disqualified from full or partial participation in the *capacity auction* pursuant to sections 19.4.8, 19.5.4, 19.7.4, 19.9.4 or 19.11.4.
- 18.6.3 A *capacity auction offer* may include up to twenty *price-quantity* pairs for each *obligation period* and shall comply with the following:
- 18.6.3.1 the *capacity auction offer* shall be for and applicable over an entire *obligation period* associated with a *capacity auction*;
 - 18.6.3.2 the *capacity auction offer* price in any *price-quantity pair* shall:

- be expressed in dollars and whole cents per MW-day of *auction capacity* to be provided in each hour of the *availability window* throughout the *obligation period* associated with that *capacity auction*;
- be greater than or equal to \$0.00/MW-day;
- not exceed the applicable maximum *capacity auction clearing price*; and
- increase as the associated *capacity auction offer* quantity increases.

18.6.3.3 the *capacity auction offer* quantity in any *price-quantity* pair shall be expressed in MW to not more than one decimal place and the total *offered* quantity shall not exceed the *unforced capacity* of the *capacity auction resource*; and

18.6.3.4 the *capacity auction offer* shall indicate whether the *capacity auction participant* is willing to clear a *capacity auction* with the full amount of *auction capacity offered* in a lamination or a partial amount of the *auction capacity offered* in a lamination, in accordance with the applicable *market manual*.

18.7 Capacity Auction Clearing Prices and Quantities

18.7.1 The *IESO* shall determine a *capacity auction* demand curve to be utilized for each *obligation period* based upon the *capacity auction* parameters detailed in the pre-auction report pursuant to section 18.5 and in accordance with the applicable *market manual*.

18.7.2 The *IESO* shall, in each *capacity auction*, determine for each *obligation period* the *capacity auction clearing price* in accordance with the applicable *market manual*.

18.7.3 The *IESO* shall, in each *capacity auction*, determine for each *obligation period* the *capacity obligation* for each *capacity auction* participant's *capacity auction resource(s)* in accordance with section 18.7.5 and the applicable *market manual*.

18.7.4 The *IESO* shall, for each *capacity auction*, determine for each *obligation period* associated with the *capacity auction*:

18.7.4.1 the *capacity auction clearing prices* for each electrical zone identified in the pre-auction report; and

18.7.4.2 the zonal *capacity obligation* for each *capacity auction participant's capacity auction resource(s)*.

18.7.5 Where multiple *capacity auction offer* laminations share the same price and cannot all be fully awarded based on the available *auction capacity* remaining to be awarded, the awarding of such available *auction capacity* will be determined in accordance with the following:

- 18.7.5.1 divide the available *auction capacity* by the number of *capacity auction offer* laminations involved in the tie, rounding the calculated value down to one decimal place.
- a. for any *capacity auction offer* lamination for a quantity that is less than or equal to the share determined in accordance with s.18.7.5.1, such *capacity auction offer* lamination will be allotted *auction capacity* equal to such *capacity auction offer* lamination.
 - b. for any *capacity auction offer* lamination for a quantity which greater than the share determined in accordance with s.18.7.5.1 and was identified as being for the full amount *offered* in the lamination, in accordance with s.18.6.3.4, such *capacity auction offer* lamination will not be allotted *auction capacity* and such *capacity auction offer* lamination will not be considered further in the tie break methodology outlined in this section.
 - c. for any *capacity auction offer* lamination for a quantity greater than the share determined in accordance with s.18.7.5.1 and identified as including consideration of partial amounts *offered* in its lamination, in accordance with s.18.6.3.4, it will be allotted *auction capacity* equal to the share determined in accordance with s.18.7.5.1.

18.7.5.2 If there is available *auction capacity* after completing the process in s.18.7.5.1, each *capacity auction offer* lamination referred to in section s.18.7.5.1(c) will be allotted a proportional share, rounded down to one decimal place, of the remaining *auction capacity* based on the unallotted quantity of the *capacity auction offer* lamination relative to the remaining available *auction capacity*.

18.7.5.3 If there is available *auction capacity* after completing the process in s.18.7.5.2, such unallotted *auction capacity* shall be allotted in accordance with the following using the time stamp determined in accordance with the applicable *market manual*:

- a. rank the *capacity auction offer* laminations referred to in s.18.7.5.1(c) that remain partially allotted after the process described in s.18.7.5.2, from earliest to latest time stamp; and
 - b. allot the remaining *auction capacity* to the *capacity auction offer* lamination with the earliest time stamp. If the *capacity auction offer* lamination with the earliest time stamp is fully met and there is still *auction capacity* remaining, continue allotting the remaining *auction capacity* in rank order from earliest to latest time stamp.
- 18.7.5.4 Where the application of ss.18.7.5.1 to 18.7.5.3 would result in a total *capacity obligation* of less than 1MW being awarded to a *capacity auction resource*:
- 18.7.5.4.1 the *capacity auction offer* lamination which was allotted the lowest amount of auction capacity of the tied *capacity auction offers* will be eliminated and the process in ss.18.7.5.1 to 18.7.5.3 will be repeated to allot the *auction capacity* that would have otherwise been allotted to such *capacity auction offer* lamination.
 - 18.7.5.4.2 If there are two or more *capacity auction offer* laminations that are tied in regards to the lowest *capacity obligation* allotted, the *capacity auction offer* eliminated will be the one with the latest time stamp.
- 18.7.5.5 If any constraint, as published in accordance with ss.18.5.3, 18.5.5 or 18.5.6, would be violated by any allotment in the process outlined in this s.18.7.5, then the *IESO* will use the process set out in such section to allot the remaining quantity of the applicable constraint among the *capacity auction resource* types that are limited by such constraint. If two or more constraints are simultaneously violated, the constraint with the lower remaining *auction capacity* quantity shall be allotted. After such allotment the *IESO* will restart the process to allot the remaining available *auction capacity* among the remaining eligible *capacity auction offer* laminations.
- 18.7.5.6 Following the completion of the tie-break process outlined in this section, the *IESO* shall award *capacity obligations* to *capacity auction resources* in the amounts such *auction capacity* was allotted to such *capacity auction resources* as determined in accordance with the tie-break process outlined in this section in addition to the *capacity obligation* it is awarded for the entirety of the auction process. Where there is unallotted *auction capacity* after completing the tie-break

process in this section such remaining *auction capacity* will not be awarded to any *capacity auction resource*.

18.8 Post-Auction Notification and Publication

18.8.1 The *IESO* shall, as soon as practicable following the conclusion of a *capacity auction*, *publish* the following in accordance with the applicable *market manual*:

18.8.1.1 the *capacity auction* clearing price;

18.8.1.2 the amount of *auction capacity* that has been acquired in each electrical zone; and

18.8.1.3 those *capacity auction* participants who received a *capacity obligation* and all respective *capacity obligations*.

18.8.2 The *IESO* shall, following the conclusion of a *capacity auction*, issue post-auction reports to each *capacity auction participant* by the date specified in accordance with section 18.5.4.5, to detail the *capacity auction offers* that have cleared in the *capacity auction* and the associated *capacity obligations* and *cleared ICAPs* for each *obligation period* in accordance with the applicable *market manual*:

18.8.2.1 the *cleared ICAP* is calculated as:

$$\text{cleared ICAP} = \text{cleared UCAP} \times \left(\frac{1}{\text{availability de-rating factor}} \right) \times \left(\frac{1}{\text{performance adjustment factor}} \right)$$

18.8.2.1.1 For the purposes of calculating a *cleared ICAP* where a *capacity auction resource* is not subject to an *availability de-rating factor* as per section 18.2A.1, an *availability de-rating factor* of 1 shall be applied.

18.9 Capacity Obligation Transfers

18.9.1 A *capacity transferor* may, subject to *IESO* approval and in accordance with the applicable *market manual*, request a transfer of all or a portion of its *capacity obligation* to a *capacity transferee* provided that the following criteria are met:

18.9.1.1 the quantity to be transferred does not exceed the difference between the *capacity transferee's unforced capacity* of a *capacity auction resource* for the applicable *obligation period*, and its existing

- capacity obligation* of such *capacity auction resource* for the applicable *obligation period*;
- 18.9.1.2 the *capacity transferor* provides written confirmation to the *IESO* from the *capacity transferee* of its willingness to accept the transfer of a *capacity obligation* from the *capacity transferor*;
- 18.9.1.3 [Intentionally left blank – section deleted]
- 18.9.1.4 the quantity to be transferred is in increments of 0.1MW, and the resulting *capacity obligations* for both the *capacity transferor* and *capacity transferee* following the transfer shall be 0 MW, or greater than or equal to one MW; and
- 18.9.1.5 [Intentionally left blank – section deleted]
- 18.9.1.6 [Intentionally left blank – section deleted]
- 18.9.1.7 [Intentionally left blank – section deleted]
- 18.9.1.8 *capacity obligation* transfers must not result in the violation of any constraint as defined in the pre-auction report
- 18.9.1A Where the *capacity obligation* is transferred between electrical zones, the *capacity transferee* shall be settled based upon the *capacity auction clearing price* received by the *capacity transferor* when the *capacity obligation* first cleared the *capacity auction* in accordance with the applicable *market manual*.
- 18.9.2 For each transfer request that satisfies the criteria in section 18.9.1, the *IESO* shall determine the *capacity transferee's* revised *capacity auction deposit* and/or *capacity prudential support obligation*, as applicable, in accordance with section 18.3.2 and MR Ch.2 s.5B.3.3.
- 18.9.3 The *capacity transferee* shall provide the *IESO*, within five *business days* of receiving notification from the *IESO* or within such a longer period of time as may be agreed between the *IESO* and the *capacity transferee*, any additional *capacity auction deposit* and/or *capacity prudential support obligation* that may be required as a result of a transfer request.
- 18.9.4 After the revised *capacity auction deposits* and/or *capacity prudential support obligations* have been satisfied by the *capacity transferee*, the *IESO* shall notify the *capacity transferor* and *capacity transferee* of its approval or rejection, and the *IESO* shall *publish* updated post-auction reports pursuant to section 18.8. If the *IESO* approves the transfer, the *capacity transferor* may request a reassessment of its *capacity auction deposits* and/or *capacity prudential support*

obligation to reflect its revised *capacity obligation* and the *IESO* shall remit any excess *capacity auction deposits* and/or *capacity prudential support obligation*.

19. Capacity Market Participants with Capacity Obligations

19.1 Purpose

19.1.1 This section details how a *capacity market participant* must satisfy a *capacity obligation* with a *capacity auction resource*.

19.1.2 *Capacity auction resources* eligible to satisfy a *capacity obligation* are:

19.1.2.1 an *hourly demand response resource*;

19.1.2.2 a *capacity dispatchable load resource*;

19.1.2.3 a *capacity generation resource*;

19.1.2.4 a *system-backed capacity import resource*;

19.1.2.5 a *capacity storage resource*; or

19.1.2.6 a *generator-backed capacity import resource*.

19.2 Eligibility Requirements for Hourly Demand Response Resources

19.2.1 A *capacity market participant* is eligible to satisfy its *capacity obligation* with an *hourly demand response resource* provided that the *capacity market participant*:

19.2.1.1 demonstrates to the satisfaction of the *IESO* that it can provide the *capacity obligation*, as specified in the applicable *market manual*;

19.2.1.2 registers its *facilities* and *demand response contributors* as applicable, to the satisfaction of the *IESO*, in accordance with the applicable *market manual*. The *capacity market participant* shall not modify, vary or amend in any material respect any of the features or specifications of any *facility* without first requesting *IESO* authorization and approval in accordance with the applicable *market manual*;

19.2.1.3 [Intentionally left blank – section deleted]

- 19.2.1.4 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5.
- 19.2.2 The *IESO* may refuse the participation of an *hourly demand response resource* in a future *capacity auction* if the *resource's* participation would negatively impact the *reliable* operation of the *IESO-controlled grid*.
- 19.2.3 The *IESO* may remove or temporarily remove a *capacity market participant's hourly demand response resource* from its participation as a *capacity market participant* if the *resource's* continued participation would negatively impact the *reliable* operation of the *IESO-controlled grid*. A *capacity market participant* that is removed pursuant to this section 19.2.3 shall not receive an availability payment in accordance with section 19.4.1 for the duration of the removal.
- 19.2.4 The following provisions of the *market rules* shall not apply to a *capacity market participant* that is authorized by the *IESO* to participate only with an *hourly demand response resource* and is not a *wholesale consumer* that is associated with a *non-dispatchable load* or a *price responsive load*.
- 19.2.4.1 MR Ch.2 s.8;
- 19.2.4.2 MR Ch.5, other than ss.1.2.1 to 1.2.3, 2.3, 2.4, 5.8 and 5.9;
- 19.2.4.3 MR Ch.7 s.7; and
- 19.2.4.4 MR Ch.6, 8, 10.
- 19.2.5 Subject to section 19.2.6, *load equipment* that is associated with a *non-dispatchable load* may be registered as a *demand response contributor*, provided that the *non-dispatchable load* meets all the applicable eligibility requirements of this section 19.2, and the associated *wholesale consumer* meets all the requirements in the *market rules* that are applicable to a *wholesale consumer* associated with a *non-dispatchable load*.
- 19.2.6 *Load equipment* that is associated with a *dispatchable load* or *price responsive load* shall not be registered as a demand response contributor.

19.3 Eligibility Requirements for Capacity Dispatchable Load Resources

- 19.3.1 A *capacity market participant* is eligible to satisfy its *capacity obligation* with a *capacity dispatchable load resource*, provided that the *capacity market participant*:

- 19.3.1.1 demonstrates to the satisfaction of the *IESO* that it can provide the *capacity obligation*, as specified in the applicable *market manual*;
- 19.3.1.2 is authorized as a *wholesale consumer*;
- 19.3.1.3 registers its *load facilities* as a *dispatchable load* in accordance with the applicable registration requirements. The *capacity market participant* shall not modify, vary or amend in any material respect any of the features or specifications of any *resource* without first requesting *IESO* authorization and approval in accordance with the applicable *market manual*;
- 19.3.1.4 satisfies the *connection assessment* requirements in accordance with MR Ch.4 s.6, if required by the *IESO* in accordance with the *applicable market manual*;
- 19.3.1.5 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5.

19.4 Energy Market Participation for Hourly Demand Response Resources

- 19.4.1 A *capacity market participant* with a *capacity obligation* participating with an *hourly demand response resource* shall receive an availability payment during the *obligation period* in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with section MR Ch.9 s.4.13.

Standby and Activation Notices

- 19.4.2 If an *hourly demand response resource* has a *day-ahead schedule* or a *pre-dispatch schedule* less than the *resource's* total *bid* quantity, or if the applicable pre-dispatch *locational marginal price* for an *hourly demand response resource* is equal to or greater than the standby notice price threshold, determined by the *IESO*, for at least one hour during the *dispatch day availability window*, the *IESO* shall issue a standby notice to the applicable *capacity market participant* by 07:00 EST in accordance with the applicable *market manual*.
- 19.4.3 If the *IESO* does not issue a standby notice to a *capacity market participant* by 07:00 EST, the *capacity market participant* shall remove their *bids* for the *hourly demand response resource* as soon as practicable and before 9:00 EST. A *capacity market participant* that does not remove their *bids* for the *hourly demand response resource* before 9:00 EST shall comply with any corresponding activation notices issued by the *IESO* in accordance with section 19.4.5.

- 19.4.4 Subject to 19.4.4B, the *IESO* shall issue an activation notice to a *capacity market participant* no later than two hours before the activation period, if a standby notice has been issued in accordance with section 19.4.2 or a *capacity market participant* has not removed their *bids* in accordance with section 19.4.3, and the applicable *hourly demand response resource* has, for the *pre-dispatch calculation engine* run three hours before the activation period, a *pre-dispatch schedule* less than the *resource's* total *bid* quantity for at least one hour during the *dispatch day availability window*.
- 19.4.4A Subject to 19.4.4B, the *IESO* shall use reasonable efforts to ensure that the activation notice issued with respect to each *hourly demand response resource* is consistent with the *pre-dispatch schedule* for the *pre-dispatch calculation engine* run three hours before the activation period for that *resource*.
- 19.4.4B The *IESO* shall not be required to issue an activation notice, or, in the event that the *IESO* does issue an activation notice, shall not be required to satisfy the requirements of section 19.4.4A if:
- 19.4.4B.1 the *security* and *adequacy* of the system would be endangered by implementing the *pre-dispatch schedule*;
 - 19.4.4B.2 the *pre-dispatch calculation engine* has failed, or has produced a *pre-dispatch schedule* that is clearly and materially in error;
 - 19.4.4B.3 material changes subsequent to determination of the *pre-dispatch schedule*, such as failure of an element of a *transmission system* or failure of a *resource* to follow *dispatch instructions*, have occurred; or
 - 19.4.4B.4 the operation of all or part of the *IESO-administered markets* has been suspended pursuant to section 13.
- 19.4.5 If a *capacity market participant* receives an activation notice pursuant to section 19.4.4, the *capacity market participant* shall comply with the activation notice, unless such a reduction would endanger the safety of any person, damage equipment, or violate any *applicable law*. In such circumstances, the *capacity market participant* shall notify the *IESO* as soon as practicable.
- 19.4.6 A *capacity market participant* may be subject to non-performance charges, and the *IESO* may take action pursuant to sections 19.2.2 and 19.2.3 if a *capacity market participant* does not comply with an activation notice pursuant to this section 19, in accordance with the applicable *market manual*. The *capacity market participant* may also be subject to compliance actions in accordance with MR Ch.3 s.6.

- 19.4.7 A *capacity market participant* that expects its *hourly demand response resource* to operate in a manner that differs from the activation notice issued to it in accordance with this section 19 shall notify the *IESO* as soon as possible and in accordance with the applicable *market manual*.
- 19.4.8 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to reduce its consumption in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Non-performance Events for Hourly Demand Response Resources

- 19.4.9 In the event of a reduction in the *demand response capacity* of an *hourly demand response resource*, associated with a *capacity obligation* acquired through a *capacity auction*, the *capacity market participant* shall notify the *IESO* as per the procedures and criteria specified in the applicable *market manual*.
- 19.4.10 A *capacity market participant* shall reduce its *bid* to take into account and reflect the maximum *demand response capacity* that it reasonably expects it can provide in accordance with section 3.5.9 and due to any non-performance event related to an *hourly demand response resource* in an *obligation period*.
- 19.4.10A Where a *contributor outage* has occurred and such *contributor outage*:
- a. began not more than 14 days prior to the day on which there is an activation; and
 - b. ends within one hour prior to such activation or within the *activation window* of such activation;

then the *capacity market participant* may notify the *IESO* within five *business days* of the activation notice, in accordance with the process and requirements described in the applicable *market manual*.

- 19.4.10B Where the *IESO* receives a valid *contributor outage* notice pursuant to section 19.4.10A, the *IESO* shall adjust the assessment of the *capacity market participant's* performance as set out in the applicable *market manual*.

Capacity Auction Testing for Hourly Demand Response Resources

- 19.4.11 The *IESO* may, in accordance with the applicable *market manual*, direct a *capacity market participant* with a *capacity obligation* to perform a *capacity auction dispatch test* for each *hourly demand response resource* up to a maximum of two *capacity auction dispatch tests* per *obligation period*.
- 19.4.11A The *capacity market participant* shall perform a *capacity auction capacity test* once per *obligation period* for each *hourly demand response resource*, in

accordance with the applicable *market manual*. The *capacity auction capacity test* shall occur within a five *business day* testing window determined by the *IESO*. The *IESO* shall provide notification to a *capacity market participant* of the *capacity auction capacity test* no less than ten *business days* prior to the first day of the testing window.

- 19.4.12 If a *capacity market participant* fails during a *capacity auction dispatch test* or a *capacity auction capacity test* performed pursuant to section 19.4.11 or section 19.4.11A, respectively, the *capacity market participant* shall be subject to non-performance charges in accordance with the applicable *market manual* and MR Ch.9 s.4.13. Failure during a *capacity auction dispatch test* or a *capacity auction capacity test* shall be considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.
- 19.4.13 The *IESO* shall provide a *capacity market participant* day-ahead notification of a *capacity auction dispatch test* pursuant to section 19.4.11 and the test activation shall occur within the *availability window* of an *obligation period*.
- 19.4.14 The *capacity auction dispatch test* shall occur in accordance with the *hourly demand response resource* activation process specified in this section 19.4.
- 19.4.15 The *hourly demand response resource* shall be entitled to compensation for valid *capacity auction dispatch tests* conducted during a *capacity auction commitment period* pursuant to this section 19.4 and in accordance with the applicable *market manuals*. The *hourly demand response resource* shall not be entitled to compensation for any costs related to any *capacity auction capacity test*.
- 19.4.16 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines, the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test* or *capacity auction dispatch test*, as the case may be.
- 19.4.17 The *IESO* shall assess, in accordance with the applicable *market manual*, the testing data and other information submitted by the *capacity market participant* and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.
- 19.4.18 Where the notice referred to in section 19.4.17 indicates that the *hourly demand response resource's* average hourly capacity delivered over the four hour testing period was less than 90% of its *cleared UCAP* and such *capacity market participant* has not filed a *notice of disagreement* in regards to the outcomes of the *capacity auction capacity test* in accordance with MR Ch.9 s.6.8, such

capacity market participant's capacity obligation for such *hourly demand response resource* shall, effective as of one *business day* following the time period referred to in MR Ch.9 s.6.3.14, be reduced to the amount of capacity that was determined by the *IESO*, in accordance with the applicable *market manual*, to have been provided by the *capacity market participant* during the *capacity auction capacity test*. If such reduction in the *capacity market participant's capacity obligation* for such *hourly demand response resource* results in such *capacity obligation* being less than one MW, the remainder of the *capacity market participant's capacity obligation* for such *hourly demand response resource* is forfeited effective as of one *business day* following the time period referred to in MR Ch.9 s.6.3.14.

- 19.4.19 Where the notice referred to in section 19.4.17 indicates that the *hourly demand response resource's* average hourly capacity delivered over the four hour testing period was less than 90% of its *cleared UCAP*, such *capacity market participant* shall be subject to an in-period *cleared UCAP* adjustment charge pursuant to MR Ch.9 s.4.13.8.
- 19.4.20 After the relevant *capacity market participant* has made payment in full of any *settlement amount* owing pursuant to MR Ch.9 s.4.13.8, in respect of the same *capacity auction capacity test* for which its *capacity obligation* is being reduced pursuant to this section 19.4.16, the *capacity market participant* may request a reassessment of its *capacity prudential support obligation* to reflect its revised *capacity obligation* and the *IESO* shall remit any excess *capacity prudential support*.

Activation of Hourly Demand Response Resources leading up to or during an Emergency Operating State

- 19.4.21 A *capacity market participant* satisfying a *capacity obligation* using an *hourly demand response resource* shall be entitled to compensation for an activation leading up to or during an *emergency operating state* pursuant to MR Ch.5 s.2.3, and in accordance with the applicable *market manuals*.

19.5 Energy Market Participation for Capacity Dispatchable Load Resources

- 19.5.1 A *capacity market participant* with a *capacity obligation* participating with a *capacity dispatchable load resource* shall receive an availability payment during the *obligation period*, in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with MR Ch.9 s.4.13.

Dispatch of Capacity Dispatchable Load Resources

- 19.5.2 The *IESO* shall schedule a *capacity dispatchable load resource* in the *real-time market* and issue a *dispatch instruction* in accordance with Chapter 7.
- 19.5.3 A *capacity dispatchable load resource* shall comply with *IESO dispatch instructions* in accordance with Chapter 7.
- 19.5.4 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to reduce its consumption in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Outage Notification Requirements for Capacity Dispatchable Load Resources

- 19.5.5 Each *capacity dispatchable load resource* shall comply with the *outage* notification requirements of MR Ch.5.
- 19.5.6 A *capacity dispatchable load resource* shall reduce its *bid* to take into account and reflect the maximum *demand response capacity* that it reasonably expects it can consume in accordance with section 3.5.9.

Capacity Auction Testing for Capacity Dispatchable Load Resources

- 19.5.7 The *IESO* may, in accordance with the applicable *market manual*, direct a *capacity market participant* to perform a *capacity auction dispatch test* for each *resource* up to a maximum of two *capacity auction dispatch tests* per *obligation period*.
- 19.5.7A The *capacity market participant* shall perform a *capacity auction capacity test* once per *obligation period* for each *capacity dispatchable load resource*, in accordance with the applicable *market manual*. The *capacity auction capacity test* shall occur within a five *business day* testing window determined by the *IESO*. The *IESO* shall provide notification to a *capacity market participant* of the *capacity auction capacity test* no less than ten *business days* prior to the first day of the testing window.
- 19.5.8 If a *capacity market participant* fails a *capacity auction dispatch test* or a *capacity auction capacity test* performed pursuant to section 19.5.7 or 19.5.7A, the *capacity market participant* shall be subject to non-performance charges in accordance with MR Ch.9 s.4.13. Failure during *capacity auction dispatch test* or *capacity auction capacity test* shall be considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.

- 19.5.9 The *IESO* shall provide a *capacity dispatchable load resource* day-ahead notification of a *capacity auction dispatch test* and the test activation shall occur within the *availability window* of an *obligation period*.
- 19.5.10 The *capacity auction dispatch test* shall occur in accordance with the *dispatch instructions* for a *capacity dispatchable load resource* specified in this section 19.5.
- 19.5.11 The *capacity dispatchable load resource* shall not be entitled to compensation for any costs related to any valid *capacity auction dispatch test* or *capacity auction capacity test* conducted during an *obligation period* pursuant to this section 19.5.
- 19.5.12 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines, the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test*.
- 19.5.13 The *IESO* shall assess, in accordance with the applicable *market manual*, the testing data and other information submitted by the *capacity market participant* and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.

19.6 Eligibility Requirements for Capacity Generation Resources

- 19.6.1 A *capacity market participant* is eligible to satisfy its capacity obligation as a *capacity generation resource*, provided that the *capacity market participant*:
- 19.6.1.1 demonstrates to the satisfaction of the *IESO* that it can provide the *capacity obligation*, as specified in the applicable *market manual*;
 - 19.6.1.2 is authorized as a *generator*;
 - 19.6.1.3 registers its *generation facilities* as a *generation resource* in accordance with the applicable registration requirements. The *capacity market participant* shall not modify, vary or amend in any material respect any of the features or specifications of any *facility* without first requesting *IESO* authorization and approval in accordance with the applicable *market manual*;
 - 19.6.1.4 satisfies the *connection assessment* requirements in accordance with MR Ch.4 s.6, if required by the *IESO* in accordance with the applicable *market manual*;

- 19.6.1.5 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5.

19.7 Energy Market Participation for Capacity Generation Resources

- 19.7.1 A *capacity market participant* satisfying its *capacity obligation* with a *capacity generation resource* shall receive an availability payment during the *obligation period*, in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with MR Ch.9 s. 4.13.

Dispatch of Resources

- 19.7.2 The *IESO* shall schedule a *capacity generation resource* in the *energy market*, and issue *dispatch instructions* in accordance with Chapter 7.
- 19.7.3 A *capacity generation resource* shall comply with *IESO dispatch instructions* in accordance with Chapter 7.
- 19.7.4 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to inject *energy* in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Outage Notification Requirements for Capacity Generation Resources

- 19.7.5 Each *capacity generation resource* shall comply with the *outage* notification requirements of MR Ch.5.
- 19.7.6 A *capacity generation resource* shall reduce its *offer* to reflect the maximum capacity that it reasonably expects it can inject in accordance with section 3.5.9.

Capacity Auction Testing for Capacity Generation Resources

- 19.7.7 The *IESO* may, in accordance with the applicable *market manual*, direct a *capacity market participant* to perform a *capacity auction dispatch test* for each *capacity generation resource* up to a maximum of two *capacity auction dispatch tests* per *obligation period*.
- 19.7.7A The *capacity market participant* shall perform a *capacity auction capacity test* once per *obligation period* for each *capacity generation resource*, in accordance with the applicable *market manual*. The *capacity auction capacity test* shall occur within a five *business day* testing window determined by the *IESO*. The *IESO* shall provide notification to a *capacity market participant* of the *capacity auction capacity test* no less than ten *business days* prior to the first day of the testing window.

- 19.7.8 If a *capacity market participant* fails a *capacity auction dispatch test* or a *capacity auction capacity test* performed pursuant to section 19.7.7 or 19.7.7A, the *capacity market participant* shall be subject to non-performance charges in accordance with MR Ch.9 s.4.13. Failure during a *capacity auction dispatch test* or *capacity auction capacity test* shall be considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.
- 19.7.9 The *IESO* shall provide a *capacity generation resource* that is a *non-quick start resource* notification up to one *business day* in advance of a *capacity auction dispatch test* and the *capacity auction dispatch test* shall occur within the *availability window* of an *obligation period*.
- 19.7.9A The *IESO* shall provide a *capacity generation resource* that is a *quick start resource* notification at least one hour in advance of the *dispatch hour* of the *capacity auction dispatch test* and the *capacity auction dispatch test* shall occur within the *availability window* of an *obligation period*.
- 19.7.10 The *capacity auction dispatch test* shall occur in accordance with the *dispatch instructions* specified in this section 19.7.
- 19.7.11 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test*.
- 19.7.12 The *IESO* shall assess, in accordance with the applicable *market manual*, the testing data and other information submitted by the *capacity market participant* and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.

19.8 Eligibility Requirements for System-Backed Capacity Import Resources

- 19.8.1 A *capacity market participant* is eligible to satisfy its *capacity obligation* with a *system-backed capacity import resource* provided that the *capacity market participant*:
- 19.8.1.1 demonstrates to the satisfaction of the *IESO* that it can provide the *capacity obligation*, as specified in the applicable *market manual*;
 - 19.8.1.2 is authorized as a *market participant* eligible to import *energy*;

- 19.8.1.3 is registered to use the applicable *boundary entity resource* pursuant to section 2.2.7; and
- 19.8.1.4 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5B.

19.9 Energy Market Participation for System-Backed Capacity Import Resources

- 19.9.1 A *capacity market participant* satisfying its *capacity obligation* with a *system-backed capacity import resource* shall receive an availability payment during the *obligation period*, in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with MR Ch.9 s.4.13.

Dispatch of System-Backed Capacity Import Resources

- 19.9.2 The *IESO* shall schedule a *system-backed capacity import resource* in the *energy market*, and issue *dispatch instructions* in accordance with Chapter 7.
- 19.9.3 A *system-backed capacity import resource* shall comply with *IESO dispatch instructions* in accordance with Chapter 7.
- 19.9.4 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to schedule *energy* with the appropriate *scheduling entity* in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Outage Notification Requirements for System-Backed Capacity Import Resources

- 19.9.5 A *system-backed capacity import resource* shall reduce or remove its *offer* to reflect the maximum capacity that it reasonably expects it can provide in accordance with section 3.5.9.

Capacity Auction Testing for System-Backed Capacity Import Resources

- 19.9.6 The *capacity market participant* shall perform a *capacity auction capacity test* once per *obligation period* for each *system-backed capacity import resource*, in accordance with the applicable *market manual*. The *capacity auction capacity test* shall occur within a five *business day* testing window determined by the *IESO*. The *IESO* shall provide notification to a *capacity market participant* of the *capacity auction capacity test* no less than ten *business days* prior to the first day of the testing window.

- 19.9.7 If a *capacity market participant* fails a *capacity auction capacity test* performed pursuant to section 19.9.6, the *capacity market participant* shall be subject to non-performance charges in accordance with MR Ch.9 s.4.13. Failure during a *capacity auction capacity test* shall be considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.
- 19.9.8 [Intentionally left blank – section deleted]
- 19.9.9 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test*.
- 19.9.10 The *IESO* shall assess, in accordance with the applicable *market manual*, the relevant testing and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.

19.9A Eligibility Requirements for Generator-Backed Capacity Import Resources

- 19.9A.1 A *capacity market participant* is eligible to satisfy its *capacity obligation* with a *generator-backed capacity import resource* provided that the *capacity market participant*:
- 19.9A.1.1 demonstrates to the satisfaction of the *IESO* that it can provide the *capacity obligation*, as specified in the applicable *market manual*;
 - 19.9A.1.2 is authorized as a *market participant* eligible to import *energy* in association with a *boundary entity resource*; and
 - 19.9A.1.3 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5B.

19.9B Energy Market Participation for Generator-Backed Capacity Import Resources

- 19.9B.1 A *capacity market participant* satisfying its *capacity obligation* with a *generator-backed capacity import resource* shall receive an availability payment during the *obligation period*, in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with MR Ch.9 s. 4.13.

Dispatch of Generator-Backed Capacity Import Resources

- 19.9B.2 The *IESO* shall schedule a *generator-backed capacity import resource* in the *energy market*, and issue *dispatch instructions* in accordance with Chapter 7.
- 19.9B.3 A *generator-backed capacity import resource* shall comply with *IESO dispatch instructions* in accordance with Chapter 7.
- 19.9B.4 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to schedule *energy* with the appropriate scheduling entity in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Outage Notification Requirements for Generator-Backed Capacity Import Resources

- 19.9B.5 A *generator-backed capacity import resource* shall reduce or remove its *offer* to reflect the maximum capacity that it reasonably expects it can provide in accordance with section 3.5.9.
- 19.9B.6 A *generator-backed capacity import resource* shall comply with the *outage notification requirements* specified in the applicable *market manual*.

Capacity Auction Testing for Generator-Backed Capacity Import Resources

- 19.9B.7 A *capacity market participant* satisfying its *capacity obligation* with a *generator-backed capacity import resource* must perform a capacity auction capacity test, once per obligation period, in accordance with the applicable *market manual*, by scheduling an *energy import* into the *IESO-administered market* for at least one (1) hour that coincides with the timing of its scheduled four hour activation in the neighbouring *control area*, on a date that falls within the first two months of the applicable *obligation period* and by submitting data to the *IESO* to confirm the capability of the *generator-backed capacity import resource* to inject at least its *cleared ICAP* into the *control area* in which it is located for four consecutive hours within the *availability window*.
- 19.9B.8 A *capacity market participant* that fails to submit data pursuant to section 19.9B.7 in the form specified by the *IESO*, in a timely manner shall be subject to a capacity obligation administration charge pursuant to MR Ch.9 s.4.13.4.
- 19.9B.9 If a *capacity market participant* fails a *capacity auction capacity test* performed pursuant to section 19.9B.7, the *capacity market participant* shall be subject to non-performance charges in accordance with MR Ch.9 s.4.13. Failure during a *capacity auction dispatch test* or a *capacity auction capacity test* shall be

considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.

- 19.9B.10 The *capacity auction capacity test* shall occur in accordance with the *dispatch instructions* specified in this section 19.9B.
- 19.9B.11 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test*.
- 19.9B.12 The *IESO* shall assess, in accordance with the applicable *market manual*, the testing data and other information submitted by the *capacity market participant* and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.

19.10 Eligibility Requirements for Capacity Storage Resources

- 19.10.1 A *capacity market participant* is eligible to satisfy its *capacity obligation* with a *capacity storage resource* provided that the *capacity market participant*:
 - 19.10.1.1 demonstrates to the satisfaction of the *IESO* that it can satisfy the *capacity obligation*, as specified in the applicable *market manual*. *Capacity storage resources* must satisfy *capacity obligations* with injections of *energy* into the *IESO-controlled grid*;
 - 19.10.1.2 is a registered *market participant* authorized as an *electricity storage participant* in accordance with the applicable *market manual*;
 - 19.10.1.3 registers its *electricity storage facilities* as an *electricity storage resource* in accordance with the applicable registration requirements. The *capacity market participant* shall not modify, vary or amend in any material respect any of the features or specifications of any *facility* without first requesting *IESO* authorization and approval in accordance with the applicable *market manual*;
 - 19.10.1.4 satisfies the *connection assessment* requirements in accordance with MR Ch.4 s.6, if required by the *IESO* in accordance with the applicable *market manual*; and
 - 19.10.1.5 has provided *prudential support* and *capacity prudential support* in accordance with MR Ch.2 s.5.

19.11 Energy Market Participation for Capacity Storage Resources

19.11.1 A *capacity market participant* satisfying its *capacity obligation* with a *capacity storage resource* shall receive an availability payment during the *obligation period*, in accordance with this section and the applicable *market manual*. Availability payments may be offset by non-performance charges in accordance with MR Ch.9 s. 4.13.

Dispatch of Capacity Storage Resources

19.11.2 The *IESO* shall schedule a *capacity storage resource* as it would an *electricity storage facility* in the *energy market*, and issue *dispatch instructions* in accordance with Chapter 7.

19.11.3 A *capacity storage resource* shall comply with *IESO dispatch instructions* in accordance with Chapter 7.

19.11.4 The *IESO* may disqualify from future participation in the *capacity auction* any *capacity market participant* that fails to inject *energy* in order to satisfy its *capacity obligation* when called upon in accordance with this section 19.

Outage Notification Requirements for Capacity Storage Resources

19.11.5 Each *capacity storage resource* shall comply with its *outage* notification requirements as outlined in MR Ch.5.

19.11.6 A *capacity storage resource* shall reduce its *offer* to reflect the maximum capacity that it reasonably expects it can inject in accordance with section 3.5.9.

Capacity Auction Testing for Capacity Storage Resources

19.11.7 The *IESO* may, in accordance with the applicable *market manual*, direct a *capacity market participant* to perform a *capacity auction dispatch test* for each *capacity storage resource* up to a maximum of two *capacity auction dispatch tests* per *obligation period*.

19.11.7A The *capacity market participant* shall perform a *capacity auction capacity test* once per *obligation period* for each *capacity storage resource*, in accordance with the applicable *market manual*. The *capacity auction capacity test* shall occur within a five *business day* testing window determined by the *IESO*. The *IESO* shall provide notification to a *capacity market participant* of the *capacity auction capacity test* no less than ten *business days* prior to the first day of the testing window.

19.11.8 If a *capacity market participant* fails a test performed pursuant to section 19.11.7 or 19.11.7A, the *capacity market participant* shall be subject to non-performance charges in accordance MR Ch.9 s.4.13. Failure during a *capacity auction dispatch*

test or capacity auction capacity test shall be considered a breach of the *market rules* and may result in sanctions in accordance with MR Ch.3 s.6.2.

- 19.11.9 The *IESO* shall provide a *capacity storage resource* notification at least one hour in advance of the *dispatch hour* of the *capacity auction dispatch test* and the *capacity auction dispatch test* shall occur within the *availability window* of an *obligation period*.
- 19.11.10 The *capacity auction dispatch test* shall occur in accordance with the *dispatch instructions* specified in this section 19.11.
- 19.11.11 The *capacity market participant* shall submit to the *IESO* all of the testing data and other information in accordance with the requirements and deadlines set out in the applicable *market manual*. If the *capacity market participant* fails to submit the entirety of such testing data and other information within such deadlines the *capacity market participant* is deemed to have delivered zero MWh during the *capacity auction capacity test*.
- 19.11.12 The *IESO* shall assess, in accordance with the applicable *market manual*, the testing data and other information submitted by the *capacity market participant* and shall provide notice to the *capacity market participant* of the results of the *capacity auction capacity test*.

20. Capacity Exports in the IESO-Administered Markets

20.1 Capacity Export Request and IESO Review

- 20.1.1 A *market participant* that wishes to export eligible capacity shall submit a *capacity export request* to the *IESO*, in the form, within the timelines and as further prescribed in the applicable *market manual*.
- 20.1.2 The *IESO* shall approve or deny *capacity export requests* based on the *IESO's* review, as prescribed in the applicable *market manual*.
- 20.1.3 The *IESO* may, after approving or partially approving a *capacity export request* and prior to the *market participant* committing capacity to an external *control area*, revoke an approval of a *capacity export request* in order to maintain the *reliability* of the *IESO-controlled grid*, or if the *IESO* becomes aware of any event or change in circumstances that may alter the *IESO's* approval of a *capacity export request*.

20.2 Capacity Export Commitment Process

- 20.2.1 A *market participant* may only commit capacity to an external *control area* in accordance with the time periods, quantities and other terms and conditions of the *IESO's* approval of the *capacity export request*.
- 20.2.2 A *market participant* that commits its capacity to an external *control area* shall notify the *IESO* of the commitment and any subsequent changes to the commitment in the time and manner prescribed in the applicable *market manual*.

20.3 Called Capacity Exports

- 20.3.1 The *IESO* shall only accept and schedule a *called capacity export* in accordance with section 20.4 when advised by the external *control area operator* that the applicable external *control area* is anticipating or experiencing an adequacy shortfall, as may be specified in the applicable *capacity export agreement*.
- 20.3.2 A *market participant* shall notify the *IESO* concerning the details of a *called capacity export* in the time and manner prescribed in the applicable *market manual*.

20.4 Called Capacity Export Scheduling and Dispatch

- 20.4.1 Export *bids* for *called capacity exports* shall only be submitted by the *registered market participant* for the *resource* that has received approval from the *IESO* to export capacity in accordance with section 20.1.2.
- 20.4.2 All export *bids* for *called capacity exports* shall be submitted in the form and within the timelines prescribed in the applicable *market manual*.
- 20.4.3 Notwithstanding any provision of the *market rules* that may require the *IESO* to restrict exports in order to maintain the *adequacy* of the *IESO-controlled grid*, the *IESO* may schedule and *dispatch called capacity exports* in accordance with applicable *capacity export agreements* (the relevant details of which are specified in the applicable *market manual*).

21. Electricity Storage in the IESO-Administered Markets

21.1 Purpose

21.1.1 This section 21 sets out *market rules* intended to facilitate the near-term inclusion of *electricity storage participants* in the *IESO-administered markets* and the connection of *electricity storage resources* to the *electricity system*. A number of the provisions of this section would, based on their subject matter, ordinarily be included under different chapters or sections of the *market rules*. However, these provisions have been gathered together here under a single section for convenience of reference and until such time that *electricity storage participants* and *electricity storage resources* are more fully integrated under these *market rules*.

21.2 Market Registration

21.2.1 An *electricity storage participant* wishing to register an *electricity storage facility* and its associated *self-scheduling electricity storage resources* shall satisfy the applicable requirements in section 2, as further described in the applicable *market manual*. Without limiting the generality of the foregoing, the *electricity storage participant* shall satisfy those requirements set out in MR Ch.4 App.4.24 (IESO Monitoring Requirements: Electricity Storage Facilities) and MR Ch.4 App. 4.25 (Monitoring Requirements: Electricity Storage Performance Standards)".

21.2.2 Subject to the *market rules* governing participation in the *energy markets* and the provision of *ancillary services* to the *IESO*, a *self-scheduling electricity storage resource* or its associated *electricity storage units* may only be registered to participate in the *energy market* and to provide *reactive support service*, *voltage control service*, or *regulation service* or combinations of the foregoing, except that it shall not be registered to both participate in the *energy market* and provide *regulation service*.

21.2.3 An *electricity storage participant* wishing to register an *electricity storage facility* and its associated *dispatchable electricity storage resources*, shall satisfy the applicable requirements in section 2 as further described in the applicable *market manual*. Without limiting the generality of the foregoing the *electricity storage participant* shall satisfy those requirements set out in MR Ch.4 App.4.24 (IESO Monitoring Requirements: Electricity Storage Facilities) and MR Ch.4 App.4.25 (Monitoring Requirements: Electricity Storage Performance Standards).

- 21.2.4 Subject to the *market rules* governing participation in the *energy markets* and the provision of *ancillary services* to the *IESO*, a *dispatchable electricity storage resource* may only be registered to allow that *resource* to participate in the *energy market* or *operating reserve market*, or for its associated *electricity storage units* to provide *reactive support service* or *voltage control service*, or combinations of the foregoing and may participate in the *capacity auction*.

21.3 Provision of Regulation Service

- 21.3.1 An *electricity storage participant* wishing to provide *regulation services* must register its *electricity storage resource* as further described in the applicable *market manual*.
- 21.3.2 Notwithstanding section 2.2.9A.1, an *electricity storage participant* may request to register an *electricity storage facility* and its associated *resources* as a *self-scheduling electricity storage facility* if such *electricity storage facility* has an *electricity storage capacity* greater than or equal to 10 MW up to 50 MW for the purposes of providing *regulation services* only, provided that the *IESO* determines that there are no adverse impacts on the reliable operation of the *IESO-controlled grid*;
- 21.3.3 An *electricity storage resource* that is registered to provide *regulation services* may not participate in the *energy market* or the *operating reserve market*.

21.4 Energy Offers and Energy Bids

- 21.4.1 Notwithstanding section 3.5.1, an *electricity storage participant* may submit both an *offer* to inject *energy* and a *bid* to withdraw *energy* for a *dispatchable electricity storage resource* during the same *dispatch hour*.
- 21.4.2 For each *dispatch hour* in which an *electricity storage participant* submits both an *energy offer* and *energy bid* for an *electricity storage resource*, the *electricity storage participant* shall not submit a *bid* for that *electricity storage resource* that includes a price that is higher than or equal to the lower of: (i) the lowest price in the *offer* submitted for that *electricity storage resource*; and (ii) the lowest price in that *electricity storage resource's energy offer reference level value*.
- 21.4.3 An *electricity storage participant* who:
- (a) submits a *bid* in the *day-ahead market* contrary to section 21.4.2, is not entitled to the *day-ahead market* make-whole payment *settlement* amount, determined in accordance with MR Ch.9 s.3.4.1, for the relevant *dispatch hours*; and

- (b) submits a *bid* in the *real-time market* contrary to section 21.4.2, is not entitled to the *real-time* make-whole payment *settlement* amount determined in accordance with MR Ch.9 s.3.5.1, for the relevant *dispatch hours*.

21.5 Revisions to Dispatch Data

- 21.5.1 The *IESO* shall approve reduced injections or withdrawal amounts included in revised *dispatch data* from *electricity storage participants* submitted within the *real-time market mandatory window*, where the *electricity storage participant* determines, acting reasonably that its *electricity storage resource* may reach its:
 - 21.5.1.a *lower energy limit* in that *dispatch hour*, and will likely prevent the *electricity storage resource* from injecting *energy* in accordance with its *offer*, or
 - 21.5.1.b *upper energy limit* in that *dispatch hour*, and will likely prevent the *electricity storage resource* from withdrawing *energy* in accordance with its *bid*.

21.6 Operating Reserve

- 21.6.1 An *electricity storage participant* shall not submit an *offer* to provide *operating reserve* from a *dispatchable electricity storage resource* in any *dispatch hour* when there is a simultaneous *energy bid* and *energy offer* for that *electricity storage resource* in the same *dispatch hour*.
- 21.6.2 An *electricity storage participant* shall only submit an *offer* to provide *operating reserve* for a *dispatchable electricity storage resource* accompanied by an *offer* to inject *energy* if:
 - 21.6.2.1 The *electricity storage participant* submits an *offer* for the *electricity storage resource* to inject *energy* for the entire *dispatch hour* and has not submitted any *bids* for that *electricity storage resource* to withdraw *energy* for that *dispatch hour*;
 - 21.6.2.2 The *electricity storage participant* does not submit a *bid* to withdraw *energy* nor an *offer* to provide *operating reserve* accompanied by a *bid* to withdraw *energy* in the subsequent *dispatch hour*; and
 - 21.6.2.3 the *remaining duration of service* at the time stipulated in the applicable *market manual* is greater than or equal to the period of time stipulated in the applicable *market manual*.

- 21.6.3 An *electricity storage participant* shall only submit an *offer* to provide *operating reserve* for a *dispatchable electricity storage resource* accompanied by a *bid* to withdraw *energy* if:
- 21.6.3.1 The *electricity storage participant* submits a *bid* for the *electricity storage resource* to withdraw *energy* for the entire *dispatch hour* and has not submitted any *offers* for that *electricity storage resource* to inject *energy* for that entire *dispatch hour*;
 - 21.6.3.2 The *electricity storage participant* does not submit an *offer* to inject *energy* nor an *offer* to provide *operating reserve* accompanied by an *offer* to inject *energy* in the subsequent *dispatch hour*; and
 - 21.6.3.3 The *remaining duration of service* at the time stipulated in the applicable *market manual* is greater than or equal to a period of time stipulated in the applicable *market manual*.

21.7 Interpretation

- 21.7.1 To the extent of any conflict or inconsistency between the provisions of this section 21 and any other provisions of the *market rules*, the provisions of this section 21 shall govern.
- 21.7.2 With respect to Chapter 7, System Operations and Physical Markets-Appendices, the *IESO* will, acting reasonably and consistently at all times with the scope and intent of the amendments referenced in section 21.1:
- 21.7.2.a treat electricity storage injecting, or proposing to inject *energy*, as either a *dispatchable generation resource* or *self-scheduling generation resource*; and
 - 21.7.2.b treat electricity storage withdrawing, or proposing to withdraw *energy*, as either a *dispatchable load* or *price responsive load*, in each case, deeming such changes to be made to the applicable provisions of such Appendices or applicable *market manuals* as may be necessary to give full meaning to the foregoing.
- 21.7.3 For further certainty, the reference in section 21.7.2a to the use of *dispatchable generation resource* or *self-scheduling generation resource* in the interpretation of Chapter 7, System Operations and Physical Markets-Appendices and the applicable *market manuals*, shall not include any features or attributes that pertain primarily to and are distinctive of *intermittent generation resources*, *flexible nuclear generators*, or *variable generators*.

22. Market Power Mitigation

22.1 Reference Levels - General

- 22.1.1 The *IESO* shall determine and register *reference levels* for each *dispatchable resource* registered to submit *offers* or *bids* into the *energy market* or *offers* for *operating reserve* into the *operating reserve market*.
- 22.1.1.1 The *IESO* shall determine a *resource's* initial *reference levels* at the request of the *market participant* that is registered as the owner of the *resource*.
- 22.1.1.2 The *IESO* shall determine a *resource's* *reference levels* in accordance with the applicable *market manual*.
- 22.1.2 No *registered market participant* for a *resource* that meets the requirements in section 22.1.1 shall submit *offers* or *bids* for that *resource* unless the *IESO* has determined and registered *reference levels* for that *resource*.
- 22.1.3 A *market participant* shall provide to the *IESO* all information and supporting documentation that the *IESO* may reasonably require to determine a *resource's* *reference levels*, in accordance with the applicable *market manual*.
- 22.1.4 The *IESO* shall make available to each *market participant* the *reference levels* that are registered and *reference level values* that are calculated for that *market participant's* *resources*, in accordance with the applicable *market manual*.
- 22.1.5 The *reference level values* of each *energy offer reference level* shall be consistent with the requirements for *energy offers* in section 3.5.3.
- 22.1.6 The *reference level values* of each *operating reserve offer reference level* shall be consistent with the requirements for *offers* to provide *operating reserve* in section 3.6.2.
- 22.1.7 A *dispatchable resource* installed pursuant to the Canadian Nuclear Safety Commission's requirement for nuclear power plants to maintain standby and emergency power systems is exempt from the requirements in, and market power mitigation framework established by, this section 22.

22.2 Reference Levels for Financial Dispatch Data Parameters

- 22.2.1 The *IESO* shall determine the following *reference levels* for *financial dispatch data parameters*, by month or season if applicable, for each *resource* that meets the requirements in section 22.1.1:

- 22.2.1.1 *energy offer reference level;*
 - 22.2.1.2 *one speed no-load offer reference level;*
 - 22.2.1.3 *one start-up offer reference level per thermal state; and*
 - 22.2.1.4 *one operating reserve offer reference level for each class of operating reserve that the resource is registered to provide.*
- 22.2.2 The IESO shall determine the *reference levels* in section 22.2.1 based on a *resource's short-run marginal costs*, except as set out in the applicable *market manual*.
- 22.2.3 Despite section 22.2.2:
- 22.2.3.1 the IESO shall not register an *energy offer reference level* or an *operating reserve offer reference level* that produces *reference level values* that do not monotonically increase in quantity, regardless of a *resource's short-run marginal costs*; and
 - 22.2.3.2 the IESO may register a *reference level* that produces *reference level values* below a *resource's short-run marginal costs* at the request of the relevant *market participant*.

22.3 Reference Levels for Non-Financial Dispatch Data Parameters

- 22.3.1 The IESO shall determine the following *reference levels* for *non-financial dispatch data parameters* in accordance with the applicable *market manual*, by month or season if applicable, for each *resource* that meets the requirements in section 22.1.1:
- 22.3.1.1 *energy ramp rate reference level;*
 - 22.3.1.2 *operating reserve ramp rate reference level;*
 - 22.3.1.3 *lead time reference levels for each thermal state;*
 - 22.3.1.4 *minimum loading point reference level;*
 - 22.3.1.5 *minimum generation block run-time reference level;*
 - 22.3.1.6 *minimum generation block down-time reference levels for each thermal state;*
 - 22.3.1.7 *maximum number of starts per day reference level;*

- 22.3.1.8 *ramp hours to minimum loading point reference levels for each thermal state; and*
- 22.3.1.9 *minimum and maximum energy per ramp hour reference levels for each thermal state.*
- 22.3.2 The *IESO* shall determine the *reference levels* in section 22.3.1 based on a *resource's* operating characteristics in *unrestricted competition*, except as may be set out in the applicable *market manual*.
- 22.3.3 If a *market participant* fails to provide the information or supporting documentation required by the *IESO* pursuant to section 22.1.3, the *IESO* may register the following values for a *reference level* determined pursuant to section 22.3.1:
 - 22.3.3.1 *energy ramp rate reference level: 0.1 MW/min;*
 - 22.3.3.2 *operating reserve ramp rate reference level: 0.1 MW/min;*
 - 22.3.3.3 *lead time reference levels for each thermal state: 24 hours;*
 - 22.3.3.4 *minimum loading point reference level: for a generation resource, the resource's registered maximum generator resource active power capability; for a dispatchable load resource, the resource's registered maximum load – active power;*
 - 22.3.3.5 *minimum generation block run-time reference level: 24 hours;*
 - 22.3.3.6 *minimum generation block down-time reference level for each thermal state: 24 hours;*
 - 22.3.3.7 *maximum number of starts per day reference level: one start per day;*
 - 22.3.3.8 *ramp hours to minimum loading point reference levels for each thermal state: 12 hours;*
 - 22.3.3.9 *minimum energy per ramp hour reference levels for each thermal state: 0 MWh; and*
 - 22.3.3.10 *maximum energy per ramp hour reference levels for each thermal state: 1 MWh multiplied by the resource's minimum loading point reference level.*

22.4 Resources with Multiple Sets of Reference Levels

- 22.4.1 For each *resource* that is registered as a *pseudo-unit*, the *IESO* shall determine one set of *reference levels* for the combined-cycle mode of operation and one set of *reference levels* for the single-cycle mode of operation, as applicable to that *resource*.
- 22.4.2 For a *resource* that has registered a primary fuel type of gas, oil, steam, or biomass, and which is not eligible to submit *start-up offers* and *speed-no-load offers* as hourly *dispatch data* into the *day-ahead market* and *real-time market*, the *IESO* shall determine two *energy offer reference levels* for that *resource* in accordance with the applicable *market manual*.
- 22.4.3 For a *resource* that does not have multiple sets of *reference levels* determined pursuant to section 22.4.1 or 22.4.2 and which has indicated to the *IESO* that it can operate according to two distinct cost profiles, the *IESO* shall determine a set of *reference levels* for each profile in accordance with the applicable *market manual*. Each set of *reference levels* shall include all *reference levels* applicable to the *resource*.
- 22.4.4 For a *resource* with *reference levels* determined pursuant to section 22.4.3, the *IESO* shall use the set of *reference levels* associated with the profile with the lowest costs, unless the *market participant* requests otherwise pursuant to section 22.5.6 and the *IESO* has accepted the request.
- 22.4.5 The *IESO* shall determine one *operating reserve offer reference level* to be used when an *electricity storage resource* proposes to inject and a separate *operating reserve offer reference level* for when it proposes to withdraw, in accordance with the applicable *market manual*.

22.5 Changes to Reference Levels

- 22.5.1 Once the *IESO* has registered a *reference level* for a *resource*, the *IESO* shall not change that *reference level* unless:
- 22.5.1.1 the *IESO* has modified the *market rules* or the applicable *market manual* such that the *reference level* determined following such modification differs from the registered *reference level*;
 - 22.5.1.2 the *IESO* identifies a need in accordance with section 22.5.2;
 - 22.5.1.3 the *IESO* registered that *reference level* pursuant to section 22.3.3;
 - 22.5.1.4 the *IESO* is required to do so pursuant to section 22.5.3;

- 22.5.1.5 the *market participant* for the *resource* requests the *IESO* review that *reference level* pursuant to section 22.5.4 and the *IESO* has accepted the request;
 - 22.5.1.6 the *market participant* for the *resource* requests a temporary revision to the fuel cost component of one of the *resource's reference levels* pursuant to section 22.5.5 and the *IESO* has accepted the temporary revision; or
 - 22.5.1.7 more than two years have passed since the *reference level* was established or last updated, whichever is later.
- 22.5.2 The *IESO* may, at any time, review a *resource's* registered information or the supporting documentation submitted pursuant to section 22.1.3 to verify that the *resource's reference levels* are consistent with the registered information or supporting documentation. If, as a result of such review, the *IESO* determines that the *reference level* needs to be amended to be consistent with the registered information or supporting documentation, the *IESO* shall determine a revised *reference level* on a go-forward basis from a date specified by the *IESO*.
- 22.5.3 The *IESO* shall include *energy* and *speed no-load costs* in a *resource's start-up offer reference level* for every hour that the *resource's minimum generation block run-time* extends into the next *dispatch day* after HE 24 of the current *dispatch day*, if that *resource* is eligible to submit *start-up offers* and *speed-no-load offers* as hourly *dispatch data* into the *day-ahead market* and *real-time market*.
- 22.5.4 A *market participant* may, in accordance with the applicable *market manual*, request that the *IESO* review one of its *resources' reference levels* if the *market participant*:
- 22.5.4.1 believes the *reference level* does not accurately describe the *short-run marginal costs* or operational characteristics of that *resource*; or
 - 22.5.4.2 reasonably expects the *reference level* will not accurately describe the *short-run marginal costs* or operational characteristics of that *resource*.
- 22.5.5 A *market participant* may, in accordance with the applicable *market manual*, request a temporary revision to the fuel cost component of a *reference level* for specific *dispatch hours* if the fuel cost component in a *resource's energy offer reference level*, *start-up offer reference level*, or *speed no-load offer reference level* will not reflect the *resource's short-run marginal costs* for fuel in those *dispatch hours*. Such request must include supporting documentation showing

that the fuel cost component will not reflect the *resource's short-run marginal costs* for fuel in those *dispatch hours*.

- 22.5.6 A *market participant* that has more than one set of *reference levels* determined for a *resource* pursuant to section 22.4.3 may request, in accordance with the applicable *market manual*, that the *IESO* temporarily use the set of *reference levels* with the highest costs for specific *dispatch hours* if the *resource* is expected to operate in a manner consistent with those *reference levels* for those *dispatch hours*, and shall submit to the *IESO* documentation to substantiate the need to use those *reference levels* at the time of the request. The form and content of such documentation shall be set by the *IESO* and the *market participant* at the time a *resource's reference levels* are determined and may be amended with the agreement of the *IESO* and the *market participant*.
- 22.5.7 A *market participant* may make a request pursuant to either, but not both, section 22.5.5 or 22.5.6 for a specific *dispatch hour* or set of *dispatch hours* in the *day-ahead market* or the *real-time market*. A *market participant* may make a request in either or both of the *day-ahead market* and the *real-time market*. A request made pursuant to section 22.5.5 or 22.5.6 must be submitted:
- 22.5.7.1 for the *day-ahead market*, between the opening of and up to 30 minutes before the close of the *day-ahead market submission window*;
- 22.5.7.2 for the *real-time market*, no later than 150 minutes before the first *dispatch hour* in the request.
- 22.5.8 The *IESO* shall temporarily revise the *reference level* for the *dispatch hours* that were the subject of a request made pursuant to section 22.5.5 or 22.5.6 if the request met the applicable deadline specified in section 22.5.7.
- 22.5.9 The *IESO* may use the *reference level value* in force at the time of a request made pursuant to section 22.5.5 or 22.5.6 despite section 22.5.8 if, upon review, the *IESO* is not satisfied that the supporting documentation submitted demonstrates that the fuel cost component will not reflect the *resource's short-run marginal costs* for fuel in one or more hours of a *dispatch day* or that the *resource* needed to use the set of *reference levels* associated with the profile with the highest costs. The *IESO* may also assess whether a *settlement charge* is required in accordance with MR Ch.9 ss.5.2.1 and 5.3.1.
- 22.5.10 If the *IESO* is not satisfied that the fuel cost component will not reflect the *resource's short-run marginal costs* for fuel in one or more hours of a *dispatch day* or that the *resource* needed to use the set of *reference levels* associated with the profile with the highest costs then, despite section 22.5.8, the *IESO* may:

- 22.5.10.1 use the *reference level value* in force at the time of a request;
- 22.5.10.2 assess whether a *settlement* charge is required in accordance with MR Ch.9 ss.5.2.1 and 5.3.1;
- 22.5.10.3 reject subsequent requests for the *resource* made outside of 8:00 to 16:00 EPT on *business days* for 20 *business days* following the *dispatch day* that was the subject of the initial request without reviewing such subsequent requests; and
- 22.5.10.4 reject subsequent requests for the *resource* that the *IESO* has not reviewed before:
 - 22.5.10.4.1 the close of the *day-ahead market submission window*, for the *day-ahead market*; or
 - 22.5.10.4.2 no later than 130 minutes before the requested *dispatch hour*, for the *real-time market*.
- 22.5.11 For a request made pursuant to section 22.5.6 that has been accepted by the *IESO*, the *IESO* may require that the *market participant* provide additional supporting documentation showing that the set of *reference levels* associated with the profile with the highest costs represented the relevant *resource's short-run marginal costs* during the requested *dispatch hours* within two *business days* after the *dispatch day* for which use of those *reference levels* was requested. The form and content of such documentation shall be set by the *IESO* and the *market participant* at the time the *resource's reference levels* are determined and may be amended with the agreement of the *IESO* and the *market participant*. If the *market participant* fails to provide the documentation within the specified time or if the *IESO* is not satisfied that the documentation provided shows that those *reference levels* represented the *resource's short-run marginal costs* during the requested *dispatch hours*, the *IESO* shall assess whether a *settlement* charge is required in accordance with MR Ch.9 ss. 5.2.1 and 5.3.1.
- 22.5.12 The requirement in section 22.8.1 to communicate a *preliminary view* to the relevant *market participant* prior to registering a *reference level* shall not apply to a *reference level* registered pursuant to sections 22.5.1.4 or 22.5.1.6.

22.6 Reference Quantities

- 22.6.1 The *IESO* shall determine and register *reference quantities* for each *dispatchable resource* registered to submit *offers* into the *energy* or *operating reserve* markets.

- 22.6.1.1 The *IESO* shall determine a *resource's* initial *reference quantities* at the request of the *market participant* that is registered as the owner of the *resource*.
- 22.6.1.2 The *IESO* shall determine a *resource's* *reference quantities* in accordance with the applicable *market manual*.
- 22.6.2 No *registered market participant* for a *resource* that meets the requirements in section 22.6.1 shall submit *offers* or *bids* for that *resource* unless the *IESO* has determined and registered *reference quantities* for that *resource*.
- 22.6.3 A *market participant* shall provide to the *IESO* all information and supporting documentation that the *IESO* may reasonably require to determine a *resource's* *reference quantities*, in accordance with the applicable *market manual*.
- 22.6.4 The *IESO* shall make available to each *market participant* the *reference quantities* and *reference quantity values* registered for that *market participant's* *resources* in accordance with the applicable *market manual*.
- 22.6.5 A *market participant* may request that the *IESO* modify a *reference quantity* for a *resource* registered under that *market participant*, if the *market participant* believes that the *IESO's* methodology for calculating that *reference quantity* will over-estimate the quantity of *energy* or *operating reserve* that the *resource* can provide. Any request to do so must be accompanied by additional data and supporting documentation, as set out in the applicable *market manual*.
- 22.6.6 If the *IESO* is satisfied that the modified methodology used pursuant to section 22.6.5 more accurately describes the specific operational characteristics of the *resource*, then the *IESO* shall use such modified methodology to determine the *reference quantities* for that *resource*.
- 22.6.7 If a *market participant* fails to provide the information or supporting documentation required by the *IESO* pursuant to section 22.6.3, the *IESO* may register as the *resource's* *reference quantity*.
 - 22.6.7.1 the maximum quantity of *operating reserve* that the *resource* is registered to *offer*, if the *resource* is a *dispatchable load* or an *electricity storage resource* that is withdrawing *energy*, or
 - 22.6.7.2 the sum of the maximum active power capability of all *generation units* or *electricity storage units* associated with the *resource*, for all *resources* other than those described in 22.6.7.1.

22.7 Changes to Reference Quantities

22.7.1 Once the *IESO* has registered a *reference quantity* for a *resource*, the *IESO* shall not change that *reference quantity* unless:

22.7.1.1 the *IESO* has modified the *market rules* or the applicable *market manual* such the *reference quantity* determined following such modification differs from the registered *reference quantity*;

22.7.1.2 the *IESO* identifies a need in accordance with section 22.7.2;

22.7.1.3 the *market participant* for the *resource* notifies the *IESO* of a change to the *resource's* operational characteristics in accordance with section 22.5.4 or section 22.7.3 and the *IESO* has accepted the change; or

22.7.1.4 more than two years have passed since the *reference quantity* was established or last updated, whichever is later.

22.7.2 The *IESO* may, at any time, review the supporting documentation submitted pursuant to section 22.6.3 to verify that the *reference quantity* determined is consistent with the supporting documentation. If, as a result of such review, the *IESO* determines that the *reference quantity* needs to be amended to be consistent with the supporting documentation, the *IESO* shall update that *reference quantity* on a go-forward basis from a date specified by the *IESO*.

22.7.3 A *market participant* may request that the *IESO* review one of its *resources' reference quantities* if the *market participant*:

22.7.3.1 believes the *reference quantity* does not accurately describe the operational characteristics of that *resource*; or

22.7.3.2 reasonably expects the *reference quantity* will not accurately describe the operational characteristics of that *resource*.

22.8 Independent Review

22.8.1 Prior to registering a *reference level* or *reference quantity* for a *resource*, the *IESO* shall communicate a *preliminary view* to the relevant *market participant*.

22.8.1.1 The *IESO* shall register the *reference levels* and *reference quantities* contained in the *preliminary view* on the 11th *business day* after the date of the *preliminary view*, unless the *market participant*:

i. makes a request pursuant to section 22.8.2;

- ii. requests that the *IESO* delay registration until a date specified by the *market participant* and the *IESO* has approved such request; or
- iii. requests that the *IESO* register the *reference levels* and *reference quantities* in the *preliminary view* at an earlier date, in which case the *IESO* shall register the *reference levels* and *reference quantities* in the *preliminary view* no later than the 11th *business day* after the date of the *preliminary view*.

22.8.1.2 A *market participant* shall not make a request pursuant to section 22.8.2 if the *IESO* has registered the *reference levels* and *reference quantities* contained in the *preliminary view* pursuant to section 22.8.1.1.

22.8.2 A *market participant* may request that the *IESO* engage an expert independent of the *IESO* and the *market participant* to determine a value upon which the *IESO* and *market participant* disagree and which the *IESO* relied upon for the purpose of determining its *preliminary view* of a *reference level* or *reference quantity*. The *IESO* shall not register a *reference level* or *reference quantity* that is the subject of an expert determination except in accordance with this section 22.8.

22.8.3 The *IESO* shall request proposals to conduct a determination following a request made pursuant to section 22.8.2 or as required by section 22.8.11.2, as specified in the applicable *market manual*. If no responses to the request for proposals are received, the *IESO* shall register the applicable *reference levels* and *reference quantities* communicated in the *preliminary view*. A *market participant* may request a determination no more frequently than once every 60 days until such time as the *IESO* receives a response to the request for proposals, despite any time to do so specified in the applicable *market manual*.

22.8.4 The *IESO* shall provide the *market participant* with an estimate of the cost of the determination, as specified in the applicable *market manual*. If the *market participant* has not notified the *IESO* that it accepts the cost estimate and wishes to proceed with the determination within five *business days* of the *IESO's* notification, the *IESO* shall terminate the determination and register the applicable *reference levels* and *reference quantities* in the *preliminary view*.

22.8.5 The *IESO* shall, in accordance with and as further prescribed in the applicable *market manual*, provide an expert engaged pursuant to this section 22.8 with the following:

- 22.8.5.1 a statement of the values that are in dispute between the *IESO* and *market participant* and which the expert is required to determine;

- 22.8.5.2 the relevant *market rules*, *market manuals* and other documents setting out the values and supporting documents and information required to be submitted by *market participants* for the purpose of the *IESO's* determination of *reference levels* or *reference quantities*;
 - 22.8.5.3 the documents and information relevant to the expert's determination of the disputed values, as prescribed by the applicable *market manual*; and
 - 22.8.5.4 other relevant documents and information as may be agreed upon by the *IESO* and the *market participant*, including any documents or information that may be requested by the expert.
- 22.8.6 The *IESO* shall provide the *market participant* with a copy of the expert's determination following receipt thereof.
- 22.8.7 The *IESO* shall, subject to the *IESO's* and *market participant's* rights and obligations under sections 22.8.8, 22.8.10, and 22.8.13, register a *reference level* or *reference quantity* that is consistent with the expert's determination and the *market rules*, in accordance with the applicable *market manual*. If an expert has determined multiple values, the *IESO* rejecting a value pursuant to section 22.8.10 shall not affect the requirement in this section 22.8.7 that the *IESO* register *reference levels* or *reference quantities* consistent with the values that were not rejected.
- 22.8.8 The *IESO* or *market participant* may request that the expert correct any typographical error, error of calculation or similar error in the expert's determination of any values, or request that the expert reconsider and vary the expert's determination of any values on the grounds that:
- 22.8.8.1 the expert did not determine certain values that the expert was requested to determine; or
 - 22.8.8.2 the expert did not provide reasons, or adequate reasons, for his or her determination of certain values.
- 22.8.9 A request made pursuant to section 22.8.8 shall be made in accordance with the applicable *market manual*.
- 22.8.10 The *IESO* shall, within 15 *business days* of receiving the expert's determination, or within 10 *business days* of receiving the expert's further determination following a request made pursuant to section 22.8.8, if applicable, reject the expert's determination of any value if:

- 22.8.10.1 the expert's determination of that value contains a manifest error that materially affected the expert's determination of such value; or
 - 22.8.10.2 the expert's determination of that value, if accepted and implemented by the *IESO* for the purpose of calculating and registering the applicable *reference level* or *reference quantity*, would require the *IESO* to breach the *market rules*.
- 22.8.11 If the *IESO* rejects any values pursuant to section 22.8.10, the *IESO* shall:
- 22.8.11.1 notify the relevant *market participant* within 15 *business days* of receiving a determination that it has rejected a determination and specify the reason for the rejection; and
 - 22.8.11.2 within 10 *business days* of its rejection, take steps pursuant to sections 22.8.3 to 22.8.5 to procure a new expert to determine the rejected values. The *IESO* shall not be required to procure a new expert if it registers *reference levels* or *reference quantities* pursuant to sections 22.8.12 or 22.8.13. A *market participant* disputing the *IESO's* rejection shall not stay the requirement that the *IESO* procure a new expert.
- 22.8.12 A *market participant* that has requested a determination pursuant to section 22.8.2 may request that the *IESO* discontinue the process with respect to a *reference level* or *reference quantity* at any time prior to receiving the expert's determination. In such cases, the *IESO* shall register the relevant *reference level* or *reference quantity* in the *preliminary view*.
- 22.8.13 Despite sections 22.8.7 and 22.8.10, the *IESO* and a *market participant* may, at any time, agree to discontinue the determination process and register the *reference levels* or *reference quantities* that the *market participant* originally requested.
- 22.8.14 The *IESO* may apply a *settlement* charge to the *market participant* equal to the amount charged to the *IESO* by the expert for a review conducted pursuant to section 22.8.2. The costs to the *IESO* of a review conducted pursuant to section 22.8.11.2 shall be recovered from *market participants* pursuant to MR Ch.9 s.4.14.12(j).

22.9 Market Control Entities

22.9.1 The obligations in this section 22.9 apply to a *market participant* that is registered with the *IESO* as:

- 22.9.1.1 the owner of a:

- 22.9.1.1.1 *generation resource;*
- 22.9.1.1.2 *dispatchable load;*
- 22.9.1.1.3 *load resource participating as a price-responsive load;*
or
- 22.9.1.1.4 *electricity storage resource;*

22.9.1.2 an *energy trader*; or

22.9.1.3 a *virtual trader*,

and a reference to a *market participant* in sections 22.9.2 and section 22.9.3 includes a person who has filed an *application for authorization to participate* and indicated its intent to register as: (i) the owner of a *resource* type set out in section 22.9.1.1.1, 22.9.1.1.2, or 22.9.1.1.4; (ii) the owner of a *load resource* that will participate as a *price responsive load*; (iii) an *energy trader*; or (iv) a *virtual trader*.

22.9.2 A *market participant* shall disclose to the *IESO* the name, address, relationship to the *market participant*, and, if applicable, jurisdiction of formation, of each person or entity that meets any of the following criteria:

- 22.9.2.1 a person or entity that beneficially owns, directly or indirectly, whether through one or more subsidiaries or otherwise, voting securities carrying more than 10 per cent of the voting rights attached to all voting securities of the *market participant*;
- 22.9.2.2 a person or entity that is able to elect or appoint, directly or indirectly, whether through one or more subsidiaries or otherwise, at least 10 per cent of the directors of the *market participant*, other than ex officio directors;
- 22.9.2.3 a person or entity that is a partner in or of the *market participant*;
- 22.9.2.4 a person or entity that has a substantial beneficial interest in the *market participant* or that serves as a trustee in the *market participant*, if the *market participant* is a trust;
- 22.9.2.5 [Intentionally left blank – section deleted]
- 22.9.2.6 a person or entity that holds, directly or indirectly, whether through one or more subsidiaries or otherwise, an interest in the *market participant* that entitles the entity or individual to receive more than

10 per cent of the profits of the *market participant*, if the *market participant* is an entity other than a corporation; or

22.9.2.7 a person or entity that has any form of agreement with the *market participant* whereby: (i) the *market participant* confers the right or ability to determine a *resource's energy offers and bids* or *offers for operating reserve* to that person or entity or the ability to follow the *dispatch* instructions given to the *resource*; and (ii) that person or entity is entitled to receive more than 10 per cent of the amounts paid to the *market participant* in respect of all *energy and operating reserve* transacted through the *energy and operating reserve markets* for a *resource*.

22.9.3 A *market participant* shall designate one of the persons or entities disclosed pursuant to section 22.9.2 as the *market control entity for physical withholding* for each *dispatchable generation resource, dispatchable electricity storage resource and dispatchable load resource* for which the *market participant* is registered with the *IESO* as the owner, in accordance with sections 22.9.3-22.9.7.

22.9.3.1 A *market participant* shall designate *market control entities* and the *market control entity for physical withholding* for a *resource* in accordance with the applicable *market manual*.

22.9.4 A *market participant* shall designate a *market control entity* as the *market control entity for physical withholding* for a *resource* if the *market participant* has any form of agreement with that *market control entity* whereby: (i) the *market participant* confers the right or ability to determine the *resource's energy offers and bids* or *offers for operating reserve* to that *market control entity*; and (ii) that *market control entity* is entitled to receive more than 50 per cent of the amounts paid to the *market participant* in respect of all *energy and operating reserve* transacted through the *energy and operating reserve markets* by the *resource*.

22.9.5 If none of the *market participant's market control entities* meets the criteria in section 22.9.4, the *market participant* shall designate a *market control entity* as the *market control entity for physical withholding* for a *resource* as follows:

22.9.5.1 If the *market participant* is a corporation with share capital, then the *market participant* shall designate as the *resource's market control entity for physical withholding* the person or entity that ultimately holds, directly or indirectly, whether through one or more subsidiaries or otherwise, otherwise than by way of security only, by or for the benefit of that person or entity securities of the *market participant* that are attached to more than 50% of the votes that may be cast to

elect directors of the *market participant* and the votes attached to those securities are sufficient, if exercised, to elect a majority of the directors of the *market participant*.

22.9.5.2 If the *market participant* is a corporation without share capital, then the *market participant* shall designate as the *resource's market control entity for physical withholding* the person or entity that ultimately, directly or indirectly, whether through one or more subsidiaries or otherwise, is able to elect or appoint a majority of the directors of the *market participant*, other than ex officio directors.

22.9.5.3 If the *market participant* is an entity other than a corporation, then the *market participant* shall designate as the *resource's market control entity for physical withholding* the person or entity that ultimately holds, directly or indirectly, whether through one or more subsidiaries or otherwise, an interest in the *market participant* that entitles that person or entity to receive more than 50 per cent of the profits of the *market participant*.

22.9.6 If none of the *market participant's market control entities* meets the criteria in sections 22.9.4 to 22.9.5 and the *market participant* is any type of partnership, then the *market participant* shall designate as the *resource's market control entity for physical withholding* the partner that is entitled to the greatest share of the profits of the *market participant*.

22.9.7 If none of the *market participant's market control entities* meets the criteria in sections 22.9.4 to 22.9.6 then the *market participant* shall designate itself as the *resource's market control entity for physical withholding*.

22.10 Designation of Constrained Areas

22.10.1 Potential Constrained Areas

22.10.1.1 The *IESO* may designate an area as a *potential constrained area* following or in advance of relevant configuration changes on the *IESO-controlled grid*, in accordance with the applicable *market manual*.

22.10.1.2 The *IESO* shall assess *potential constrained area* designations on at least an annual basis.

22.10.1.3 The *IESO* shall *publish* a list of *potential constrained areas*, along with each of the *resources* and the transmission constraints within each *potential constrained area*, at least once per year, in accordance with the applicable *market manual*.

22.10.1.4 The *IESO* may update the list of *resources* or the name of any system element in a *potential constrained area* in accordance with the applicable *market manual*.

22.10.2 Narrow Constrained Areas

22.10.2.1 The *IESO* shall *publish* a list of *narrow constrained areas*, along with each of the *resources* and the transmission constraints within each *narrow constrained area*, at least once per year, in accordance with the applicable *market manual*.

22.10.2.2 The *IESO* shall designate a *potential constrained area* as a *narrow constrained area* if during an *IESO*-determined study period, the *potential constrained area* was import constrained in more than 4% of the hours in the previous 365 days in either the *day-ahead market* or the *real-time market*, as further specified in the applicable *market manual*.

22.10.2.3 The *IESO* may update the list of *resources* or the name of any system element in a *narrow constrained area* in accordance with the applicable *market manual*.

22.10.2.4 Designations made pursuant to section 22.10.2.1 and changes *published* under section 22.10.2.3 shall come into effect in accordance with the applicable *market manual*.

22.10.3 Dynamic Constrained Areas

22.10.3.1 The *IESO* shall designate a *potential constrained area* as a *dynamic constrained area* if the *potential constrained area*: (i) is not currently designated as a *narrow constrained area*; and (ii) was import constrained in more than 15% of the previous 120 hours in either the *day-ahead market* or the *real-time market*, as further specified in the applicable *market manual*. The designation shall come into effect no sooner than four hours following the criteria above being met.

22.10.3.2 The *dynamic constrained area* designation shall remain in effect until: (i) 120 *dispatch hours* have passed since the start of the *dispatch hour* in which the designation came into effect; and (ii) the *potential constrained area* was import constrained in fewer than 15% of the previous 120 hours in both the *day-ahead market* and the *real-time market* from the start of the current hour.

22.10.3.3 The *IESO* shall assess a *dynamic constrained area* designation every day prior to the *dispatch day* for the *day-ahead market* and every hour for the *real-time market*.

22.10.3.4 The *IESO* shall *publish* a list of *dynamic constrained areas*, along with each of the *resources* and the transmission constraints within each *dynamic constrained area*.

22.11 Global Market Power Reference Intertie Zones

- 22.11.1 The *IESO* may designate an *intertie zone* as a *global market power reference intertie zone* if:
- 22.11.1.1 the *intertie* associated with that *intertie zone* connects Ontario directly to another wholesale electricity market; and
 - 22.11.1.2 the *intertie zone* is able to provide effective competitive discipline for *market participant* behaviour.
- 22.11.2 The *IESO* shall designate an *intertie zone* as a *global market power reference intertie zone* in accordance with the applicable *market manual*.
- 22.11.3 The *IESO* shall *publish* the *intertie zones* designated as *global market power reference intertie zones* following a change to an *intertie zone's* designation status. A change to an *intertie zone's* designation status shall take effect no earlier than five *business days* following *publication*.

22.12 Uncompetitive Intertie Zones

- 22.12.1 The *IESO* shall designate an *intertie zone* as uncompetitive if at least one of the following conditions is true for that *intertie zone*:
- 22.12.1.1 a single *market participant* received at least ninety percent of the *day-ahead market* scheduled *energy* withdrawals or injections over *boundary entity resources* connected to that *intertie zone* scheduled in the previous calendar quarter; or
 - 22.12.1.2 the *IESO* reasonably determines that effective competition in that *intertie zone* is or is expected to be restricted.
- 22.12.2 The *IESO* shall designate an *intertie zone* as uncompetitive in accordance with the applicable *market manual*.
- 22.12.3 The *IESO* may remove the designation of an *intertie zone* as uncompetitive if the *intertie zone* no longer meets any of the criteria specified in section 22.12.1.
- 22.12.4 The *IESO* shall *publish* the *intertie zones* designated as uncompetitive following a change to an *intertie zone's* designation status. A change to an *intertie zone's* designation status shall take effect no earlier than two days following *publication*.
- 22.12.5 The *IESO* shall review the *intertie zones* designated as uncompetitive:

- 22.12.5.1 within the first five *business days* of each calendar quarter to determine whether either of the conditions in section 22.12.1 has been met; and
- 22.12.5.2 when a new *intertie zone* is added to the *IESO-administered market*.
- 22.12.6 The *IESO* may review the *intertie zones* designated as uncompetitive when a material change in market trade, structure, or regulation of external markets has occurred in the neighbouring *control area*.

22.13 Ex-Ante Validation of Non-Financial Dispatch Data Parameters

- 22.13.1 The *IESO* shall validate a *dispatchable resource's non-financial dispatch data parameters* against its corresponding *reference level values* at the time the *registered market participant* for a *resource* submits a *non-financial dispatch data parameter* by evaluating whether the *resource's* submitted *non-financial dispatch data parameter* exceeds the corresponding *reference level value*. A submitted *non-financial dispatch data parameter* shall be rejected if it violates any of the following:
 - 22.13.1.1 *minimum generation block run-time* is greater than the minimum of:
 - 22.13.1.1.1 100% above the *reference level value*; or
 - 22.13.1.1.2 three hours above the *reference level value*;
 - 22.13.1.2 *minimum generation block down-time* is greater than the minimum of:
 - 22.13.1.2.1 100% above the *reference level value* for the hot *thermal state*; or
 - 22.13.1.2.2 three hours above the *reference level value* for the hot *thermal state*;
 - 22.13.1.3 *minimum generation block down-time* is less than:
 - 22.13.1.3.1 50% of the *reference level value* for the warm *thermal state*; or
 - 22.13.1.3.2 the *reference level value* minus three hours for the warm *thermal state*;
 - 22.13.1.4 *minimum generation block down-time* is less than:

- 22.13.1.4.1 50% of the *reference level value* for the cold *thermal state*; or
- 22.13.1.4.2 the *reference level value* minus three hours for the cold *thermal state*;
- 22.13.1.5 *minimum loading point* is greater than 100% above the *reference level value*;
- 22.13.1.6 *energy ramp rate offered* is less than 50% of the *reference level value*;
- 22.13.1.7 *operating reserve ramp rate offered* is less than 50% of the *reference level value*;
- 22.13.1.8 *lead time* is greater than the minimum of:
 - 22.13.1.8.1 100% above the *reference level value* for any *thermal state*; or
 - 22.13.1.8.2 three hours above the *reference level value* for any *thermal state*;
- 22.13.1.9 the summed *lead time* of all *thermal states* is greater than six hours above the summed *reference level values* of all *thermal states*;
- 22.13.1.10 *ramp hours to minimum loading point* is greater than the minimum of:
 - 22.13.1.10.1 100% above the *reference level value* for any *thermal state*; or
 - 22.13.1.10.2 three hours above the *reference level value* for any *thermal state*;
- 22.13.1.11 *energy per ramp hour* is greater than:
 - 22.13.1.11.1 50% above the upper bound *reference level value* for any *thermal state*; or
 - 22.13.1.11.2 50% below the lower bound *reference level value* for any *thermal state*;
- 22.13.1.12 *maximum number of starts per day* is 50% less than the *reference level value* or less than one.

22.14 Ex-Ante Mitigation of Economic Withholding

- 22.14.1 The *IESO* shall, for *dispatchable resources*, apply a conduct test and impact test to assess *economic withholding of energy* and *operating reserve* in any *dispatch hour* using *day-ahead market* and *real-time market reference levels* in the processes to determine *day-ahead schedules* and *pre-dispatch schedules*, respectively, as set out in Appendix 7.5 and Appendix 7.5A of the *market rules*.
- 22.14.2 If the application of a conduct test applied further to this section 22.14 would result in an *energy offer* that exceeds (i) 20 *price-quantity pairs*, for a *resource* that is not a *pseudo-unit*, or (ii) the number of *price-quantity pairs* specified in section 3.5.5.6, for a *resource* that is a *pseudo-unit*, the *IESO* shall:
- (i) for conduct tests applicable to *price-quantity pairs* that are above the *price-quantity pair* that includes the *resource's minimum loading point*, delete the *price-quantity pairs* in order from the highest price to the lowest price, except maintaining the *price-quantity pair* with the highest price, until the number of *price-quantity pairs* is equal to the maximum number of *price-quantity pairs* permitted; and
 - (ii) for conduct tests applicable to *price-quantity pairs* that are up to and including the *price-quantity pair* that includes the *resource's minimum loading point*, replace all *price-quantity pairs* with one *price-quantity pair* where the price is equal to the highest price *price-quantity pair* of the relevant *reference level* and the quantity is equal to the submitted *minimum loading point*.

22.15 Ex-Post Mitigation of Physical Withholding

- 22.15.1 The *IESO* may apply the conduct tests and impact tests specified in this section 22.15, and as further specified in the applicable *market manual*, to assess *physical withholding of energy* and *operating reserve*.
- 22.15.2 The *IESO* may assess a *dispatchable resource* for *physical withholding* pursuant to this section 22.15 and may cease an assessment of *physical withholding* at any time.
- 22.15.3 When comparing an *offer* to the relevant *reference quantity value* pursuant to section 22.15.4, 22.15.5, 22.15.11, or 22.15.13, the *IESO* shall use the highest MW quantity value from that *offer*.

Conditions – Energy

- 22.15.4 The *IESO* may test an *energy offer* submitted by the *registered market participant* for a *resource* to assess *physical withholding of energy* if the *resource*:
- 22.15.4.1 had a *day-ahead market* or a *real-time market locational marginal price* for *energy* greater than \$25/MWh and can supply at least 10 MW of *energy* based on that *resource's* maximum resource active power capability; or
 - 22.15.4.2 had a *day-ahead market* or a *real-time market locational marginal price* for *energy* greater than \$25/MWh and the *market control entity for physical withholding* for that *resource* was designated as the *market control entity for physical withholding* for *resources* that can supply at least 10 MW of *energy* in aggregate based on those *resources'* maximum resource active power capabilities,
- and the *resource* met at least one of the following conditions in the *day-ahead market calculation engine* or the hour-ahead run of the *pre-dispatch calculation engine*:
- 22.15.4.3 the *energy offer* was below the *resource's reference quantity value* and the *resource* was part of a *narrow constrained area* where at least one of the transmission constraints that defines that *narrow constrained area* was binding;
 - 22.15.4.4 the *energy offer* was below the *resource's reference quantity value* and the *resource* was part of a *dynamic constrained area* where at least one of the transmission constraints that defines that *dynamic constrained area* was binding;
 - 22.15.4.5 the *energy offer* was below the *resource's reference quantity value* and the *resource* had a positive congestion component greater than \$25/MWh; or
 - 22.15.4.6 the *energy offer* was below the *resource's reference quantity value* and the *resource* could have met incremental load within Ontario when the conditions for testing for global market power for *energy* price impact set out in Appendix 7.5 and Appendix 7.5A were met.

Conduct Test – Energy

- 22.15.5 The *IESO* may apply a conduct test for *physical withholding* to an *energy offer* of the *registered market participant* for a *resource* that met the requirements set

out in section 22.15.4. An *energy offer* shall fail the conduct test for *physical withholding* if:

22.15.5.1 that *resource* met the conditions in section 22.15.4.3 or 22.15.4.4 and:

22.15.5.1.1 the *registered market participant* for that *resource* submitted an *energy offer* less than its *reference quantity value* by greater than the lesser of 2% or 5 MW; or

22.15.5.1.2 that *resource* and every other *resource*: (i) that shares a *market control entity for physical withholding* that met the same condition in section 22.15.4.3 or 22.15.4.4, but (ii) that did not meet the condition in section 22.15.5.1.1, submitted *energy offers* that were, in the aggregate, greater than 5 MW less than those *resources'* aggregate *reference quantity values*; or

22.15.5.2 that *resource* met the condition in section 22.15.4.5 or 22.15.4.6 and:

22.15.5.2.1 the *registered market participant* for that *resource* submitted an *energy offer* less than its *reference quantity value* by greater than the lesser of 10% or 100 MW; or

22.15.5.2.2 that *resource* and every other *resource* (i) that shares a *market control entity for physical withholding* that met the same condition in section 22.15.4.5 or 22.15.4.6, but (ii) that did not meet the condition in section 22.15.5.2.1, submitted *energy offers* that were, in the aggregate, less than those *resources'* aggregate *reference quantity values* by greater than the lesser of 5% or 200 MW.

22.15.6 A *registered market participant* for a *resource* that did not submit an *energy offer* for a *dispatch hour* in the *day-ahead market* or *real-time market* shall be deemed to have submitted an *energy offer* of 0 MW in that market for the purposes of the conduct test set out in this section.

22.15.7 If a *resource* met more than one of the conditions in sections 22.15.4.3 to 22.15.4.6, the *IESO* shall apply the conduct test for *physical withholding* with the most restrictive of the conduct thresholds set out in section 22.15.5.

Impact Test – Energy

- 22.15.8 The IESO may apply an impact test for *physical withholding* to the *energy offers* of the *registered market participant* for a *resource* that had an *energy offer* fail any of the conduct tests in section 22.15.5. An *energy offer* shall fail the impact test if:
- 22.15.8.1 the *resource* met the condition in section 22.15.4.3 and the *resource's simulated as-offered energy locational marginal price* is greater than the *resource's simulated reference quantity energy locational marginal price* by greater than the lesser of 50% or \$25/MWh;
 - 22.15.8.2 the *resource* met the condition in section 22.15.4.4 and the *resource's simulated as-offered energy locational marginal price* is greater than the *resource's simulated reference quantity energy locational marginal price* by greater than the lesser of 50% or \$25/MWh;
 - 22.15.8.3 the *resource* met the condition in section 22.15.4.5 and the *resource's simulated as-offered energy locational marginal price* is greater than the *resource's simulated reference quantity energy locational marginal price* by greater than the lesser of 100% or \$50/MWh; or
 - 22.15.8.4 the *resource* met the condition in section 22.15.4.6 and the *resource's simulated as-offered energy locational marginal price* is greater than the *resource's simulated reference quantity energy locational marginal price* by greater than the lesser of 100% or \$50/MWh.
- 22.15.9 The IESO shall calculate a *resource's simulated as-offered energy locational marginal price* using the same inputs as those used by the relevant calculation engine to calculate that *resource's energy locational marginal price*.
- 22.15.10 The IESO shall calculate a *resource's simulated reference quantity energy locational marginal price* by using the same inputs as those used by the relevant calculation engine to calculate the *resource's simulated as-offered energy locational marginal price* and the applicable *reference quantities* and *reference levels*.

Conditions – Operating Reserve

- 22.15.11 The IESO may test an *offer* for *operating reserve* of the *registered market participant* for a *resource* for *physical withholding* of *operating reserve* if the *resource*:
- 22.15.11.1 had a *day-ahead market* or a *real-time market locational marginal price* for the *offered class of operating reserve* greater than \$5/MW and can supply at least 10 MW of *operating reserve* based on that

resource's maximum resource active power capability or its maximum load active power; or

22.15.11.2 had a *day-ahead market* or a *real-time market locational marginal price* for the *offered* class of *operating reserve* greater than \$5/MW and the *market control entity for physical withholding* for the *resource* was designated as the *market control entity for physical withholding* for *resources* that can supply at least 10 MW of *operating reserve* in aggregate based on those *resources'* maximum resource active power capabilities or its maximum load active power,

and the *resource* met at least one of the following conditions in the *day-ahead market calculation engine* or the hour-ahead run of the *pre-dispatch calculation engine*:

22.15.11.3 the *offer* for *operating reserve* was below the *resource's reference quantity value* and the *operating reserve locational marginal price* for the *offered* class of *operating reserve* for the *resource* was greater than \$15/MW; or

22.15.11.4 the *offer* for *operating reserve* was below the *resource's reference quantity value* and the *resource* was located in a reserve area where the value of a minimum constraint for a class of *operating reserve* that the *resource* is eligible to *offer* was greater than 0 MW.

Conduct Test – Operating Reserve

22.15.12 The *IESO* may apply a conduct test for *physical withholding* to the *offers* for *operating reserve* of the *registered market participant* for a *resource* that meet the requirements set out in section 22.15.11. An *offer* for *operating reserve* shall fail the conduct test for *physical withholding* if:

22.15.12.1 that *resource* met the conditions in section 22.15.11.3, and:

22.15.12.1.1 the *registered market participant* for that *resource* submitted an *offer* for *operating reserve* less than its *operating reserve reference quantity* by greater than the lesser of 10% or 100 MW; or

22.15.12.1.2 that *resource* and every other *resource* (i) that shares a *market control entity for physical withholding* that met the same condition in section 22.15.11.3, but (ii) that did not meet the condition in section 22.15.12.1.1, submitted *offers* for *operating reserve* that were, in the aggregate, less than those *resources'* aggregate

reference quantity values by greater than the lesser of 5% or 200 MW; or

22.15.12.2 that *resource* met the conditions in section 22.15.11.4 and:

22.15.12.2.1 the *registered market participant* for that *resource* submitted an *offer* for *operating reserve* less than the applicable *reference quantity* by greater than the lesser of 2% or 5 MW; or

22.15.12.2.2 that *resource* and every other *resource*: (i) that shares a *market control entity for physical withholding* that met the same condition in section 22.15.11.4, but (ii) that did not meet the conditions in section 22.15.12.2.1, submitted *offers* for *operating reserve* that were, in the aggregate, lower than 5 MW less than those *resources'* aggregate *reference quantity values*.

22.15.13 Despite section 22.15.3, a *registered market participant* for a *resource* that does not submit an *offer* for *operating reserve* of a class that it is eligible to *offer* for a *dispatch hour* in the *day-ahead market* or *real-time market* shall be deemed to have submitted an *offer* for *operating reserve* of 0 MW for that class in that market for the purposes of the conduct test set out in this section.

22.15.14 If a *resource* meets more than one of the conditions in sections 22.15.11.1 and 22.15.11.2, the *IESO* shall apply the conduct test for *physical withholding* using the most restrictive conduct thresholds set out in section 22.15.12.

Impact Test – Operating Reserve

22.15.15 The *IESO* may apply an impact test for *physical withholding* to a *resource* that had an *offer* for *operating reserve* fail any of the conduct tests applied pursuant to section 22.15.12. An *offer* for the *offered* class of *operating reserve* shall fail the impact test if:

22.15.15.1 the *resource* met the condition in section 22.15.11.3 and the *resource's simulated as-offered operating reserve locational marginal price* the *offered* class of *operating reserve* is greater than the *resource's simulated reference quantity operating reserve locational marginal price* by greater than the lesser of 50% or \$25/MW; or

22.15.15.2 the *resource* met the condition in section 22.15.11.4 and the *resource's simulated as-offered operating reserve locational marginal price* for the *offered* class of *operating reserve* is greater than the *resource's simulated reference quantity operating reserve locational marginal price*.

- 22.15.16 The *IESO* shall calculate a *resource's simulated as-offered operating reserve locational marginal price* using the same inputs as those used by the relevant calculation engine to calculate that *resource's operating reserve locational marginal price*.
- 22.15.17 The *IESO* shall calculate a *resource's simulated reference quantity operating reserve locational marginal price* by using the same inputs as those used by the relevant calculation engine to calculate the *resource's simulated as-offered operating reserve locational marginal price* and the applicable *reference quantities* and *reference levels*.

Physical Withholding - Procedural Steps and Timelines

- 22.15.18 If an *energy offer* or *offer for operating reserve* fails an impact test for *physical withholding* applied pursuant to section 22.15.8 or 22.15.15, the *IESO* shall issue a first notice of *physical withholding* to the relevant *market participant* communicating a finding of an *instance of physical withholding*.
- 22.15.18.1 Notices issued pursuant to this section shall be issued no later than 180 days following the *dispatch day* for which the *offer* was submitted.
- 22.15.19 The *IESO* shall notify the *market participant* if the *IESO* ceases its assessment of *physical withholding* following issuance of the first notice of *physical withholding*.
- 22.15.20 Up to 45 days after the date of the notice specified in section 22.15.18, the *market participant* may submit to the *IESO* a request that the *IESO* determine an *alternative reference quantity value* for the relevant *resource* during the *dispatch day* in which the *offer* was submitted that failed the impact test for *physical withholding* applied pursuant to section 22.15.8 or 22.15.15.
- 22.15.20.1 Requests submitted pursuant to this section must include documentation to support any *resource-specific* considerations that were not accounted for in the *reference quantities* in use during the *instance of physical withholding*.
- 22.15.21 The *IESO* shall review the submitted supporting documentation and if upon such review the *IESO* determines that it demonstrates that a *resource* was able to supply a quantity of *energy* or *operating reserve* different than the *resource's reference quantity values* during the *instance of physical withholding*, the *IESO* shall determine an *alternative reference quantity value* for the *resource* and repeat the conduct test applied pursuant to section 22.15.5 or 22.15.12 and impact test applied pursuant to section 22.15.8 or 22.15.15, as applicable, using the *alternative reference quantity value* in the place of the applicable *reference quantity value*.

- 22.15.22 If the conduct test and impact test repeated pursuant to section 22.15.21 are not failed when the *alternative reference quantity value* is used, the *IESO* shall discontinue the assessment and notify the *market participant* within 90 days of receiving the supporting documentation.
- 22.15.23 The *IESO* shall issue a second notice of *physical withholding* to the relevant *market participant* within 90 days of the day the *IESO* received supporting documentation pursuant to section 22.15.20 if:
- 22.15.23.1 the conduct test and impact test repeated pursuant to section 22.15.21 are failed; or
- 22.15.23.2 upon review of the supporting documentation, the *IESO* determines that the supporting documentation does not demonstrate that a *resource* was able to supply a quantity of *energy* or *operating reserve* different than the *resource's reference quantity values* during the *instance of physical withholding*.
- 22.15.24 If a *market participant* does not request that the *IESO* determine an *alternative reference quantity value* in accordance with section 22.15.20 or notifies the *IESO* that it will not make such a request, the *IESO* shall issue a second notice of *physical withholding* within 90 days of the time period in section 22.15.20 elapsing or receipt of such notice, as the case may be.
- 22.15.25 If the *registered market participant* for a *resource* has submitted an *offer* that fails an impact test repeated pursuant to section 22.15.21, the *IESO* shall issue a second notice of *physical withholding* to the *market participant* for the *resource* within 90 days of the time period in section 22.15.20 elapsing.
- 22.15.25.1 A second notice of *physical withholding* shall set out the *settlement* charge relating to the *instance of physical withholding* specified in the notice and, if applicable, additional information regarding the conduct test and impact test. The *settlement* charge applied shall be determined in accordance with the applicable *market manual*.

22.16 Intertie Reference Levels

- 22.16.1 The *IESO* shall determine daily *day-ahead market* and *real-time market intertie reference levels* for each *dispatch day* for each *market participant* for each *boundary entity resource* on which the *market participant* may submit *offers* or *bids*.
- 22.16.1.1 The *IESO* shall determine one *intertie reference level* for each class of *operating reserve* a *market participant* is registered to *offer* on a *boundary entity resource*.

- 22.16.1.2 The *IESO* shall determine the *intertie reference levels* in section 22.16.1 using the information available on the day that is 14 days following the relevant *dispatch day*.
- 22.16.2 For a *market participant* that has *intertie reference levels* determined pursuant to section 22.16.1, the *IESO* shall determine one set of *intertie reference levels* for the period from 7:00 to 23:00 EPT on *business days* and one set of *intertie reference levels* for all other times. The *IESO* shall consider only the *dispatch hours* within each period when determining *intertie reference levels* for that period.

Energy Offers

- 22.16.3 When determining *day-ahead market energy offer intertie reference levels* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:
- 22.16.3.1 the *market participant* had at least 1 MW in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the *day-ahead schedule*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;
 - 22.16.3.2 the positive congestion component of the *intertie border price* in the *day-ahead market* was less than or equal to \$25/MWh for *energy*; and
 - 22.16.3.3 the *market participant's energy offer* for the *boundary entity resource* was priced below or equal to the *intertie border price*.
- 22.16.4 If a *market participant* did not have an *energy offer* that met the conditions in section 22.16.3 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market energy offer intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the *intertie border price* for *energy* from the *day-ahead market* for that *dispatch hour* in that *dispatch day*.
- 22.16.5 If a *market participant* had an *energy offer* that met the conditions in section 22.16.3 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market energy offer intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the unweighted average of the highest price *offer lamination* that was scheduled contained in all *energy offers* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.3.

- 22.16.6 When determining *real-time market energy offer inertia reference levels* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:
- 22.16.6.1 the *market participant* had at least 1 MW in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the hour-ahead run of the *pre-dispatch calculation engine*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;
 - 22.16.6.2 the positive congestion component of the *inertia border price* in the *real-time market* was less than or equal to \$25/MWh for *energy*; and
 - 22.16.6.3 the *market participant's energy offer* for the *boundary entity resource* was priced below or equal to the *inertia border price*.
- 22.16.7 If a *market participant* did not have an *energy offer* that met the conditions in section 22.16.6 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market energy offer inertia reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the *inertia border price* for *energy* from the *real-time market* for that *dispatch hour* in that *dispatch day*.
- 22.16.8 If a *market participant* had an *energy offer* that met the conditions in section 22.16.6 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market energy offer inertia reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the unweighted average of the highest price *offer* lamination that was scheduled contained in all *energy offers* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.6.

Energy Bids

- 22.16.9 When determining *day-ahead market energy bid inertia reference levels* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:
- 22.16.9.1 the *market participant* had at least 1 MW in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the *day-ahead schedule*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;

- 22.16.9.2 the positive congestion component of the *intertie border price* in the *day-ahead market* was less than or equal to \$25/MWh for *energy*; and
 - 22.16.9.3 the *market participant's energy bid* for the *boundary entity resource* was priced above the *intertie border price*.
- 22.16.10 If a *market participant* did not have an *energy bid* that met the conditions in section 22.16.9 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market energy bid intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the *intertie border price* for *energy* from the *day-ahead market* for that *dispatch hour* in that *dispatch day*.
- 22.16.11 If a *market participant* had an *energy bid* that met the conditions in section 22.16.9 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market energy bid intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the unweighted average of the highest price *bid* lamination that was scheduled contained in all *energy bids* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.9.
- 22.16.12 When determining *real-time market energy bid intertie reference levels* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:
- 22.16.12.1 the *market participant* had at least 1 MW in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the hour-ahead run of the *pre-dispatch calculation engine*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;
 - 22.16.12.2 the positive congestion component of the *intertie border price* in the *real-time market* was less than or equal to \$25/MWh for *energy*; and
 - 22.16.12.3 the *market participant's energy bid* for the *boundary entity resource* was priced above the *intertie border price*.
- 22.16.13 If a *market participant* did not have an *energy bid* that met the conditions in section 22.16.12 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market energy bid intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the

intertie border price for *energy* from the *real-time market* for that *dispatch hour* in that *dispatch day*.

- 22.16.14 If a *market participant* had an *energy bid* that met the conditions in section 22.16.12 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market energy bid intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the unweighted average of the highest price *bid* lamination that was scheduled contained in all *energy bids* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.12.

Operating Reserve

- 22.16.15 When determining a *day-ahead market operating reserve offer intertie reference level* for a class of *operating reserve* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:

22.16.15.1 the *market participant* had at least 1 MW of that class of *operating reserve* scheduled in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the *day-ahead schedule*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;

22.16.15.2 the positive congestion component of the *intertie border price* in the *day-ahead market* was less than or equal to \$25/MW for that class of *operating reserve*; and

22.16.15.3 the *market participant's offer* for *operating reserve* for the *boundary entity resource* was priced below or equal to the *intertie border price* for that class of *operating reserve*.

- 22.16.16 If a *market participant* did not have an *offer* for *operating reserve* that met the conditions in section 22.16.15 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market operating reserve offer intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* for a particular class of *operating reserve* shall be the *intertie border price* for that class of *operating reserve* in the *day-ahead market* for that *dispatch hour* in that *dispatch day*.

- 22.16.17 If a *market participant* had an *offer* for *operating reserve* that met the conditions in section 22.16.15 scheduled in the *day-ahead schedule* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *day-ahead market operating reserve offer intertie reference level* for a *boundary entity*

resource for a particular *dispatch hour* on a particular *dispatch day* for that class of *operating reserve* shall be the unweighted average of the highest price *offer* lamination that was scheduled contained in all *offers* for that class of *operating reserve* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.15.

- 22.16.18 When determining a *real-time market operating reserve offer intertie reference level* for a class of *operating reserve* for a *market participant* for a *boundary entity resource*, the *IESO* shall consider all the *dispatch hours* in the 90 days prior to the *dispatch day* when:
- 22.16.18.1 the *market participant* had at least 1 MW of that class of *operating reserve* scheduled in at least 1 *dispatch hour* scheduled at the *boundary entity resource* in the hour-ahead run of the *pre-dispatch calculation engine*, excluding any *dispatch hours* where the *IESO* manually set the schedule for the *market participant* for that *boundary entity resource*;
 - 22.16.18.2 the positive congestion component of the *intertie border price* in the *real-time market* was less than or equal to \$25/MW for that class of *operating reserve*; and
 - 22.16.18.3 the *market participant's offer* for *operating reserve* for the *boundary entity resource* was priced below or equal to the *intertie border price* for that class of *operating reserve*.
- 22.16.19 If a *market participant* did not have an *offer* for *operating reserve* that met the conditions in section 22.16.18 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market operating reserve offer intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* for a particular class of *operating reserve* shall be the *intertie border price* for that class of *operating reserve* in the *real-time market* for that *dispatch hour* in that *dispatch day*.
- 22.16.20 If a *market participant* had an *offer* for *operating reserve* that met the conditions in section 22.16.18 scheduled in the hour-ahead run of the *pre-dispatch calculation engine* for at least one *dispatch hour* in 15 of the 90 days prior to a *dispatch day*, then its *real-time market operating reserve offer intertie reference level* for a *boundary entity resource* for a particular *dispatch hour* on a particular *dispatch day* shall be the unweighted average of the highest price *offer* lamination that was scheduled contained in all *offers* for that class of *operating reserve* submitted by that *market participant* for that *boundary entity resource* that met the conditions in section 22.16.18.

22.17 Intertie Economic Withholding on an Uncompetitive Intertie Zone

- 22.17.1 The *IESO* may apply the conduct tests and impact tests specified in this section 22.17 in accordance with the applicable *market manual* to assess *intertie economic withholding*.
- 22.17.1.1 The *IESO* shall not assess the export transactions of an *energy trader* for *intertie economic withholding* under this section 22.17 if that *energy trader* has not disclosed a *market control entity* that has been designated as the *market control entity for physical withholding* for a *dispatchable resource* that is authorized to supply *energy* or *operating reserve*.
- 22.17.2 The *IESO* may cease the assessment of *intertie economic withholding* at any time.

Conduct Test – Energy

- 22.17.3 The *IESO* may apply a conduct test for *intertie economic withholding* to an *energy offer* or *energy bid* submitted by a *registered market participant* for a *boundary entity resource* in an *uncompetitive intertie zone* if: (i) that *energy offer* or *energy bid* was scheduled; and (ii) there is a positive congestion component on the *intertie border price* for *energy* greater than \$25/MWh in the *day-ahead market* or greater than \$25/MWh in the *real-time market*, as applicable.
- 22.17.4 An *energy offer* or *energy bid* shall fail the conduct test applied pursuant to section 22.17.3 if the *offer* or *bid* is greater than the lesser of:
- 22.17.4.1 the sum of: (i) the *boundary entity resource's* applicable *intertie reference level* and (ii) the absolute value of the *boundary entity resource's* applicable *reference level* multiplied by 300%; or
- 22.17.4.2 the sum of: (i) the *boundary entity resource's* applicable *reference level* and (ii) \$100/MWh.
- 22.17.5 A *price-quantity pair* in an *energy offer* or *energy bid* submitted by a *registered market participant* for a *boundary entity resource* that has a price component less than or equal to \$25/MWh shall be deemed not to have failed a conduct test applied pursuant to section 22.17.3.

Impact Test – Energy

- 22.17.6 The *IESO* may apply an impact test for *inertie economic withholding* in an uncompetitive *inertie zone* to any *boundary entity resource* that fails the conduct test applied pursuant to section 22.17.3.
- 22.17.7 An *energy offer* or *energy bid* submitted by a *registered market participant* for a *boundary entity resource* shall fail the impact test if the *boundary entity resource's simulated as-offered energy locational marginal price* is the lesser of greater than 100% or \$50/MWh above the *simulated inertie reference level energy locational marginal price* in the *day-ahead market* or the lesser of greater than 100% or \$50/MW above the *simulated inertie reference level energy locational marginal price* in the *real-time market*, as applicable.
- 22.17.8 The *IESO* shall calculate the *simulated inertie reference level energy locational marginal price* using the same inputs as those used by the relevant calculation engine to calculate the *energy locational marginal price* for the uncompetitive *inertie zone* and replacing each *energy offer* or *energy bid* that failed the conduct test applied pursuant to section 22.17.3 with the applicable *inertie reference level for energy* for the *boundary entity resource* in the *dispatch day* being assessed.

Conduct Test – Operating Reserve

- 22.17.9 The *IESO* may apply a conduct test for *inertie economic withholding* to an *offer* for *operating reserve* submitted by a *registered market participant* for a *boundary entity resource* in an *uncompetitive inertie zone* if: (i) that *offer* for *operating reserve* was scheduled; and (ii) the *operating reserve locational marginal price* for a class of *operating reserve* in that *uncompetitive inertie zone* is greater than \$15/MWh in the *day-ahead market* or greater than \$15/MW in the *real-time market*, as applicable.
- 22.17.10 An *offer* for *operating reserve* submitted by a *registered market participant* for a *boundary entity resource* shall fail the conduct test applied pursuant to section 22.17.9 if the *offer* is greater than the lesser of 50% or \$25/MWh above the *boundary entity resource's inertie reference level* in the *day-ahead market* or greater than the lesser of 50% or \$25/MW above the *boundary entity resource's inertie reference level* in the *real-time market*.
- 22.17.11 A *price-quantity pair* in an *offer* for *operating reserve* submitted by a *registered market participant* for a *boundary entity resource* that has a price component less than or equal to \$5/MWh in the *day-ahead market* or \$5/MW in the *real-time market* shall be deemed not to have failed the conduct test applied pursuant to section 22.17.9.

Impact Test – Operating Reserve

- 22.17.12 The *IESO* may apply an impact test for *intertie economic withholding* in an uncompetitive *intertie zone* to any *boundary entity resource* that fails the conduct test applied pursuant to section 22.17.9.
- 22.17.13 A *boundary entity resource's offer* for *operating reserve* shall fail the impact test if its *simulated as-offered operating reserve locational marginal price* is greater than the lesser of 50% or \$25/MWh above the *simulated intertie reference level operating reserve locational marginal price* in the *day-ahead market* or greater than the lesser of 50% or \$25/MW above the *simulated intertie reference level operating reserve locational marginal price* in the *real-time market*.
- 22.17.14 The *IESO* shall calculate the *simulated intertie reference level operating reserve locational marginal price* using the same inputs as those used by the relevant calculation engine to calculate the *operating reserve locational marginal price* for the *uncompetitive intertie zone* and replacing each *offer for operating reserve* that failed the conduct test applied pursuant to section 22.17.10 with the applicable *operating reserve offer intertie reference level* for the *boundary entity resource* in the *dispatch day* being assessed.

22.18 Mitigation for Make-Whole Payment Impact in Uncompetitive Intertie Zones

- 22.18.1 The *IESO* may apply the conduct tests and impact tests specified in this section 22.18 in accordance with the applicable *market manual* to assess mitigation for make-whole payment impact on an uncompetitive *intertie zone*.
- 22.18.2 The *IESO* may cease the assessment of mitigation for make-whole payment impact at any time.

Conditions

- 22.18.3 The *IESO* may assess mitigation for make-whole payment impact on an uncompetitive *intertie zone* for a *boundary entity resource* if:
- 22.18.3.1 the *boundary entity resource* was tested for an *energy price impact* pursuant to section 22.17.6;
 - 22.18.3.2 the *boundary entity resource* was tested for an *operating reserve price impact* pursuant to section 22.17.12; or
 - 22.18.3.3 the *boundary entity resource* was scheduled to provide *operating reserve* on an uncompetitive *intertie zone* and received a make-whole payment greater than \$10,000 for a *dispatch hour*.

Conduct Test

- 22.18.4 The *IESO* may apply a conduct test for *intertie economic withholding* to an *energy offer* or *offer for operating reserve* submitted by a *registered market participant* for a *boundary entity resource* that met any of the conditions in section 22.18.3. The *energy offer* or *offer for operating reserve* shall fail the conduct test if:
- 22.18.4.1 the *energy offer* was greater than the lesser of 300% or \$100/MWh above the *boundary entity resource's intertie reference level* in the *day-ahead market* or greater than the lesser of 300% or \$100/MWh above the *boundary entity resource's intertie reference level* in the *real-time market*; or
 - 22.18.4.2 the *offer for operating reserve* was greater than the lesser of 50% or \$25/MWh above the *boundary entity resource's intertie reference level* in the *day-ahead market* or greater than the lesser of 50% or \$25/MWh above the *boundary entity resource's intertie reference level* in the *real-time market*.

Impact Test

- 22.18.5 The *IESO* may apply an impact test for *intertie economic withholding* to an *energy offer* or *offer for operating reserve* submitted by a *registered market participant* for a *boundary entity resource* that that fails the conduct test applied pursuant to section 22.18.4.
- 22.18.5.1 The *energy offer* or *offer for operating reserve* shall fail the impact test for a *dispatch hour* if the *boundary entity resource's* make-whole payment for that *dispatch hour* is greater than 10% higher than the make-whole payment would have been based on the *boundary entity resource's* relevant *intertie reference levels* for *offer* parameters that failed the conduct test.

22.19 Intertie Economic Withholding – Procedural Steps and Timelines

- 22.19.1 If an *energy offer*, *energy bid*, or *offer for operating reserve* fails an impact test applied pursuant to section 22.17.6, 22.17.12 or 22.18.5, the *IESO* shall issue a first notice of *economic withholding* to the relevant *market participant* communicating a finding of an *instance of intertie economic withholding*.
- 22.19.1.1 Notices issued pursuant to this section shall be issued no later than 180 days following the *dispatch day* for which the *offer* or *bid* was submitted.

- 22.19.2 The *IESO* shall notify the *market participant* if the *IESO* ceases its assessment of *intertie economic withholding* following issuance of the first notice of *intertie economic withholding*.
- 22.19.3 Up to 45 days after the date of the notice specified in section 22.19.1, the *market participant* may submit to the *IESO* a request that the *IESO* determine an *alternative intertie reference level value* for the relevant *boundary entity resource* during the *dispatch day* in which the *offer* or *bid* was submitted.
- 22.19.3.1 Requests submitted pursuant to this section must include documentation to support any *resource*-specific considerations that were not accounted for in the *intertie reference levels* in use during the *instance of intertie economic withholding*.
- 22.19.4 The *IESO* shall review the submitted supporting documentation and if upon such review the *IESO* determines it demonstrates that the *intertie reference level* did not account for all a *market participant's short-run marginal costs*, for *offers*, or *short-run marginal benefits*, for *bids*, the *IESO* shall determine an *alternative intertie reference level value* for the *boundary entity resource* that accounts for all the *short-run marginal costs* or *short-run marginal benefits*, as the case may be, and repeat the conduct test applied pursuant to section 22.17.3, 22.17.9, or 22.18.4 and impact test applied pursuant to section 22.17.6, 22.17.12, or 22.18.5 using the *alternative intertie reference level value* in the place of the applicable *intertie reference level value*.
- 22.19.5 If the conduct test and impact test repeated pursuant to section 22.19.4 are not failed when the *alternative intertie reference level value* is used, the *IESO* shall discontinue the assessment and notify the *market participant* within 90 days of receiving the supporting documentation.
- 22.19.6 The *IESO* shall issue a second notice of *intertie economic withholding* to the relevant *market participant* within 90 days of the day the *IESO* received supporting documentation pursuant to section 22.19.3 if:
- 22.19.6.1 the conduct test and impact test for *intertie economic withholding* repeated pursuant to section 22.19.4 are failed; or
- 22.19.6.2 upon review of the supporting documentation, the *IESO* determines that the supporting documentation does not demonstrate that the relevant *intertie reference level* did not account for all of a *market participant's short-run marginal costs*, for *offers*, or *short-run marginal benefits*, for *bids*.
- 22.19.7 If a *market participant* does not request that the *IESO* determine an *alternative intertie reference level value* in accordance with section 22.19.3 or notifies the

IESO that it will not make such a request, the *IESO* shall issue a second notice of *intertie economic withholding* within 90 days of the time period in section 22.19.3 elapsing or receipt of such notice, as the case may be.

22.19.8 If a *registered market participant* for a *boundary entity resource* has submitted an *offer* or *bid* that fails an impact test applied pursuant to section 22.17.6, 22.17.12, or 22.18.5, the *IESO* shall apply a *settlement* charge to the relevant *market participant* in respect of each *instance of intertie economic withholding*.

22.19.8.1 A second notice of *intertie economic withholding* shall set out the *settlement* charge relating to the *instance of intertie economic withholding* specified in the notice and, if applicable, additional information regarding the conduct test and impact test. The *settlement* charge applied shall be determined in accordance with the applicable *market manual*.