Market Rule Amendment Proposal Form

Part 1 - Market Rule Information

Identification No.:	MR-00481-R05
Subject:	Market Renewal Program- Final Alignment
Title:	Chapter 0.5 and Appendices - Power System Reliability
Nature of Proposal:	☐ Alteration ☐ Deletion ☒ Addition
Chapter:	0.5
Appendix:	Appendix 5.1 – Performance Standards for Ancillary Services
Sections:	All
Sub-sections proposed for amending:	Various
Current Market Rules Baseline:	

Part 2 - Proposal History

Version	Reason for Issuing	Version Date
1.0	Draft for Stakeholder Review	June 7, 2024
2.0	Draft for Technical Panel Review	July 2, 2024

Approved Amendment Publication Date:

Approved Amendment Effective Date:

Part 3 - Explanation for Proposed Amendment

Provide a brief description that includes some or all of the following points:

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

Summary

The IESO proposes to amend the market rules to support the implementation of the Market Renewal Program (MRP), via the Final Alignment (FA) Batch.

The FA Batch consolidates all Technical Panel provisionally recommended/IESO Board provisionally approved market rule amendments, with three types of further modifications:

1. Updates or corrections to earlier batches resulting from the ongoing implementation and engagement processes;
2. Transitional market rules required to facilitate the mechanics of transitioning from the old market to the renewed market; and
3. Administrative "conforming change" – to reflect any updates or corrections, e.g. update to references and defined terms.

This proposal is based on input from various stakeholder engagement initiatives for the Market Renewal Program.

Further information on MRP can be found on the IESO's Market Renewal webpage.

Background

Previous drafts of MRP market rule amendments have been provisionally approved by the IESO Board. The Final Alignment batch consolidates these provisionally approved amendments, with amendments where required, into a single batch that will follow the formal process for market rule amendments, including a formal vote by Technical Panel to recommend the market rules for IESO Board consideration, and formal approval by the IESO Board.

Given the scope of changes being proposed by MRP, each market rule chapter is impacted. The Final Alignment batch is structured such that there is a proposal for each chapter, with separate proposals for appendices 7 and 9.

The implementation of MRP will require two parallel sets of market rules to exist concurrently; the legacy market rules and the renewed market rules. The renewed market rules, which these proposals will create, will be labelled with unique chapter numbers to delineate them from the legacy market rules. A new section A, and in some chapters a section B, details the transitional nature of the two sets of market rules. As the renewed market rules are new chapters, there are no changes tracked. For a tracked changes view compared against the current market rules baseline, please refer to the MRP Final Alignment page.

Discussion

The accompanying "Summary of Changes - Final Alignment (Readers Guide)" provides a summary of the market rule amendments to the market rules.

Part 4 - Proposed Amendment

Introduction

A.1.1 This Chapter is part of the *renewed market rules,* which pertain to:

A.1.1.1 the period prior to a *market transition* insofar as the provisions are relevant and applicable to the rights and obligations of the *IESO* and *market participants* relating to preparation for operation in the *IESO administered markets* following commencement of *market transition;* and

A.1.1.2 the period following commencement of *market transition* in respect of all the rights and obligations of the *IESO* and *market participants.*

A.1.2 All references herein to chapters or provisions of the *market rules* will be interpreted as, and deemed to be references to chapters and provisions of the *renewed market rules.*

A.1.3 Upon commencement of the *market transition*, the *legacy market rules* will be immediately revoked and only the *renewed market rules* will remain in force.

A.1.4 For certainty, the revocation of the *legacy market rules* upon commencement of *market transition* does not:

A.1.4.1 affect the previous operation of any *market rule* or *market manual* in effect before the *market transition*;

A.1.4.2 affect any right, privilege, obligation or liability that came into existence under the *market rules* or *market manuals* in effect prior to the *market transition*;

A.1.4.3 affect any breach, non-compliance, offense or violation committed under or relating to the *market rules* or *market manuals* in effect prior to the *market transition*, or any sanction or penalty incurred in connection with such breach, non-compliance, offense or violation

A.1.4.4 affect an investigation, proceeding or remedy in respect of,

(a) a right, privilege, obligation or liability described in subsection A.1.4.2, or

(b) a sanction or penalty described in subsection A.1.4.3.

A.1.5. An investigation, proceeding or remedy described in subsection A.1.4.3 may be commenced, continued or enforced, and any sanction or penalty may be imposed, as if the *legacy market rules* had not been revoked.

B.1 Exceptions

B.1.1 Notwithstanding section A.1.1, the *legacy market rules* shall apply to any request for *one-day advance approval* of a *planned outage* submitted pursuant to section 6.4.1E prior to the commencement of the *market transition*, including where the requested *planned outage* would occur following the commencement of the *market transition*.

1. Purposes, Interpretation and General Principles

1.1 Purposes of Chapter 5 and Interpretation

1.1.1 Pursuant to section 6 of the *Electricity Act, 1998*, one of the objects of the *IESO* is to maintain the *reliability* of the *IESO-controlled grid*. This Chapter of the *market rules* sets forth:

1.1.1.1 rules governing maintenance of the *reliability* of the *IESO-controlled grid*;

1.1.1.2 conditions under which the *IESO* shall have authority to intervene in the *IESO-administered markets* and issue directions to *market participants* so as to maintain the *reliability* of the *IESO-controlled grid* and of electricity service;

1.1.1.3 procedures to be used by the *IESO*, including the issuance of directions, in the event of an *emergency,* an *emergency operating state* or a *high-risk operating state;*

1.1.1.4 minimum requirements for communication and information exchange between the *IESO* and *market participants* relating to the *reliability* of the *IESO-controlled grid*; and

1.1.1.5 the *IESO's* reporting requirements associated with its responsibilities for maintaining the *reliability* of the *IESO-controlled grid*.

1.1.2 [Intentionally left blank]

1.1.3 In the event of a contradiction or inconsistency between the provisions of this Chapter 5 and any other provision of the *market rules*, the provisions of this Chapter 5 shall govern. In performing any act, power, or duty under the *market rules*, the *IESO* shall have due regard to and, when necessary to ensure the *reliability* of the *IESO-controlled grid*, give precedence to the provisions of this Chapter 5.

1.2 General Principles

1.2.1 To the fullest extent possible consistent with maintaining the *reliability* of the *IESO-controlled grid*, the *IESO* shall apply the *market rules* relating to *reliability* so as to minimize the *IESO's* intervention into the operation of the *IESO-administered markets*. However, the maintenance of a *reliable IESO-controlled grid* shall be considered of paramount importance under these *market rules*, and the *IESO* shall have authority to intervene in the *IESO-administered markets* to the extent necessary to maintain the *reliability* of the *IESO-controlled grid*.

1.2.2 In all cases, except as otherwise noted in this Chapter, where the *IESO* takes action under this Chapter, it shall attempt to coordinate its actions with affected *market participants* unless, in the *IESO's* opinion, conditions dictate the need for immediate action.

1.2.3 Nothing in this Chapter is intended to prevent *market participants* from acting to ensure the safety of any person, prevent the damage of equipment, or prevent the violation of any *applicable law*, provided that any such actions that may affect the *reliability* of the *IESO-controlled grid* are coordinated with the *IESO* to the fullest extent practicable and are, in any event, reported or notified to the *IESO* where required by these *market rules* to be so reported or notified.

1.2.4 MR Ch.1 s.7.5 does not apply to this Chapter and any action or event that is required to occur on or by a stipulated time or day under this Chapter, or under a direction, instruction or order of the *IESO* issued pursuant to this Chapter, shall occur on or by that time, whether or not a business hour, or on or by that day, whether or not a *business day*, unless otherwise specified in this Chapter.

1.2.5 Unless a direction, instruction or order of the *IESO* provides otherwise, wherever this Chapter specifies that an action is to be taken "promptly" or "immediately", such action shall be taken as soon as possible after receiving the direction, instruction or order from the *IESO* or after becoming aware that an action is to be taken or is required not to be taken but in all events within five minutes, subject only to delay necessitated to ensure the safety of any person, prevent the damage of equipment, or prevent the violation of any *applicable law*.

1.2.6 Subject to section 1.2.7, *reliability standards* established by a *standards authority* that have not otherwise been stayed or revoked and referred back to the *standards authority* for further consideration by the *Ontario Energy Board* shall be declared in force in Ontario upon the later date of:

1.2.6.1 the *reliability standards* being declared in force in the United States or, for *NPCC* reliability criteria*,* when declared in force by *NPCC*; and

1.2.6.2 the expiry of the period for initiating a review before the *Ontario Energy Board* and the conclusion of any such review*;*

and shall cease to be in force in Ontario when they cease to be in force in the United States, provided that where a *reliability standard* is being retired and replaced with a new or amended version, the previous version shall remain in effect in Ontario until the later of the completion of the conditions in sections 1.2.6.1 and 1.2.6.2.

1.2.7 Notwithstanding section 1.2.6, where a *reliability standard* approved by *NERC* failed to achieve approval by the *NERC* registered ballot body as specified in *NERC*'s Rules of Procedure, the *reliability standard* will not be in force in Ontario unless and until the *IESO* determines, in consultation with affected *market participants*, that all or part of the *reliability standard* is in force in Ontario. The *IESO* shall *publish* notice of its determination and where applicable, such *reliability standard* will come into effect in accordance with section 1.2.6.

2. IESO-Controlled Grid and Operating States

2.1 Scope of IESO-Controlled Grid

2.1.1 The specific *facilities* included within the *IESO-controlled grid* shall be identified in the *operating agreements* between the *IESO* and each *transmitter* that are entered into in accordance with the *Electricity Act, 1998*. To the extent the *IESO* concludes, on its own initiative or further to a request made by a *market participant*, that, in order to meet its obligations to *reliably* operate the *IESO-controlled grid* or administer the *IESO-administered markets*, additional *transmission systems* or distribution *facilities* should be included within the *IESO-controlled grid*, the *IESO* shall negotiate to amend the applicable *operating agreement* to include such *transmission systems or facilities* or to conclude an *operating agreement* with the *transmitter* or owner of such *facilities* with whom no *operating agreement* has yet been concluded, as the case may be.

2.1.2 Subject to the licence of the *IESO* or of the applicable *transmitter* or *distributor*, if the *IESO* and a *transmitter* or *distributor* are unable to reach agreement on the inclusion of *facilities* within the *IESO-controlled grid*, the matter shall be resolved using the dispute resolution procedures in the applicable *operating agreement* or, in the absence of same, the procedures set forth in MR Ch.3 s.2.

2.2 Normal Operating State

2.2.1 The *IESO-controlled grid* shall be considered as being in a *normal operating state* when:

2.2.1.1 the voltage magnitudes at all energized busbars at any switchyard or substation of the *IESO-controlled grid* are within the ratings set by relevant *transmitters*;

2.2.1.2 the current flows on all transmission *facilities* of the *IESO-controlled grid* are within the equipment ratings established by the relevant *transmitters*;

2.2.1.3 all other electric plant forming part of, or having or likely to have a material impact on the operation of, the *IESO-controlled grid* is being operated within the equipment ratings defined by the relevant *transmitters*, *generators, electricity storage participants,* and *distributors*;

2.2.1.4 all *interconnected systems* having or likely to have a material impact on the operation of the *IESO-controlled grid* are being operated within the equipment ratings that are jointly established between the *IESO* and the relevant *transmitters*;

2.2.1.5 the configuration of the *IESO-controlled grid* is such that the severity of any potential fault is within the capability of circuit breakers to disconnect the faulted circuit or equipment; and

2.2.1.6 conditions on the *IESO-controlled grid* are secure in accordance with the requirements set forth in Section 5.

2.3 Emergency Operating State

2.3.1 The *IESO-controlled grid* shall be considered as being in an *emergency operating state* when observance of *security limits* under a *normal operating state* will either:

2.3.1.1 require *curtailment*; or

2.3.1.2 restrict transactions on *interconnected systems* during an *emergency* on the *IESO-controlled grid* or on a *neighbouring electricity system*.

2.3.2 The *IESO* shall not take any action or refrain from taking any action that will, in the *IESO*'s opinion, be reasonably likely to lead to an *emergency operating state*.

2.3.3 The *IESO* shall promptly inform *market participants* when an *emergency operating state* is anticipated or has been declared, and when it ceases to exist or to be anticipated. During an *emergency operating state*, the *IESO* shall have the authority to modify *security limits* as necessary to manage conditions on the *IESO-controlled grid*, and to take such other action or refrain from taking such other action consistent with *good utility practice* as may be required to restore the *IESO-controlled grid* to a *normal operating state* and with as little disruption to electric service or adverse impact on the operation of the *IESO-administered markets* as is reasonably practicable in the circumstances.

2.3.3A Without limiting the generality of section 2.3.3 and notwithstanding any other provision of the *market rules*, the *IESO* may, when the *IESO-controlled grid* is in an *emergency operating state*, acquire *emergency energy* in accordance with all applicable *reliability standards* and any applicable *interconnection agreement* in order to maintain the *reliability* of the *IESO-controlled grid.* The *IESO* shall not exercise this power where *market participants* have *offered* to provide sufficient quantities of *energy*, eligible for *dispatch* or scheduling, to enable the *IESO* to maintain the *reliability* of the *IESO-controlled grid*. The costs associated with the acquisition of such *emergency energy* paid by the *IESO* pursuant to the applicable *interconnection agreement* shall be recovered in accordance with MR Ch.9 s.4.14.12.

2.3.4 Further provisions relating to system and *market operations* during *emergency* conditions are set forth in MR Ch.7.

2.4 High-Risk Operating State

2.4.1 The *IESO-controlled grid* shall be considered to be in a *high-risk operating state* when the observance of *security limits* under a *normal operating state* will expose the *integrated power system* to a significantly higher than normal probability of one

or more *contingency events* and associated consequences, or of a condition that may lead to, but is not yet, an *emergency*. The conditions under which the *IESO-controlled grid* may be considered as entering into or exiting a *high-risk operating state* shall be defined in the *IESO*'s operating procedures, it being understood that, without limiting the generality of the foregoing, a *high-risk operating state* is normally associated with adverse or extreme weather conditions or equipment-related problems that could lead to a *contingency event* on the *IESO-controlled grid* that is not expected under a *normal operating state*.

2.4.2 The *IESO* shall not take any action or refrain from taking any action that will, in the opinion of the *IESO*, be reasonably likely to lead to a *high-risk operating state*.

2.4.3 The *IESO* shall promptly inform *market participants* when a *high-risk operating state* is anticipated or has been declared, and when it ceases to exist or to be anticipated. During a *high-risk operating state*, the *IESO* shall have the authority to modify *security limits* as necessary to manage conditions and increase *reliability* on the *IESO-controlled grid*, and to take such other action or refrain from taking such other action consistent with *good utility practice* as may be required and with as little disruption to electric service or adverse impact on the operation of the *IESO-administered markets* as is reasonably practicable in the circumstances.

2.5 Conservative Operating State

2.5.1 The *IESO-controlled grid* shall be considered to be in a *conservative operating state* when the impact of a *contingency event* on the *IESO-controlled grid* could be more severe than under a *normal operating state*. Under a *conservative operating state* the *IESO-controlled grid* will be operated within equipment and *security limits* established for a *normal operating state*. The *IESO-controlled grid* will be in a heightened state of readiness due to anticipated, or actual, stresses on the grid itself, or due to the *IESO's* loss of ability to effectively monitor the *IESO-controlled grid*. Conditions that may require a *conservative operating state* are listed in the applicable *market manual*.

2.5.2 The *IESO* shall promptly inform *market participants* when a *conservative operating state* is anticipated or has been declared, and when it ceases to exist or to be anticipated. During a *conservative operating state*, the *IESO* shall have the authority to take such action or refrain from taking such action consistent with *good utility practice* as may be required and with as little disruption to electric service or adverse impact on the operation of the *IESO-administered markets* as is reasonably practicable in the circumstances.

3. Obligations and Responsibilities

3.1 Objectives

3.1.1 This section 3 sets forth the responsibilities, obligations and authorities of the *IESO* and each *market participant* in order to maintain the *reliability* of the *IESO-controlled grid*.

3.2 Obligations of the IESO

3.2.1 The *IESO* shall direct the operations of the *IESO-controlled grid* pursuant to the provisions of all applicable *operating agreements* and shall maintain the *reliability* of the *IESO-controlled grid*. The *IESO's* responsibilities in this regard shall include, but are not limited to, the monitoring of, and the issuing of orders, directions or *dispatch instructions* to *facilities* and any associated *resources.*

3.2.2 The *IESO* shall carry out its obligations in accordance with all applicable *reliability standards.*

3.2.3 In order to meet its obligations under this Chapter and under other provisions of the *market rules*, the *IESO* shall maintain written operating procedures and instructions and shall make same available for inspection at all times by *market participants*. The *IESO Board* may *amend* the *market rules* to include any such operating procedures and instructions within the *market rules*.

3.2.4 [Intentionally left blank – section deleted]

Identification of Reliability Standards

3.2.5 The *IESO* shall maintain a mapping containing *reliability standards* applicable to each class of *market participants,* as per the applicability criteria, and provide *market participants* with the ability to retrieve those *reliability standards'* obligations or requirements that the *IESO* determines apply to that *market participant*. The *IESO* may revise its applicability determination under this section at any time on notice to the *market participant*. If required, the *IESO* shall consult with *market participants* to finalize *reliability standards'* obligations or requirements that apply to a *market participant.*

3.2.6 The *IESO* shall inform *market participants* when an amendment to a *reliability standard* or a new *reliability standard* will come into effect in Ontario, and update the mapping containing *reliability standards* applicable to each class of *market participants* to provide *market participants* with the ability to retrieve the new or amended *reliability standards'* obligations or requirements that the *IESO* determines apply to that *market participant*. The *IESO* may revise its applicability determination under this section at any time on notice to the *market participant*.

3.2.7 A *market participant* may request the *IESO* review a determination under section 3.2.5 or 3.2.6 with respect to that *market participant*. The *IESO* shall, following

consideration of any representations made by the *market participant,* determine whether the *reliability standards'* obligations or requirements apply to that *market participant*.

3.2A Technical Feasibility Exceptions

3.2A.1 The *IESO* may:

3.2A.1.1 [Intentionally left blank – section deleted]

3.2A.1.2 approve a *TFE application*, in whole or in part, subject to and including any terms and conditions the *IESO* determines appropriate or disapprove a *TFE application*, in whole or in part with such approval or disapproval being a *reviewable decision*;

3.2A.1.3 upon the request of a *market participant* amend or transfer a *technical feasibility exception*, in whole or in part, subject to and including any terms and conditions the *IESO* determines appropriate; or

3.2A.1.4 terminate or amend an approved *technical feasibility exception*, in whole or in part, subject to any terms and conditions the *IESO* determines appropriate. Such termination or amendment is a *reviewable decision*.

3.2A.2 A *TFE applicant* may, in accordance with the applicable *market manual*, request the *IESO* approve, amend, transfer, or terminate one or more *technical feasibility exceptions* by filing with the *IESO* a *TFE application* for each required *technical feasibility exception*, and shall, in accordance with the applicable *market manual* submit to the *IESO* an initial deposit. A *TFE applicant* may withdraw a *TFE application* at any time.

3.2A.3 Upon request by the *IESO*, a *TFE applicant* shall provide to the *IESO*:

3.2A.3.1 [Intentionally left blank – section deleted]

3.2A.3.2 any supporting documentation; and

3.2A.3.3 an executed agreement pursuant to which the *TFE applicant* agrees to pay to the *IESO* an amount equal to all of the reasonable costs incurred by the *IESO* in processing the *TFE application* and maintaining an approved *technical feasibility exception* until such time as the *technical feasibility exception* is no longer in effect.

3.2A.4 The *IESO* shall process a *TFE application* in accordance with Ontario-adapted *NERC* procedures for processing *TFE applications* as set out in the applicable *market manual*.

3.2A.5 Where applicable, for each *TFE application,* the *IESO* shall establish a cost threshold or subsequent cost thresholds which it considers to be reasonable, which is a *reviewable decision*, and which will form part of the executed agreement set out in

section 3.2A.3.3 and will monitor expenditures against the processing costs of a *TFE application* and where that threshold is reached:

3.2A.5.1 the *IESO* shall advise the *TFE applicant* of the work and costs incurred to date;

3.2A.5.2 the *IESO* shall provide an estimate to the *TFE applicant* of the further work and costs necessary to complete the processing of the *TFE application*; and

3.2A.5.3 the *TFE applicant* may choose to continue with the processing of the *TFE application* or discontinue the processing of the *TFE application*. In the event that the *TFE applicant* chooses to discontinue the processing by withdrawing the *TFE application*, the *IESO* shall issue an *invoice* to the *TFE applicant* for the reasonable costs incurred by the *IESO* to that point.

3.2A.6 The *IESO* may utilize an independent third party to review a *TFE application* and any changes to an approved *technical feasibility exception* submitted by a *TFE applicant*.

3.2A.7 The *IESO* may consult with *NERC* or *NPCC* in its assessment of a *TFE application* and any changes to an approved *technical feasibility exception*.

3.2A.8 A failure by a *market participant* or the *IESO* to meet any of the terms and conditions of an approved *technical feasibility exception* shall be a breach of the *market rules* and the *IESO* may terminate the approved *technical feasibility exception* and require the *TFE applicant* to become compliant with the applicable *NERC reliability standard*.

3.2A.9 Subject to section 3.2A.4, all *technical feasibility exceptions* which remain in effect are subject to periodic review, in accordance with the applicable *market manual*, to verify continuing justification for the *technical feasibility exception*.

3.2A.10 The *IESO* may submit *invoices* to the *TFE applicant* for costs and expenses incurred by the *IESO* in processing the *TFE application* and maintaining the approved *technical feasibility exception* until such time as the *technical feasibility exception* is no longer in effect, less in each case, the amount of any deposit paid pursuant to section 3.2A.2 not previously applied against the *IESO's* costs and expenses. The submission of *invoices* to the *TFE applicant* is a *reviewable decision*.

3.2A.11 A *TFE applicant* shall, within thirty days of the date of an *invoice* referred to in section 3.2A.5.3 or 3.2A.10, pay to the *IESO* the amount owing.

3.2B Bulk Electric System Exceptions

3.2B.1 A *BES exception applicant* may, in accordance with the applicable *market manual*, request the *IESO* approve, amend, transfer, or terminate one or more *bulk electric system exceptions* by filing with the *IESO* a *BES exception request* for each required *bulk electric system exception*, and shall, in accordance with the applicable *market*

manual submit to the *IESO* an initial deposit. A *BES exception applicant* may withdraw a *BES exception request* at any time.

3.2B.2 The *IESO* may review, reject or accept a *BES exception request* in whole or in part.

3.2B.3 The *IESO* shall process a *BES exception request* in accordance with the Ontario-adapted *NERC* procedure for processing *BES exception requests* as set out in the applicable *market manual*.

3.2B.4 Upon request by the *IESO*, a *BES exception applicant* shall provide to the *IESO*:

3.2B.4.1 a substantive review deposit amount;

3.2B.4.2 any supporting documentation; and

3.2B.4.3 an executed agreement pursuant to which the *BES exception applicant* agrees to pay to the *IESO* an amount equal to all of the reasonable costs incurred by the *IESO* in processing the *BES exception request*.

3.2B.5 Where applicable, for each *BES exception request*, the *IESO* shall establish a cost threshold or subsequent cost thresholds which it considers to be reasonable and which will form part of the executed agreement set out in section 3.2B.4.3 and will monitor expenditures against the processing costs of a *BES exception request* and where that threshold is reached:

3.2B.5.1 the *IESO* shall advise the *BES exception applicant* of the work and costs incurred to date;

3.2B.5.2 the *IESO* shall provide an estimate to the *BES exception applicant* of the further work and costs necessary to complete the processing of the *BES exception request*; and

3.2B.5.3 the *BES exception applicant* may choose to continue with the processing of the *BES exception request* or discontinue the processing of the *BES exception request*. In the event that the *BES exception applicant* chooses to discontinue the processing by withdrawing the *BES exception request*, the *IESO* shall issue an *invoice* to the *BES exception applicant* for the reasonable costs incurred by the *IESO* to that point. The issuance of such an *invoice* is a *reviewable decision*.

3.2B.6 The *IESO* may utilize an independent third party to review a *BES exception request* submitted by a *BES exception applicant*.

3.2B.7 After receiving a recommendation from the *IESO* on a *BES exception request*, the *IESO Board* or a panel of the *IESO Board* as determined by the Chair of the *IESO Board* may:

3.2B.7.1 [Intentionally left blank]

3.2B.7.2 approve or disapprove a *BES exception request*, in whole or in part, subject to and including any terms and conditions the *IESO* determines appropriate or disapprove a *BES exception request*, in whole or in part, with such approval or disapproval being a *reviewable decision*;

3.2B.7.3 upon the request of a *market participant* or a *connection applicant* amend or transfer a *bulk electric system exception*, in whole or in part, subject to and including any terms and conditions the *IESO* determines appropriate; or

3.2B.7.4 terminate or amend an approved *bulk electric system exception*, in whole or in part, subject to any terms and conditions the *IESO* determines appropriate. Such termination or amendment is a *reviewable decision*.

3.2B.8 A failure by a *market participant* or the *IESO* to meet any of the terms and conditions of an approved *bulk electric system exception* shall be a breach of the *market rules* and the *IESO Board* or a panel of the *IESO Board* as determined by the Chair of the *IESO Board* may terminate the approved *bulk electric system exception* and require the *BES exception applicant* to become compliant with the applicable *NERC reliability standards.*

3.2B.9 All *bulk electric system exceptions* are subject to periodic review, in accordance with the applicable *market manu*al, to verify continuing justification for the *bulk electric system exception* and may be referred to the *IESO Board* or a panel of the *IESO Board* as determined by the Chair of the *IESO Board* in accordance with section 3.2B.7.

3.2B.10 The *IESO* shall submit an *invoice* to a *BES exception applicant* upon completion of the processing of that applicant's *BES exception request* in an amount equal to all of the *IESO's* costs and expenses relating to the processing of the *BES exception applicant's BES exception request* less the amount of any deposit paid pursuant to section 3.2B.4.1. The submission of an *invoice* to a *BES exemption applicant* is a *reviewable decision*.

3.2B.11 A *BES exception applicant* shall, within thirty days of the date of an *invoice* referred to in section 3.2B.5.3 or 3.2B.10, pay to the *IESO* the amount owing.

3.3 Reliability-Related Information

3.3.1 The *IESO* shall *publish* a list of the categories of *reliability*-related information that it shall provide to *market participants*, the time periods within which such information will be provided, and the manner in which such information will be provided. Such information shall include, but not be limited to, information designed to:

3.3.1.1 enable *market participants* to initiate procedures to manage the potential risk of any action taken by the *IESO* to maintain the *reliability* of the *IESO-controlled grid*;

3.3.1.2 assist *market participants* in meeting their obligations under this Chapter; and

3.3.1.3 notify *market participants* of any operating changes or decisions that may have an impact on their operations, *facilities* or equipment.

3.3.2 The *IESO* shall *publish* a catalogue of the *reliability*-related information that the *IESO* shall require from *market participants*, including the information referred to in section 14.1.3, the time periods within which such information will be provided and the manner in which such information will be provided. At the same time, the *IESO* shall *publish* initial monitoring indices that the *IESO* shall use in evaluating the information so provided.

3.3.3 *Market participants* shall provide the *IESO* with the information referred to in section 3.3.2 within the time and in the manner required.

3.3.4 Subject to the confidentiality provisions of MR Ch.3 and MR Ch.4, the *IESO* shall, if requested to do so by a *market participant*, provide to that *market participant* *reliability*-related information not contained in the list referred to in section 3.3.1, provided that the *IESO* shall be under no obligation to provide any information that, in the *IESO's* opinion, would provide the requesting *market participant* with an undue advantage in the *IESO-administered markets*. In order to prevent any such undue advantage, the *IESO* may provide *market participants* with notice of the request prior to providing such information and may make the information requested by a *market participant* simultaneously available to all *market participants*.

3.4 Obligations of Transmitters

3.4.1 Each *transmitter* shall operate and maintain its transmission *facilities* and equipment in a manner that is consistent with the *reliable* operation of the *IESO-controlled grid* and shall assist the *IESO* in the discharge of its responsibilities relating to *reliability*. Such obligation shall include, but not be limited to, the following:

3.4.1.1 ensuring that systems and procedures for load-shedding in *emergencies* are provided for as specified in section 10;

3.4.1.2 ensuring there are controls, monitoring and secure communication systems to facilitate a manually initiated, rotational load-shedding and restoration process in order to assist the *IESO* in the management of a prolonged, major shortage of electrical supply or an extreme disruption to or *emergency* on the *IESO-controlled grid*;

3.4.1.3 providing the *IESO* with functional descriptions, equipment ratings, and operating restrictions for its equipment*;*

3.4.1.4 promptly informing the *IESO* of any change or anticipated change in the capability of its transmission *facilities* or the status of its equipment or *facilities* forming part of the *IESO-controlled grid*, and of any other change or anticipated change in its transmission *facilities* that could have

a material effect on the *reliability* of the *IESO-controlled grid* or the operation of the *IESO-administered markets;* and

3.4.1.5 promptly complying with the *IESO's* directions, including directions to *disconnect facilities* or equipment from the *IESO-controlled grid* or its *transmission system* for *reliability* purposes, unless the *transmitter* reasonably believes that following the *IESO's* direction poses a real and substantial risk of endangering the safety of any person, damaging equipment, or violating any *applicable law*. In all cases where the *transmitter* does not intend to follow the *IESO's* directions for any such reasons, it shall promptly notify the *IESO* of this fact and shall nonetheless comply with the *IESO's* directions to the fullest extent possible without causing the harms described above.

3.4.2 Each *transmitter* shall carry out its obligations under this Chapter in accordance with all applicable *reliability standards,* subject to the information reporting requirements specified in section 14.1.2*.*

3.5 Obligations of Wholesale Customers

3.5.1 Each *connected wholesale customer* shall operate and maintain its *facilities* and equipment in a manner that is consistent with the *reliable* operation of the *IESO-controlled grid* and shall assist the *IESO* in the discharge of its responsibilities relating to *reliability*. Such obligation shall include, but not be limited to, the following:

3.5.1.1 ensuring there are controls, monitoring, and secure communication systems to facilitate a manually initiated, rotational load-shedding and restoration process in order to assist the *IESO* in the management of a prolonged, major shortage of electrical supply or an extreme disruption to or *emergency* on the *IESO-controlled grid*;

3.5.1.2 promptly informing the *IESO* of any change or anticipated change in the status of any *facility* or equipment that it operates and is associated with the *resource* that is under the *dispatch* control of the *IESO* as described in these *market rules* or of any other change or anticipated change in its *facilities* or equipment that could have a material effect on the *IESO-controlled grid* or the operation of the *IESO-administered markets;*

3.5.1.3 promptly complying with the *IESO's* directions, including directions to *disconnect* equipment from the *IESO-controlled grid* for *reliability* purposes, unless the *connected wholesale customer* reasonably believes that following the *IESO's* direction poses a real and substantial risk of endangering the safety of any person, damaging equipment, or violating any *applicable law*. In all cases where the *connected wholesale customer* does not intend to follow the *IESO's* directions for any such reasons, it shall promptly notify the *IESO* of this fact and shall nonetheless comply with the *IESO's* directions to the fullest extent possible without causing the harms described above; and

3.5.1.4 [Intentionally left blank]

3.5.1.5 providing, no later than 14:00 EST on the last *trading day* of every second *trading week*, or more frequently if requested by the *IESO*, the following information:

a. the timing and duration of any *planned outage*, closure, test or other similar operational event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of any *facility* that it operates, where such *planned outage*, closure, test or other similar operational event is expected to result in a change in *demand* of 20 MW or more; relative to the average weekday *demand* of that *facility*; and

b. the timing and duration of any *planned outage*, closure, test or other similar operational event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of any *facility* that it operates and that has been specifically designated by the *IESO* for this purpose.

3.5.2 Each *wholesale consumer* that is an *embedded market participant* shall provide, no later than 14:00 EST on the last *trading day* of every second *trading week*, or more frequently if requested by the *IESO*, the following information:

3.5.2.1 the timing and duration of any *planned outage*, closure, test or other similar operational event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of any *resource* associated with an *embedded load facility*, where such *planned outage*, closure, test or other similar operational event is expected to result in a change in *demand* of 20 MW or more relative to the average weekday *demand* of that *resource*; and

3.5.2.2 the timing and duration of any *planned outage*, closure, test or other similar operational event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of such *resource* that has been specifically designated by the *IESO* for this purpose.

3.5.3 Each *wholesale customer* shall carry out its obligations under this Chapter in accordance with all applicable *reliability standards,* subject to the information reporting requirements specified in section 14.1.2.

3.6 Obligations of Generators (Embedded and Non-embedded)

3.6.1 Each *generator* that participates in the *IESO-administered markets* or that causes or permits electricity to be conveyed into, through or out of the *IESO-controlled grid* shall operate and maintain its *generation facilities* and equipment in a manner that is consistent with the *reliable* operation of the *IESO-controlled grid* and shall assist the *IESO* in the discharge of its responsibilities related to *reliability*. Such obligation shall include, but not be limited to, the following:

3.6.1.1 ensuring there are controls, monitoring and secure communication systems to facilitate a manually initiated restoration process in order to assist the *IESO* in the management of a prolonged, major shortage of electrical supply or an extreme disruption to or *emergency* on the *IESO-controlled grid*;

3.6.1.2 providing the *IESO* with functional descriptions, equipment ratings, and operating restrictions for its equipment*,* as required by the *IESO* to *reliably* operate the *IESO-controlled grid*;

3.6.1.3 promptly informing the *IESO* of any change or anticipated change in the status of any *generation facility* or related equipment that it operates and is associated with the *resource* that is under the *dispatch* control of the *IESO* as described in these *market rules* or of any other change or anticipated change in its *generation facilities* or equipment that could have a material effect on the *IESO-controlled grid* or the operation of the *IESO-administered markets.* Such change shall include, but not be limited to, any change in status that could affect the maximum output of a *generation unit*, the minimum load of a *generation unit*, the ability of a *generation unit* to operate with *automatic voltage regulation*, or the availability of a *generation unit* to provide *ancillary services* (unless no application has been made to provide *ancillary services* to the *IESO-administered markets* in respect of a given *generation unit);*

3.6.1.4 promptly informing the *IESO* if any of the *generation facilities* that it operates are unable for any reason to operate in accordance with the schedules determined pursuant to MR Ch.7;

3.6.1.5 providing the *IESO* with current information showing the maximum unit capabilities of each of its *generation units* to facilitate *dispatch* in an *emergency operating state*. Such maximum unit capabilities shall consist of the maximum physical-rating of the *generation unit* and shall not be limited to the unit capabilities contained in the *offers* submitted for the *resource* associated with such *generation unit* pursuant to MR Ch.7; and

3.6.1.6 promptly complying with the *IESO's* directions, including directions to disconnect equipment from the *IESO-controlled grid* for *reliability* purposes, unless the *generator* reasonably believes that following the

IESO's direction poses a real and substantial risk of endangering the safety of any person, damaging equipment, or violating any *applicable law*. In all cases where the *generator* does not intend to follow the *IESO's* directions for any such reasons, it shall promptly notify the *IESO* of this fact and shall nonetheless comply with the *IESO's* directions to the fullest extent possible without causing the harms described above.

3.6.2 Each *generator* shall carry out its obligations under this Chapter in accordance with all applicable *reliability standards,* subject to the information reporting requirements specified in section 14.1.2*.*

3.7 Obligations of Distributors

3.7.1 Each *distributor* shall operate and maintain its distribution *facilities* and equipment in a manner that is consistent with the *reliable* operation of the *IESO-controlled grid* and shall assist the *IESO* in the discharge of its responsibilities relating to *reliability*. Such obligation shall include, but not be limited to, the following:

3.7.1.1 ensuring that systems and procedures for load-shedding in *emergencies* are provided for as specified in section 10;

3.7.1.2 promptly informing the *IESO* of any change or anticipated change in the capability of its equipment or distribution *facilities* connected to the *IESO-controlled grid* that could have a material effect on the *reliable* operation of the *IESO-controlled grid* or the operation of the *IESO-administered markets*;

3.7.1.3 promptly informing the *IESO* of any event or circumstance in its service territory that could have a material effect on the *reliability* of the *IESO-controlled grid;*

3.7.1.4 providing the *IESO* with functional descriptions, equipment ratings, and operating restrictions for equipment and distribution *facilities* that are included within the *IESO-controlled grid*;

3.7.1.5 promptly complying with the *IESO's* directions, including directions to *disconnect facilities* or equipment from the *IESO-controlled grid* or its *distribution system* for *reliability* purposes, unless the *distributor* reasonably believes that following the *IESO's* direction poses a real and substantial risk of endangering the safety of any person, damaging equipment, or violating any *applicable law*. In all cases where the *distributor* does not intend to follow the *IESO's* directions for any such reasons, it shall promptly notify the *IESO* of this fact and shall nonetheless comply with the *IESO's* directions to the fullest extent possible without causing the harms described above;

3.7.1.6 providing, no later than 14:00 EST on the last *trading day* of every second *trading week*, or more frequently if requested by the *IESO*, the following information:

a. the timing and duration of any *planned outage*, closure, test or other event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of any portion of a *facility* that is not associated with a *resource*, that draws electrical *energy* from or injects electrical *energy* into its *distribution system*, where such *planned outage*, closure, test or other event is expected to result in a change in *demand* or supply by that *facility* of 20 MW or more relative to the average weekday demand or supply of that *facility*; and

b. the timing and duration of any *planned outage*, closure, test or other event scheduled to commence or occur in the immediately succeeding four *trading weeks*, or during such longer period as may be requested by the *IESO*, in respect of any portion of a *facility* that is not associated with a *resource*, that draws electrical *energy* from or injects electrical *energy* into its *distribution system* and that has been specifically designated by the *IESO* for this purpose, where such *planned outage*, closure, test or other event is expected to result in a change in *demand* or supply by such *facility* relative to the average weekday *demand* or supply of that *facility*;

3.7.2 Each *distributor* shall carry out its obligations under this Chapter in accordance with all applicable *reliability standards,* subject to the information reporting requirements specified in section 14.1.2*.*

3.8 Obligations of Electricity Storage Participants (Embedded and Non-embedded)

3.8.1 Each *electricity storage participant* that participates in the *IESO-administered markets* or that causes or permits electricity to be conveyed into, through or out of the *IESO-controlled grid* shall operate and maintain its *electricity storage facilities* and equipment in a manner that is consistent with the *reliable* operation of the *IESO-controlled grid* and shall assist the *IESO* in the discharge of its responsibilities related to *reliability*. Such obligations shall include, but not be limited to, the following:

3.8.1.1 ensuring there are controls, monitoring and secure communication systems to facilitate a manually initiated restoration process in order to assist the *IESO* in the management of a prolonged, major shortage of electrical supply or an extreme disruption to or *emergency* on the *IESO-controlled grid*;

3.8.1.2 providing the *IESO* with functional descriptions, equipment ratings, and operating restrictions for its equipment*,* as required by the *IESO* to *reliably* operate the *IESO-controlled grid*;

3.8.1.3 promptly informing the *IESO* of any change or anticipated change in the status of any *electricity storage facility* or related equipment that it operates and is associated with the *resource* that is under the *dispatch*

control of the *IESO* as described in these *market rules* or of any other change or anticipated change in its *electricity storage facilities* or equipment that could have a material effect on the *IESO-controlled grid* or the operation of the *IESO-administered markets.* Such change shall include, but not be limited to, any change in status that could affect its range of injections and withdrawals of *energy*, *state of charge*, the ability of an *electricity storage unit* to operate with *automatic voltage regulation*, or the availability of an *electricity storage unit* to provide *ancillary services* (unless no application has been made to provide *ancillary services* to the *IESO-administered markets* in respect of a given *electricity storage unit);*

3.8.1.4 promptly informing the *IESO* if any of the *electricity storage facilities* that it operates are unable for any reason to operate in accordance with the schedules determined pursuant to MR Ch.7;

3.8.1.5 providing the *IESO* with current information showing the maximum unit capabilities to inject electricity, for each of its *electricity storage units* to facilitate dispatch in an *emergency operating state.* Such maximum unit capabilities shall consist of the maximum amount in MWs that can be injected at that point in time, and for how long, and shall not be limited to the unit capabilities contained in the *offers* submitted for the *resource* associated with such *electricity storage unit* pursuant to MR Ch.7;

3.8.1.6 promptly complying with the *IESO's* directions, including directions to disconnect equipment from the *IESO-controlled grid* for *reliability* purposes, unless the *electricity storage participant* reasonably believes that following the *IESO's* direction poses a real and substantial risk of endangering the safety of any person, damaging equipment, or violating any *applicable law*. In all cases where the *electricity storage participant* does not intend to follow the *IESO's* directions for any such reasons, it shall promptly notify the *IESO* of this fact and shall nonetheless comply with the *IESO's* directions to the fullest extent possible without causing the harms described above; and

3.8.1.7 providing the *IESO* with current information showing the maximum unit capabilities to withdraw energy, for each of its *electricity storage units* to facilitate dispatch in an *emergency operating state*. Such maximum unit capabilities shall consist of the maximum amount in MWs that can be withdrawn at that point in time, and for how long, and shall not be limited to the unit capabilities contained in the *bids* submitted for the *resource* associated with such *electricity storage unit* pursuant to MR Ch.7;

3.8.2 Each *electricity storage participant* shall carry out its obligations under this Chapter in accordance with all applicable *reliability standards,* subject to the information reporting requirements specified in section 14.1.2*.*

4. System Reliability

4.1 Objectives

4.1.1 The objective of this section 4 is to set forth the requirements to ensure the availability of sufficient capacity and *ancillary services* to the *IESO-administered markets.*

4.2 Standards for Ancillary Services

4.2.1 The *IESO* shall operate the *IESO-administered markets* and contract for *ancillary services*, including by means or within the scope of an *operating agreement* or another agreement of similar nature, to ensure that sufficient *ancillary services* are available to ensure the *reliability* of the *IESO-controlled grid*. *Ancillary services* shall be procured by the *IESO* in accordance with this Chapter and MR Ch.7.

4.2.2 The requirements for *ancillary services* shall be determined based on all applicable *reliability standards* and actual and expected conditions on the *IESO-controlled grid.* Requirements for *ancillary services* may be adjusted from time to time by the *IESO* to take into account, among other things, variations in *integrated power system* conditions, real-time *dispatch* constraints, *contingency events*, the prevailing level of system risks or vulnerability, and the results of assessments of the voltage and dynamic stability of the *integrated power system*.

4.2.3 The *IESO* shall, in accordance with the procedures set forth in MR Ch.3 s.4, periodically review the operation of the *IESO-administered markets* for *ancillary services* to determine whether any revision to the requirements and standards for *ancillary services* is required for *reliability* purposes. As a minimum, the *IESO* shall conduct such reviews to accommodate revisions to applicable criteria established by relevant *standards authorities*.

4.3 Generic Performance Requirements for Ancillary Services

4.3.1 *Ancillary services* may be provided to the *IESO* only by *facilities* or *resources* in accordance with MR Ch.7. *Ancillary services* may be offered to the *IESO* in its daily and hourly *physical markets* or provided to the *IESO* under *contracted ancillary service* contracts through the *IESO's ancillary services procurement markets* or by means or within the scope of *operating agreements* or another agreement of a similar nature. Prior to entering into a contract with any *ancillary service provider*, the *IESO* shall determine whether the *facilities, resources* and procedures of such *ancillary service provider* meet the applicable requirements for registration in respect of the *ancillary service(s)* to be provided and are otherwise in compliance with the technical requirements of this Chapter. The *IESO* shall not contract for *ancillary services* with an *ancillary services provider* whose *facilities* or *resources* are not in compliance with such requirements.

4.3.2 In order to make the determination referred to in section 4.3.1, the *IESO* may require each *ancillary service provider* to demonstrate through physical tests or other appropriate means specified by the *IESO* that the *facilities,* equipment, or their associated *resources*, as the case may be, that will be used to provide the *ancillary service* meet the performance standards for each *ancillary service* set forth in Appendix 5.1 or in the applicable *market manual*.

4.4 Regulation

4.4.1 The *IESO* shall maintain sufficient *regulation* to allow the *IESO* to meet all applicable *reliability standards.*

4.4.2 The *IESO* shall determine the quantity of *regulation* capacity needed for each hour of the following day. As a minimum, the requirement shall be +/- 100 MW, with a ramp rate of 50 MW/min.

4.4.3 If the *IESO* is unable to comply with applicable *reliability standards*, it shall take corrective action to achieve compliance with applicable *reliability standards* within three months.

4.4.4 *Area control error (ACE)* shall be calculated by the *IESO* in accordance with section 4.4.5 and all applicable *reliability standards*. Control signals shall be sent from the *IESO* to *facilities* associated with *resources* providing *regulation*, as required by the *IESO*.

4.4.5 The calculation of *ACE* shall occur at least every four seconds.

4.4A Assistance to Other Control Areas

4.4A.1 Notwithstanding any other provision of the *market rules*, when a *transmission system* in another *control area* is in a state identical or comparable to an *emergency operating state*, the *IESO* may, in accordance with all applicable *reliability standards* and any applicable *interconnection agreement*, provide *emergency energy* to the *control area* within which such other *transmission system* is located in order to maintain the *reliability* of such *transmission system.* The *IESO* shall only provide *emergency energy* to another *control area* in circumstances where *energy* could not be obtained by that *control area* using the *offer* and *bid* processes described in MR Ch.7. The compensation associated with the provision of such *emergency energy* that is received by the *IESO* pursuant to the applicable *interconnection agreement* shall be distributed in accordance with MR Ch.9 s.4.14.13.

4.5 Operating Reserve

4.5.1 *Operating reserve* is capacity that, for any given operating interval or *dispatch interval*, is in excess to that required to meet anticipated requirements for *energy* for that operating interval or *dispatch interval*, and is available to the *integrated power system* for *dispatch* by the *IESO* within a specified time period, such as 10 minutes or 30 minutes. *Operating reserve* may be provided by *generation resources,*

electricity storage resources, dispatchable loads and *boundary entity resources* to the extent that each meets the applicable requirements to be a *resource* in respect of each category of *operating reserve*. Neighbouring *control areas* may also provide *operating reserve* through simultaneous activation of *operating reserve* and regional reserve sharing programs. *Operating reserve* is required to:

4.5.1.1 cover or offset unanticipated increases in load during a *dispatch day* or *dispatch hour*;

4.5.1.2 replace or offset capacity lost due to the *forced outage* of generation, electricity storage or transmission equipment; or

4.5.1.3 cover uncertainty associated with the performance of *generation resources*, *electricity storage resources* or *dispatchable loads* in responding to the *IESO's dispatch instructions*.

4.5.2 The *IESO* shall maintain sufficient *operating reserve* to meet all applicable *reliability standards.*

4.5.2A In the event of an *operating reserve* deficiency, the *IESO* may apply voltage reductions and/or reduce the *thirty-minute operating reserve* requirements in compliance with the applicable *reliability standards*.

4.5.3 The *IESO* shall maintain, as a minimum, total *operating reserve* that is the sum of the *ten-minute operating reserve* requirement and the *thirty-minute operating reserve* requirement.

4.5.4 Part of the requirement for *ten-minute operating reserve* shall be synchronized with the *IESO-controlled grid* consistent with section 4.5.9.

4.5.5 The *IESO* shall ensure that *operating reserve* is distributed throughout the *IESO-controlled grid* such that sufficient *operating reserve* can be activated and delivered to any location on the *integrated power system*.

Simultaneous Activation of Reserve

4.5.6 The *IESO* may simultaneously activate with nearby systems its *ten-minute operating reserve* to respond to *contingency events* in accordance with agreements between the *IESO* and such systems. Similarly, such systems may activate their *operating reserve* when requested to meet *contingency events* in the *IESO control area* in accordance with agreements between the *IESO* and such systems. Such simultaneous activation of *operating reserve* is solely for the purpose of maintaining the *reliability* of *interconnected systems* and shall not alter the *operating reserve* requirements of the *IESO*.

Regional Reserve Sharing

4.5.6A The *IESO* may participate in regional reserve sharing programs with neighbouring *control areas*. Subject to availability and deliverability of the associated *energy*, the

IESO may count towards its *ten-minute operating reserve* requirement a contribution of up to 100 MW from neighbouring *control areas* in accordance with applicable regional reserve sharing programs and applicable *reliability standards.* The *IESO* shall activate *energy* from regional reserve sharing programs in accordance with applicable *reliability standards*.

Ten-Minute Operating Reserve

4.5.7 *Ten-minute operating reserve* is capacity that is available to the *integrated power system* in excess of anticipated requirements for *energy* and that can be made available and used within ten minutes. It includes *resources* that are either synchronized or non-synchronized with the *IESO-controlled grid*.

4.5.8 The *IESO* shall maintain sufficient *ten-minute operating reserve* to meet the requirements of all applicable *reliability standards.* This shall be at least equal to the largest first contingency loss sustainable on the *IESO-controlled grid*.

4.5.9 *Ten-minute operating reserve* shall be synchronized with the *IESO-controlled grid* to the extent required by all applicable *reliability standards*.

4.5.10 If, for any reason, there is a deficiency of *ten-minute operating reserve*, the *IESO* shall replace such *operating reserve* in accordance with the applicable *reliability standards* referenced in the *market manuals*.

4.5.11 The *IESO* shall, in accordance with MR Ch.7, *publish* daily its estimates of the quantity of *ten-minute operating reserve* that is required for each hour of the following day.

4.5.12 A *boundary entity resource* that is used as *ten-minute operating reserve* shall be treated as *operating reserve* that is non-synchronized with the *IESO-controlled grid*.

4.5.13 The reduction in load that can be effected by curtailing pumping hydroelectric *generation facilities* is eligible to be treated as *operating reserve* that is synchronized with the *IESO-controlled grid*.

4.5.14 The reduction in load that can be effected by curtailing withdrawals from *electricity storage facilities* is eligible to be treated as *operating reserve* that is synchronized with the *IESO-controlled grid*.

4.5.15 [Intentionally left blank]

4.5.16 [Intentionally left blank]

4.5.17 [Intentionally left blank]

Thirty-Minute Operating Reserve

4.5.18 *Thirty-minute operating reserve* is capacity in excess of anticipated requirements for *energy* that can be made available and used within thirty-minutes and that is not included as *ten-minute operating reserve*.

4.5.19 Subject to section 4.5.20, the requirement for *thirty-minute operating reserve* shall be at least equal to one-half of the largest *second contingency loss* sustainable on the *IESO-controlled grid*. However, when a *generation unit* is commissioning and is one of the two largest *contingency events*, the requirement for *thirty-minute operating reserve* shall be at least equal to the *second contingency loss*.

4.5.20 If such a commissioning *generation unit* is not one of the two largest *contingency events*, the requirement for *thirty-minute operating reserve* shall be at least equal to the larger of one-half of the *second contingency loss* or the output of the commissioning *generation unit.*

4.5.21 The requirement for *thirty-minute operating reserve* shall be maintained in accordance with the applicable *reliability standards* referenced in *the market manuals*.

4.6 Reactive Support and Voltage Control

4.6.1 *Reactive support service* and *voltage control service* is the control and maintenance of prescribed voltages on the *IESO-controlled grid*. The devices that supply reactive power to the *integrated power system* include but are not limited to, capacitors, static VAR compensators, reactors, synchronous *generation facilities*, and synchronous condensers.

4.6.1A The *IESO* shall direct the operation of the *IESO-controlled grid* to meet all applicable *reliability standards* with respect to the *dispatch* of *resources* associated with the provision of reactive power.

4.6.2 The *IESO* shall ensure that sufficient *reactive support service* and *voltage control service* is available throughout the *IESO-controlled grid* to meet all applicable *reliability standards* for *reactive support service* and *voltage control service*. Voltage levels shall be maintained within acceptable levels within the *IESO-controlled grid*. As part of its assessment of system *adequacy* under the *market rules*, the *IESO* shall on a continual basis assess whether sufficient *reactive support service* and *voltage control service* is available to the *IESO*.

4.6.3 The *IESO* shall direct providers of *reactive support service* and *voltage control service* to take any actions necessary to maintain stable voltage levels in accordance with *reliability standards* and to prevent the collapse of voltages on the *IESO-controlled grid*.

4.6.4 The *IESO* shall obtain reactive power capability to maintain *reactive support service* and *voltage control service* in accordance with all applicable *reliability standards*.

Reactive support service and *voltage control service* shall be made available by *market participants* from, but not limited to, the following:

4.6.4.1 reactive power produced from within the standard power factor range of a *generation facility* as described in MR Ch.4*,* which shall be *dispatchable* by the *IESO*;

4.6.4.2 equipment owned by *market participants* (capacitors, SVCs, synchronous condensers and reactors) that is made available to the *IESO* pursuant to the *market rules* and any *operating agreement* between the *IESO* and a *market participant*; and

4.6.4.3 reactive power produced outside the standard power factor range of a *generation facility* as required in MR Ch.4 (synchronous condensers or hydroelectric units in condense mode) as acquired by the *IESO* through *contracted ancillary services* contracts.

4.7 Black Start Service

4.7.1 [Intentionally left blank]

4.7.2 The *IESO* shall determine the required amounts and locations of *black start capability* across the *IESO-controlled grid*, as required to satisfy the requirements of the *Ontario power system restoration plan* and all applicable *reliability standards.* The *IESO* shall notify *market participants* of these requirements before entering into agreements for the provision of *certified black start facilities*.

4.7.3 *Ancillary service providers* providing *certified black start facilities* must also be *restoration participants*.

4.8 Reliability Must-Run Resources

4.8.1 The *IESO* may need to call on specific *resources*, excluding *non-dispatchable loads* or *price responsive loads*, to maintain the *reliability* of the *IESO-controlled grid* whenever sufficient *resources* for the provision of *physical services*, other than *contracted ancillary services*, are not otherwise offered in the *IESO-administered markets*. Such applicable *resources* are referred to as *reliability must-run resources* and shall be procured either through *reliability must-run contracts* in accordance with this section 4.8 and MR Ch.7 ss.9.6 and 9.7 or by means of the process for directing the submission of *dispatch data* referred to in MR Ch.7 ss.3.3.10 to 3.3.17.

4.8.2 The *IESO* shall identify all *reliability must-run resources* in respect of which it wishes to conclude *reliability must-run contracts* and may enter into *reliability must-run contracts* with the *registered market participant* or prospective *registered market participant* for such *reliability must-run resources*. Where the *IESO* identifies such a *reliability must-run resource*, the *registered market participant* or prospective *registered market participant* for such *reliability must-run resource* shall, subject to MR Ch.7 s.9.6.4, contract with the *IESO* to supply *physical services*, other than *contracted ancillary services*, to the *IESO-controlled grid* for *reliability* purposes in

accordance with MR Ch.7 ss. 9.6 and 9.7. Each such *reliability must-run contract* shall provide the *IESO* with the ability to call on the *reliability must-run resources* covered by the *reliability must-run contract* in accordance with MR Ch.7 s.9 and shall comply with MR Ch.7.

4.8.3 [Intentionally left blank]

4.8.4 The provisions of this section 4.8 and of any *reliability must-run contracts* shall be consistent with the provisions of the *licence* of the *IESO* that incorporate the terms of any directive issued by the *Minister* to the *Ontario Energy Board* pursuant to subsection 28(1) of the *Ontario Energy Board Act, 1998* or that incorporate terms imposed by the *Ontario Energy Board* in furtherance of the exercise of its powers under subsection 70(5) of the *Ontario Energy Board Act, 1998*. In the event of any inconsistency between such terms and the provisions of this section 4.8 or of any *reliability must-run contracts*, such terms shall govern.

4.9 Auditing and Testing of Ancillary Services

4.9.1 The *IESO* shall test *facilities* and any associated *resources* that will or do provide *ancillary services* to the *IESO-controlled grid.* The *IESO* shall use such tests to determine whether to register each *facility* as one or more *resources* for the provision of *ancillary services* and to ensure that each applicable *facility* or *resource* continues to meet the requirements for registration to provide the relevant *ancillary services.*

4.9.2 Tests of the *facilities* and *resources* of *ancillary service providers* or of prospective *ancillary service providers* referred to in section 4.9.1 shall include, but not be limited to, testing in the manner set forth in this section 4.9.2, to determine whether the *ancillary service provider* can supply the *ancillary services* which it wishes to supply or has contracted or been registered to supply:

4.9.2.1 the *IESO* may test the synchronized *ten-minute operating reserve* capability of a *generation facility*, *load facility* associated with a *dispatchable load* or an *electricity storage facility* by issuing unannounced *dispatch instructions* requiring the associated *resource* to ramp up or reduce demand, in either case to its ten-minute capability;

4.9.2.2 the *IESO* may test the non-synchronized *ten-minute operating reserve* capability of a *generation facility*, *electricity storage facility* or *load facility* associated with a dispatchable load by issuing unannounced dispatch instructions requiring the associated *resource* to come on line and ramp up or to reduce demand, in either case to its ten-minute capability;

4.9.2.3 the IESO may test the *thirty-minute operating reserve* capability of a *generation facility*, *electricity storage facility* or *load facility* associated with a *dispatchable load* by issuing unannounced *dispatch instructions* requiring the associated *resource* to come on line and ramp up or to reduce demand, in either case to its thirty-minute capability;

4.9.2.4 a *certified black start facility* must perform tests on auxiliary and control equipment and alternate sources of power in accordance with and using the testing criteria and testing frequency requirements specified in the *Ontario power system restoration plan*;

4.9.2.4A a *certified black start facility* must pass the tests required for *certified black start facilities* in accordance with and using the testing criteria specified in the *Ontario power system restoration plan*;

4.9.2.4B the *IESO* may direct line energization tests of a *certified black start facility* to determine whether the *certified black start facility* can energize a transmission path specified by the *IESO*;

4.9.2.5 the *IESO* may test the *reactive support* and *voltage control* that has been contracted from a *facility* that is a *generation facility* or *electricity storage facility* by issuing unannounced *dispatch instructions* requiring the associated *resource* to provide such support within its contracted capability; and

4.9.2.6 the *IESO* shall at least annually test a *resource* providing *regulation* for compliance with the performance standards referred to in sections 1.1.3 and 1.1.4 of Appendix 5.1 in accordance with the testing procedures specified in the applicable *contracted ancillary services* contract.

4.9.3 The costs incurred by the *IESO* in conducting and evaluating any tests pursuant to section 4.9.1 or 4.9.2 shall be recovered by the *IESO* as part of the costs to the *IESO* of contracting for the applicable *ancillary service* in accordance with MR Ch.9 s.4.2.

4.9.4 Any costs incurred by the *ancillary service provider* in conducting any tests pursuant to section 4.9.1 or 4.9.2 shall be borne by the *ancillary service provider*.

4.10 Consequences of Failure to Pass a Test

4.10.1 If an *ancillary service provider's facility* or *resource* fails a test performed pursuant to section 4.9.1 or 4.9.2 in respect of an *ancillary service*, the *IESO* shall not schedule such *ancillary service* from such *facility* or *resource* until the *ancillary service provider* demonstrates that it can provide the relevant *ancillary service*.

4.10.2 Without prejudice to the application of section 4.10.1, an *ancillary service provider* whose *facility* or *resource* fails a test performed pursuant to section 4.9.1 or 4.9.2:

4.10.2.1 in the case of an ancillary service provider providing a certified black start facility or regulation under a contracted ancillary service contract:

a. where there is sufficient information available to determine the date as of which the applicable *contracted ancillary service* was not provided, the *IESO* may require the *ancillary service provider* to

refund the compensation it has received for such *contracted ancillary service* from such date to the date of the failed test; or

b. in all other cases, the *ancillary service provider* shall provide such refund of compensation, if any, as may be specified in its *contracted ancillary service* contract;

4.10.2.2 in the case of an *ancillary service provider* providing a *certified black start facility* or *regulation* under a *contracted ancillary service* contract, shall be subject to such penalties and sanctions as may be specified in its *contracted ancillary service* contract; and

4.10.2.3 in the case of any other *ancillary service provider*, shall be subject to financial penalties in accordance with MR Ch.3 s.6.6 and to such other sanctions as may be provided for in these *market rules*.

4.11 Emergency Conditions

4.11.1 Notwithstanding any other provision of the *market rules*, when the *IESO-controlled grid* is in an *emergency operating state*, the *IESO* may acquire *ancillary services* from any *market participant*, whether or not such *market participant* satisfies all of the standards and registration requirements applicable in respect of such *ancillary services*.

5. System Security

5.1 Objectives and General Obligations

5.1.1 The objective of this section is to detail the procedures necessary to enable the *IESO* to ensure the *security* of the *IESO-controlled grid* in accordance with all applicable *reliability standards.*

5.1.2 In order to maintain the *security* of the *IESO-controlled grid*, the *IESO* shall:

5.1.2.1 monitor the real-time operating status of the *IESO-controlled grid*;

5.1.2.2 establish and *publish security limits* for all *facilities* that are part of the *IESO-controlled grid*;

5.1.2.3 establish and *publish* criteria and margins to be used in the development of *security limits* and a process for reviewing and revising such criteria and margins;

5.1.2.4 establish available *transmission transfer capabilities* in accordance with all applicable *reliability standards* and manage the use of transmission in accordance with such *transmission transfer capabilities* and the *market rules*;

5.1.2.5 direct the operation of *facilities* that are part of the *IESO-controlled grid* within the appropriate *security limits* and in accordance with the applicable *operating agreements*;

5.1.2.6 direct any *market participant* to take or to refrain from taking any action necessary to maintain the *IESO-controlled grid* in a *normal operating state*;

5.1.2.7 act as the *control area operator* and as *security coordinator* for the province of Ontario and interact with other *control area operators*, *security coordinators* and *interconnected transmitters* as required to establish *security limits* and rules for interconnected operations including, but not limited to, entering into *interconnection agreements* with adjacent *control area operators*, *security coordinators* and *interconnected transmitters* that provide for interconnected operations, other than with respect to the physical *facility* and equipment requirements for *interconnections* which shall be the responsibility of *transmitters*. In the event of flows or exchanges of *physical services* across the *interconnections* or *interties* which are not directly attributable to the transactions of *market participants*, the *IESO* may provide for such exchanges through the sale or purchase of these *physical services* in the *IESO-administered markets*;

5.1.2.8 represent Ontario in the context of the work of *standards authorities* with respect to the *reliable* operation of the *IESO-controlled grid* and the *interconnected systems*, and the operation of the *IESO-administered markets*, other than with respect to the physical *facility* and equipment requirements for *reliability* of the *IESO-controlled grid* which shall be the responsibility of the relevant *transmitters*, *distributors* and *generators* as applicable;

5.1.2.9 investigate major operational incidents on the *IESO-controlled grid* and initiate plans to manage abnormal situations or significant deficiencies which, in the *IESO's* opinion, threaten the *reliability* of the *IESO-controlled grid*;

5.1.2.10 issue directions to market participants in order to manage high-risk operating states and emergency operating states; and

5.1.2.11 assess the future *reliability* of the *IESO-controlled grid*.

5.2 Security Limits

5.2.1 The *IESO* shall establish and *publish security limits* to prevent, contain and alleviate the effects of *contingency events*. Such *security limits* shall be as described in section 5.2.4 and shall be observed by the *IESO* in the minute-to-minute operation of the *IESO-controlled grid*.

5.2.2 The IESO shall calculate and publish transmission transfer capabilities.

5.2.3 *Market participants* shall immediately respond to directions from the *IESO* to alter their operations to stay within the *security limits* and *transmission transfer capabilities* established by the *IESO*.

5.2.4 Two types of *security limits* shall be established by the *IESO*:

5.2.4.1 *security limits* based on the dynamic response of the *IESO-controlled grid*, including transient stability limits, voltage stability limits, dynamic stability limits, and voltage decline limits; and

5.2.4.2 *security limits* based on the ratings of equipment, including the thermal ratings of lines and transmission equipment (e.g. the design characteristic of lines and equipment and weather conditions) and the short circuit capability of equipment.

5.2.5 Each *market participant* shall:

- establish thermal ratings for the equipment that it owns and that is part of the *IESO-controlled grid*, and
- provide such ratings (including continuous and limited time ratings) to the *IESO* in a form suitable for *IESO* monitoring

The *IESO* shall not deliberately operate or plan to operate equipment comprising the *IESO-controlled grid* in excess of the thermal rating for such equipment as communicated to the *IESO* by the relevant *market participants*.

5.2.6 The *IESO* shall respect all pre-and post-contingency *security* criteria that are used to establish *security limits*.

5.3 The Use of Tie-Lines and Associated Facilities

5.3.1 The *IESO-controlled grid* is interconnected with utilities in Canada and the United States via *tielines* such that *interconnected systems* can be used to help maintain the *security* of the *IESO-controlled grid*.

5.3.2 With respect to the use of *tielines*:

5.3.2.1 the *IESO* shall use reasonable efforts to conduct studies on a coordinated basis with adjacent *control areas* so that normal and emergency transfer limits on all *tielines* are established or reaffirmed at least annually;

5.3.2.2 the *IESO* shall use reasonable efforts to cooperate with other *control area operators* to determine and reaffirm total *transmission transfer capability* with other *control areas* at least annually;

5.3.2.3 the *IESO* shall operate the *IESO-controlled grid* so that there is no net transfer of reactive power, provided that reactive power may be

exchanged or transferred from one system to another under contractual agreement with adjacent *control areas;*

5.3.2.4 the maximum net scheduled interchange across *tielines* shall not exceed the lower of the continuous rating of the *tielines* or the incremental transfer capability of the first *contingency event*;

5.3.2.5 for *interconnected systems* that are entirely controlled by phase-shifters, such as Manitoba and Minnesota, the *IESO* shall maintain MW flows at the scheduled transfer level;

5.3.2.6 unless there is prior agreement to that effect between *control areas*, the *IESO* shall not move phase shifters or make changes to fixed-tap positions; and

5.3.2.7 the *IESO* shall abide by all applicable *reliability standards* with respect to the management of *tielines*.

5.3.3 Each *market participant* shall comply with all relevant *reliability standards* relating to the *reliability* of *interconnections* and:

5.3.3.1 each *registered market participant* submitting an *energy offer* or an *energy bid* in respect of a *boundary entity resource* shall comply with the scheduling and notification procedures for the source or sink *control area*, as applicable, and any intervening *control areas* and with all other applicable procedural and information requirements established by relevant *standards authorities* and other relevant entities for registering transactions and/or arranging transmission access;

5.3.3.2 each *registered market participant* submitting an *offer* to provide *operating reserve* in respect of a *boundary entity resource* shall comply with all applicable procedural and information requirements established by relevant *standards authorities* and other relevant entities for registering transactions and/or arranging transmission access; and

5.3.3.3 the notification of the activation of the *energy* associated with an *operating reserve offer* and the scheduling coordination shall be the responsibility of the *IESO*.

5.3.4 Where:

5.3.4.1 the quantity of a *physical service* delivered to or withdrawn from the *IESO-controlled grid* by a *registered market participant* is reduced relative to that *registered market participant's* most recent valid *bid* or *offer*; and

5.3.4.2 such reduction is initiated pursuant to *reliability standards* by an entity, other than the *IESO*, having authority under such *reliability standards*;

the *registered market participant* shall not be entitled to compensation for any financial loss suffered as a result of such action.

Where such reduction was initiated by the *IESO*, the *registered market participant* shall be entitled to compensation, which shall be calculated and paid in accordance with MR Ch.9 ss.3.4 and 3.5.

5.4 Reliability Policy for Area Supply

5.4.1 In coordination with *transmitters*, the *IESO* may develop and apply specific *security* criteria in areas of the *IESO-controlled grid* where the consequences of *contingency events* are localized and do not have a significant adverse impact on the *reliability* of the *IESO-controlled grid* ("*local areas*").

5.4.2 The following criteria shall be used to assess the *security* of a *local area*, as determined at the boundary between the *local area* and the remainder of the *IESO-controlled grid*, on the one hand, and individual and collective *connection points* of the *IESO-controlled grid*, on the other:

5.4.2.1 the extent to which severe *contingency events* are experienced; and

5.4.2.2 the *reliability* of transmission *facilities* which directly affect the exchange of electricity to the *local area*.

5.4.3 The *IESO* shall coordinate with *transmitters* to review the performance at *connection points* at least once annually in order that they can jointly assess the *reliability* of *local areas*.

5.5 Interconnection Assistance

5.5.1 The *IESO* shall use and support *interconnected systems* in accordance with agreements between the *IESO* and other *security coordinators, control area operators* or *interconnected transmitters* and to the extent necessary to maintain the *security* of the *IESO-controlled grid*.

5.5.1A Information provided to the *IESO* under an *interconnection agreement* by a *security coordinator, control area operator* or *interconnected transmitter* and identified by the person providing the information as confidential shall be *confidential information* and shall not be disclosed or made available without the prior written consent of the particular *security coordinator, control area operator* or *interconnected transmitter*.

5.5.2 In requesting assistance from *market participants* and from other *security coordinators*, the *IESO* shall take effective action in the *IESO control area* prior to, or concurrently with, similar action being taken by the *interconnected system* providing assistance.

5.5.3 All agreements entered into by the *IESO* and other *security coordinators* relating to *security* shall meet all applicable *reliability standards*.

5.6 Inadvertent Interchange

5.6.1 Inadvertent interchange is the difference between the scheduled interchange on a single *interconnection*, or the sum of scheduled interchanges with several *interconnected systems*, on the one hand, and the actual metered flow on the *interconnection* point(s), on the other.

5.6.2 Inadvertent interchange shall be addressed in any agreement relating to *security* between the *IESO* and other *security coordinators*. The means used to mitigate inadvertent interchange shall respect all applicable *reliability standards.*

5.7 The Management of Violations to Security Limits

5.7.1 When there is a violation of a *security limit* on the *IESO-controlled grid* while in a *normal operating state*, the sequence of control actions taken by the *IESO* shall be defined in its operating procedures and instructions.

5.7.2 The operating procedures and instructions of the *IESO* shall allow the use of market mechanisms to the maximum extent possible for purposes of responding to violations of *security limits*.

5.7.3 Where market mechanisms fail or are not sufficient to maintain the *security* of the *IESO-controlled grid*, the *IESO* may direct *market participants* to take actions to either prevent the loss of *non-dispatchable load* or *price responsive load* or to prepare for *contingency events*.

5.8 Operation Under an Emergency Operating State

5.8.1 Once an *emergency operating state* has been declared by the *IESO*, the *IESO* may take such action as it determines appropriate including, but not limited to:

5.8.1.1 coordinating with other *security coordinators*;

5.8.1.2 issuing directions to *market participants* to reduce *demand* through voltage reductions and interruptions in accordance with section 10.3;

5.8.1.3 operate to those *security limits* appropriate for an *emergency operating state* to allow for increased power transfers; and

5.8.1.4 acquiring *emergency energy* in accordance with section 2.3.3A;

5.9 Operation Under a High-Risk Operating State

5.9.1 Once a *high-risk operating state* has been declared by the *IESO*, the *IESO* may take such action as it determines appropriate including, but not limited to:

5.9.1.1 operating to *security limits* appropriate for a *high-risk operating state*;

5.9.1.2 coordinating with neighbouring *security coordinators*;

5.9.1.3 issuing directions to *market participants* to reduce *demand* through voltage reductions or interruptions in accordance with section 10.3; and

5.9.1.4 temporarily and selectively increase the level of *security* on the *IESO-controlled grid*.

5.9A Operation Under a Conservative Operating State

5.9A Once a *conservative operating state* has been declared by the *IESO*, the *IESO* may take such action as it determines appropriate including, but not limited to:

5.9A.1 coordinating with neighbouring *control area operators*; and

5.9A.2 requesting *market participants* to monitor the *IESO-controlled grid* on the *IESO's* behalf.

5.9A.3 direct *market participants* to suspend all non-urgent maintenance and switching activities on *facility* elements for which outages must be reported or involve elements that could impact the operations of the *IESO-controlled grid.*

5.10 Restoration of System Security Following a Contingency Event

5.10.1 *Market participants* shall be prepared for, shall be able to manage and shall take such actions as may be necessary to restore *security* of the *IESO-controlled grid* following a *contingency event,* as directed by the *IESO*.

5.10.2 The *IESO* shall establish:

5.10.2.1 procedures that identify the steps necessary to restore the operation of the *IESO-controlled grid* to an *emergency operating state* respecting corresponding *security limits*, within 30 minutes;

5.10.2.2 procedures to attempt to restore supply first to individual loads identified by *market participants* as critical in nature, once the minimum acceptable level of *security* on the *IESO-controlled grid* has been restored; and

5.10.2.3 in consultation with relevant *market participants*, procedures to restore the operation of the *IESO-controlled grid* and of *facilities connected* to a *transmission system* that forms part of the *IESO-controlled grid* following automatic *outages*.

6. Outage Coordination

6.1 Introduction

6.1.1 The objectives of this section 6 are to enable the *IESO* to review and assess the impact of *outage* schedules on the fulfillment by the *IESO* of its *reliability*-related responsibilities under the *Electricity Act, 1998*, its *licence*, and the *market rules*, to require *market participants* to obtain the approval of the *IESO* in respect of *planned outage* schedules and to permit the *IESO* to reject, revoke *advance approval* of and recall *outages* that may have an impact on the *reliability* of the *IESO-controlled grid* or a material impact on the operation of the *IESO-administered markets*.

6.1.2 The *IESO* shall maintain a database of all submissions to the *outage* planning and scheduling process.

6.1.3 The *IESO* shall develop, and include in the applicable *market manual*, a full list of the equipment and *facilities* the *outage* of which must be reported to and scheduled with the *IESO* in accordance with this section 6. The *IESO* shall use as the basis for including *facilities* and equipment on this list that any change or anticipated change to the *facilities* or equipment could have a material effect on the value of an operating *security limit*, the *reliable* operation of *IESO-controlled grid* or operation of the *IESO-administered markets*, including, but not be limited to, the following:

6.1.3.1 *facilities* forming part of the *IESO-controlled grid*;

6.1.3.2 *generation facilities*, *electricity storage facilities* and auxiliary equipment connected to the *IESO-controlled grid* or in respect of which a *generator* or *electricity storage participant* is participating in the *real-time markets*;

6.1.3.3 protection systems; and

6.1.3.4 communication equipment, including related hardware and software systems.

6.1.4 [Intentionally left blank]

6.1.5 Nothing in this section 6 shall relieve a *market participant* from its responsibility for and arising from the performance of all work relating to any *outage* or test, whether in respect of energized or de-energized *facilities* or equipment, including, but not limited to, its responsibility in respect of worker safety.

6.1.6 No *market participant* shall remove equipment or *facilities* from service except in accordance with this section 6 unless such removal from service is necessary to ensure the safety of any person, prevent the damage of equipment, or prevent the violation of any *applicable law*. If any equipment or *facilities* are removed from service for these reasons, the *market participant* shall promptly notify the *IESO*.

6.1.7 The *IESO* shall coordinate *outages* with *market participants* except that, with respect to *outages* to any portion of the *transmission system* during a *normal operating state*, the applicable *transmitter* shall, pursuant to the Transmission System Code, coordinate the *outage* with affected *market participants* directly connected to that portion of the *transmission system* unless the *IESO* determines it necessary to coordinate such activities in order to maintain *reliability*.

6.2 Outage Planning

6.2.1 Each *market participant* shall inform the *IESO* of its long-term plans for *outages* in accordance with the provisions of this section 6.2.

6.2.2 Each *market participant* shall establish its *outage* planning process in such manner as will enable it to comply with its reporting and scheduling obligations under this section 6. Without limiting the generality of the foregoing, *market participants* shall be required to plan *outages* in advance of the anticipated date of the *planned outage* in accordance with the submission requirements of this section 6.

Requests for Advance Approval

6.2.2A A *market participant* may request *quarterly advance approval*, *weekly advance approval*, *three-day advance approval* or *one-day advance approval* for a *planned outage* of equipment or *facility* in accordance with this section 6 and the applicable *market manual*.

IESO Obligation to Consider Planned Outages for Advance Approval

6.2.2B The *IESO* shall consider all *planned outages* submitted under section 6.2.2A for *advance approval* in accordance with this section 6 and the processes specified in the applicable *market manual*.

IESO Obligation to Include Planned Outages in Daily and Quarterly Assessments

6.2.3 The *IESO* shall include in the daily assessments referred to in section 7.3.1.4 all *planned outages* that are to occur in the immediately following 34 calendar days as reported or scheduled by *market participants*. The *IESO* shall include in the quarterly assessments referred to in section 7.3.1.2 all *outages* planned or scheduled to occur in the immediately following 18 months as reported or scheduled by *market participants*.

Transmitter Generator and Electricity Storage Participant Obligation to Provide Planned Outage Information for 18-Month Assessments

6.2.4 To support the 18-month assessments referred to in section 7.3.1.2, and subject to section 6.2.5, for those *facilities* and equipment on the list developed in accordance with section 6.1.3, *transmitters, generators* and *electricity storage participants* shall, as frequently as may be necessary to maintain the accuracy of the information provided, report to the *IESO* the *outage* plans for transmission *facilities* forming part

of the *IESO-controlled grid* and for *generation facilities*, or *electricity storage facilities* respectively, as follows:

6.2.4.1 for *outages* starting three months or more in the future, those with a scheduled duration of five days or more; and

6.2.4.2 for *outages* starting less than three months in the future, those with a scheduled duration of four hours or more.

Exclusions of Outages for Generation Facilities or Electricity Storage Facilities

6.2.5 Notwithstanding any other provision of section 6, *outages* to the following *generation facilities* or *electricity storage facilities* do not need to be reported to support the 18-month assessments referred to in section 7.3.1.2:

6.2.5.1 in the case of all *generators, generation facilities* having a *capacity* of less than 20 MW;

6.2.5.2 in the case of a *generator* whose total available capacity inside the *IESO control area* exceeds 4000 MW, *generation facilities* that represent less than 0.5 percent of the total *capacity* of such *generator,* unless the *generation facilities* have been identified by the *IESO* as affecting the *reliability* of the *IESO-controlled grid.* The *IESO* shall notify the relevant *generators* of any *generation facilities* so identified; or

6.2.5.3 in the case of all *electricity storage participants*, *electricity storage facilities* with an *electricity storage facility size* of less than 20 MW.

6.3 Outage Scheduling with the IESO

Planned Outages

6.3.1 Subject to section 6.1.3 and 6.4, each *market participant* shall submit its current schedule of all *planned outages*, regardless of duration, to the *IESO*.

6.3.2 A *planned outage* submitted by a *market participant* pursuant to section 6.3.1 shall represent the intent of the *market participant* to take the relevant equipment out of service at the scheduled time and to return the relevant equipment to service at the scheduled time.

6.3.3 [Intentionally left blank – section deleted]

Forced Outages

6.3.4 Each *market participant* shall to the maximum extent possible notify the *IESO* in advance of a *forced outage* and provide a brief description of the nature and causes of the *forced outage.* When such advance notice cannot be given, the *market*

participant shall promptly notify the *IESO* of the occurrence of a *forced outage* and provide a brief description of the nature and causes of the *forced outage*.

6.3.5 Whenever, in the opinion of the *IESO*, a *forced outage* has had a significant impact on the *reliability* of the *IESO-controlled grid*, or gives rise to potential *reliability* concerns, the *IESO* may require the *market participant* experiencing the *forced outage* to provide a detailed description of the nature and causes of the *forced outage* to the *IESO*. Such description of the *forced outage* shall be provided as soon as practicable and in any event within 48 hours, or within such longer period of time as may be agreed to by the *IESO* in any given case, following the start of the *forced outage.* The *IESO* may also require the *market participant* experiencing the *forced outage* to provide a detailed description of the steps that the *market participant* intends to take to prevent any recurrence of the circumstances that led to the *forced outage*. Such description shall also be provided as soon as practical and in any event within 48 hours, or within such longer period of time as may be agreed to by the *IESO*, following the start of the *forced outage*.

Replacement Energy to Support Planned Outages

6.3.6 A *generator* or *electricity storage participant* may, no later than the time specified in section 6.4.1, in requesting a *planned outage* in accordance with section 6.3.1, notify the *IESO* that the *generator* or *electricity storage participant* shall arrange replacement *energy offers* in the form of an import to support the *outage* request. A *generator* or *electricity storage participant* may, when requesting an extension to an *outage* under section 6.4.7 or resubmitting an *outage* under section 6.4.10, notify the *IESO* that the *generator* or *electricity storage participant* shall arrange replacement *energy offers* in the form of an import to support the *outage* extension or resubmission. For certainty, this section shall not under any circumstances impose any explicit or implicit obligation on either a *generator* or *electricity storage participant* to so notify the *IESO*, or if so notified, the *IESO* to approve or accept any such arrangement. Upon notice to the *IESO*, a *generator* or *electricity storage participant* may withdraw the arrangement for replacement *energy offers* at any time up to final approval of the *outage* or up to the final approval of the extension to or resubmitting of the *outage.*

6.3.7 The *generator* or *electricity storage participant* shall provide the following information to the *IESO* when in accordance with section 6.3.6 it either submits a *planned outage* request or requests the extension to or resubmission of an *outage*:

6.3.7.1 Subject to the approval of the *IESO*, the *intertie zone (s)* through which the replacement *energy* is intended to be scheduled; and,

6.3.7.2 The *registered market participant* associated with a *boundary entity resource* that shall submit the *offers* and, pursuant to MR Ch.7 s.7.5.8A, schedule the replacement *energy* if *dispatched* by the *IESO.*

6.3.8 The *IESO* may limit the number and aggregate size of *outages* supported by replacement *energy* and, where the number and aggregate size of *outages* is limited

the *IESO* shall determine the priority of the *outages*, in accordance with sections 6.4.13 through 6.4.20.

6.3.9 The *IESO* may specify and inform the *generator* or *electricity storage participant* of the minimum amount of replacement *energy* in megawatts and the duration of *offers* necessary to support the *planned outage* request or the request for the extension to or rescheduling of the *outage*.

6.3.10 If the *registered market participant* associated with a *boundary entity resource* referred to in section 6.3.7.2 fails to submit *offers* for the replacement *energy,* that have been arranged by the *generator* or *electricity storage participant*, the *generator* or *electricity storage participant* shall be subject to the financial penalties calculated in accordance with the provisions of MR Ch.3 s.6.6.8.

6.4 Submission of Outage Schedules and IESO Approval of Outage Schedules

6.4.1 In order to obtain *IESO* approval of a *planned outage*, a *market participant* shall submit a *planned outage* with the *IESO* under the timelines specified in sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E. At the time of the submission, the *market participant* shall:

6.4.1.1 provide information about the recall of the *planned outage*, including the time required to return the *facilities* or equipment to service and other applicable conditions of recall; and

6.4.1.2 [Intentionally left blank – section deleted]

6.4.1.3 confirm, if applicable and as specified in the applicable *market manual*, the request for *weekly advance approval* for the *planned outage*.

6.4.1A [Intentionally left blank – section deleted]

6.4.1B If requesting *quarterly advance approval* of a *planned outage*, the *market participant* shall submit the *planned outage* with the *IESO* no later than 00:00 EST on the first day of the month that is three months prior to the start of a six month period, beginning with the next calendar quarter, in which the *planned outage* is scheduled to start.

6.4.1C If requesting *weekly advance approval* of a *planned outage*, the *market participant* shall submit the *planned outage* with the *IESO* no later than 16:00 EST on the third Friday prior to the start of the week, starting Monday, in which the *planned outage* is scheduled to start, and confirm the request for *weekly advance approval* in accordance with section 6.4.1.3.

6.4.1D If requesting a *three-day advance approval* of a *planned outage*, the *market participant* shall submit the *planned outage* with the *IESO* no later than 16:00 EST on the fifth *business day* prior to the start date of a *planned outage*.

6.4.1E If requesting *one-day advance approval* of a *planned outage* the *market participant* shall submit the *planned outage* with the *IESO* no later than 10:00 EST on the second *business day* prior to the start date of the *planned outage*.

6.4.2 Where the scheduling of *planned outages* submitted by different *market participants* conflicts such that the *planned outages* cannot both or all be approved by the *IESO*, the *IESO* shall inform the affected *market participants* and request that they resolve the conflict. Should the conflict remain unresolved, the *IESO* shall determine which of the *planned outages* can be approved on the basis of the priority accorded to each *planned outage* pursuant to sections 6.4.13 to 6.4.20.

6.4.3 No *planned outage* shall occur or be permitted by a *market participant* to occur unless:

6.4.3.1 the *planned outage* has been submitted with the *IESO* in accordance with sections 6.4.1 or 6.4.6;

6.4.3.2 the *planned outage* has been approved by the *IESO* in accordance with this section 6.4;

6.4.3.3 immediately prior to the scheduled commencement of the *planned outage* or at a pre-arranged time specified by the *IESO* when providing the *advance approval* referred to in sections 6.4.4.4B, 6.4.4.4C, 6.4.4.5 and 6.4.4.5A, the *market participant* has requested from the *IESO* and has received the *IESO*'s final approval to the *planned outage*; and

6.4.3.4 the removal from service of the relevant equipment or *facilities* is undertaken under the direction of the *IESO* where the *IESO* has made the determination referred to in section 6.4.4.6.

6.4.4 The *IESO* shall:

6.4.4.1 provide *advance approval* for a *planned outage* submitted to it pursuant to section 6.4.1 and shall provide its final approval to the *planned outage* pursuant to section 6.4.3.3 unless it determines, based primarily on the quarterly assessments referred to in section 7.3.1.2 and on the daily assessments referred to in section 7.3.1.4, that the *planned outage,* including but not limited to a *planned outage* identified by an *embedded generator,* will or is reasonably likely to have an adverse impact on the *reliable* operation of the *IESO-controlled grid* or as otherwise described in section 6.4.4A*;*

6.4.4.2 assess each *planned outage* submitted under section 6.4.1;

6.4.4.3 following receipt of an *outage* submission pursuant to section 6.2.1, 6.3.1, or 6.4.1, advise the relevant *market participant* of the existence of any conflict with a *planned outage* planned by another *market participant*;

6.4.4.4 if the *market participant* submitted the *planned outage* with the *IESO* under section 6.4.1, advise the relevant *market participant* of the expected outcome of the approval process;

6.4.4.4A [Intentionally left blank – section deleted]

6.4.4.4B if the *market participant* submitted its *planned outage* for *quarterly advance approval* under section 6.4.1B, advise the *market participant* whether or not *quarterly advance approval* of the *planned outage* has been granted no later than the end of the month that is one month prior to the start of the six month period, starting with the next calendar quarter, in which the *planned outage* is scheduled to start. Where the *IESO* does not grant *quarterly advance approval*, the *IESO* shall subsequently consider the *planned outage* for either *quarterly advance approval* in accordance with this section 6.4.4.4B, *weekly advance approval* in accordance with section 6.4.4.4C, or *three-day advance approval* in accordance with section 6.4.4.5, and as specified in the applicable *market manual*;

6.4.4.4C if the *market participant* submitted its *planned outage* for *weekly advance approval* under section 6.4.1C or if the *IESO* considered the *planned outage* for *weekly advance approval* in accordance with section 6.4.4.4B, and if the *market participant* confirmed the request for *weekly advance approval* in accordance with section 6.4.1.3, advise the *market participant* of the *weekly advance approval* or rejection of the *planned outage* no later than 16:00 EST on the second Friday prior to the week, starting Monday, in which the *planned outage* is scheduled to start.

6.4.4.5 if the *market participant* submitted its *planned outage* for *three-day advance approval* under section 6.4.1D, or if the *IESO* considered the *planned outage* for *three-day advance approval* in accordance with section 6.4.4.4B, advise the *market participant* of the *three-day advance approval* or rejection of the *planned outage* no later than 16:00 EST on the third *business day* prior to the day on which the *planned outage* is scheduled to commence;

6.4.4.5A if the *market participant* submitted its *planned outage* and request for *one-day advance approval* under section 6.4.1.E, advise the *market participant* of the *one-day advance approval* or rejection of the *planned outage* no later than 8:00 EST on the *business day* prior to the day on which the *planned outage* is scheduled to commence; and

6.4.4.6 when providing the final approval referred to in section 6.4.4.1, advise the *market participant* if the submitted *planned outage* is to be undertaken under the direction of the *IESO* where the *IESO* has made a determination that this is necessary to maintain the *reliability* of the *IESO-controlled grid*. If it is known in advance, the *IESO* will advise the *market participant* of this requirement when providing the *advance*

approval referred to in sections 6.4.4.4B, 6.4.4.4C, 6.4.4.5 or 6.4.4.5A or as soon as possible thereafter.

6.4.4A The *IESO* may refuse to provide *advance approval* to a *transmitter's planned outage* if:

6.4.4A.1 the *transmitter's planned outage* is to a *connection facility* that would prevent the delivery of electricity to the *IESO-controlled grid* from a *generation unit* or *electricity storage unit* that has committed capacity to an external *control area* in accordance with MR Ch.7 s.20.2;

6.4.4A.2 the *IESO* is advised by the *market participant* that has committed its capacity to an external *control area* in accordance with MR Ch.7 s.20.2, that the external *control area operator* has determined that a *transmitter's planned outage* would result in an unacceptable risk of an adequacy shortfall to the *external control area,* as may be specified in the applicable *capacity export agreement*; and

6.4.4A.3 the *market participant* that has committed its capacity to an external *control area* in accordance with MR Ch.7 s.20.2 has demonstrated to the *IESO* that it has made best efforts to reschedule the *planned outage* with the *transmitter*, as prescribed in the applicable *market manual*.

6.4.5 Where the *IESO* does not provide *advance approval* of a *planned outage* or does not give its final approval to a *planned outage* pursuant to section 6.4.4 or 6.4.4A, the *IESO* shall work with the relevant *market participant* to re-schedule the *planned outage* to a date and time at which the *planned outage* will not or is not reasonably likely to have an adverse impact on the *reliable* operation of the *IESO-controlled grid.* Upon the resubmission of the *planned outage*, the *IESO* shall where reasonably practicable take into account the date and time preferences of the *market participant.*

Requests for Late Submissions of Planned Outages

6.4.6 A *market participant* may make a request to the *IESO* for approval of a *planned outage* after the deadlines in sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E have expired, where the request represents an unexpected opportunity to accomplish work that would otherwise have been unable to proceed. The *IESO* may consider such late submissions where the opportunity presents a low risk to the *reliability* of the *IESO-controlled grid* and a low risk to the *IESO*.

Extensions

6.4.7 Each *market participant* shall notify the *IESO* if a *planned outage* which has been approved by the *IESO* will have a duration which exceeds the duration originally approved by the *IESO*, which notice shall include a request that the *IESO* approve the extension. Unless the extension is due to a *forced outage* condition, such notice

shall be provided to the *IESO* in accordance with sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E and will be treated as a new *outage* request.

6.4.8 If the *IESO* determines that an extension to the duration of a *planned outage* will or is reasonably likely to adversely affect the *reliability* of the *IESO-controlled grid* or will or is reasonably likely to require the re-scheduling of a *planned outage* submitted to the *IESO* pursuant to section 6.4.1 or the revoking of *advance approval*, or recall of a *planned outage* approved pursuant to section 6.4.4, the *IESO* shall reject such extension and the *market participant* shall use its reasonable best efforts to ensure that the duration of the *planned outage* does not exceed the duration originally approved by the *IESO* or such longer period as the *IESO* may advise in rejecting the extension requested.

Revoke Advance Approvals

6.4.9 The *IESO* may, where necessary to maintain the *reliability* of the *IESO-controlled grid*, or as provided in section 6.4.9.3, revoke an *advance approval* of a *planned outage*. Without limiting the generality of the foregoing, the *IESO* may revoke an *advance approval* if:

6.4.9.1 the *IESO* determines that a *conservative operating state,* an *emergency operating state* or a *high-risk operating state* is occurring or is reasonably likely to occur at the time at which the *planned outage* would otherwise take place;

6.4.9.2 necessary to avoid recalling a *planned outage* pursuant to section 6.4.11; or

6.4.9.3 the *transmitter's planned outage* is to a *connection facility* that would prevent the delivery to the *IESO-controlled grid* of electricity from a *generation unit* or *electricity storage unit* that has committed capacity to an external *control area* in accordance with MR Ch.7 s.20.2; and

6.4.9.3.1 the *IESO* is advised by the *market participant* that has committed its capacity to an external *control area* in accordance with MR Ch.7 s. 20.2, that the external *control area operator* has determined that a *transmitter's planned outage* would result in an unacceptable risk of an adequacy shortfall to the *external control area,* as may be specified in the applicable *capacity export agreement*; and

6.4.9.3.2 the *market participant* that has committed its capacity to an external *control area* in accordance with MR Ch.7 s.20.2 has demonstrated to the *IESO* that it has made best efforts to reschedule the *planned outage* with the *transmitter*, as prescribed in the applicable *market manual*.

A *planned outage* that receives *advance approval* under section 6.4.4 but does not receive final approval pursuant to section 6.4.3.3 shall be considered to have had its *advance approval* revoked.

6.4.10 Where the *IESO* revokes *advance approval* of a *planned outage* pursuant to section 6.4.9, the *market participant* may elect either to resubmit or to cancel the *outage*. When the *market participant* elects to resubmit the *outage*, the *IESO* shall work with the relevant *market participant* to re-schedule the *planned outage* to a date and time at which the *planned outage* will not or is not reasonably likely to have an adverse impact on the *reliable* operation of the *IESO-controlled grid* and not pose an unacceptable risk to the adequacy of an external *control area* to which capacity has been committed. In re-scheduling the *planned outage*, the *IESO* shall where reasonably practicable take into account the date and time preferences of the *market participant*. A *planned outage* that is re-scheduled under this section must be resubmitted in accordance with the submission requirements in sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E. To maintain the priority date of the approved *planned outage* prior to the revocation of the *advance approval*; the *planned outage* must be resubmitted in accordance with section 6.4.16.

Recalls

6.4.11 The *IESO* may, where necessary to maintain the *reliability* of the *IESO-controlled grid*, recall a *planned outage* that has already commenced, having due regard to the time needed to return the *facilities* or equipment to service as identified by the relevant *market participant* pursuant to section 6.4.1.1 and shall so advise the relevant *market participant*. Such *market participant* shall arrange for the accelerated return to service of the *facilities* or equipment in accordance with the schedule identified by the *market participant* pursuant to section 6.4.1.1. The *IESO* shall not recall a *planned outage* unless further control action is required and it has revoked *advance approval* or rejected requests for approval of all other *planned outages* the revocation or rejection of which could eliminate the need to recall the *planned outage* that has already commenced.

Embedded Generators

6.4.12 Each *distributor* shall, in reporting to the *IESO* pursuant to sections 6.2 and 6.3, identify to the *IESO* any *outages* that potentially constrain an *embedded generator* or an *embedded electricity storage facility* that is connected to its *distribution system.*

Determining Outage Priority

6.4.13 The *IESO* shall assign a priority date to each *outage* submission received by the *IESO*. Where the *IESO* is required or permitted by this section 6 to approve, reject, revoke *advance approval* of or recall one or more *planned outages*, such *planned outages* shall:

6.4.13.1 be given advance or final approval in order of priority determined on the basis of sections 6.4.14 to 6.4.20; and

6.4.13.2 be rejected, be resubmitted, have *advance approval* revoked or be recalled in reverse order of priority determined on the basis of sections 6.4.14 to 6.4.20.

6.4.14 Where an *outage* is granted *advance approval* in accordance with sections 6.4.4.4B, 6.4.4.4C, 6.4.4.5 and 6.4.4.5A:

6.4.14.1 outages granted quarterly advance approval take priority over outages granted weekly advance approval, three-day advance approval or one-day advance approval; and

6.4.14.2 outages granted weekly advance approval take priority over outages granted three-day advance approval or one-day advance approval; and

6.4.14.3 outages granted three-day advance approval take priority over outages granted one-day advance approval; and

6.4.14.4 within quarterly advance approval, weekly advance approval, three-day advance approval and one-day advance approval, an outage with an earlier priority date takes priority over other outages granted the same level of advance approval.

6.4.15 Where a *market participant* gives notice of a change in the commencement, duration or nature of a *planned outage* relative to the most recent *outage* submission, the *IESO* shall revise the priority date with the time at which such notice was received by the *IESO.* The revised priority date shall be used by the *IESO* in determining the priority to be given to the *planned outage*. Where such notice reflects only a shortening in the duration of a *planned outage* relative to the most recent *outage* submission for that *planned outage*, the priority date associated with such previous *outage* submission shall be retained in determining the priority to be given to the *planned outage*.

6.4.16 Where:

6.4.16.1 the *IESO* revokes *advance approval* of a *planned outage* prior to the commencement thereof; and

6.4.16.2 the *market participant* subsequently re-submits the *planned outage* with the *IESO*, in accordance with sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E, within five *business days* of the revocation;

the priority date of the approved *planned outage* prior to the revocation of *advance approval* shall be deemed to be the priority date of the re-submitted *planned outage* for purpose of determining the priority to be given to the *planned outage*.

6.4.17 Where:

6.4.17.1 the *IESO* rejects *advance approval* of a *planned outage* in accordance with section 6.4.4.4C, 6.4.4.5 or 6.4.4.5A;

6.4.17.2 the *market participant* resubmits the *planned outage* to the *IESO,* in accordance with sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E, within five *business days* of the rejection; and

6.4.17.3 this was the first time the *planned outage* had been rejected,

the priority date of the *planned outage* prior to the rejection will be deemed to be the priority date of the re-submitted *planned outage* for purposes of determining the priority to be given to the *planned outage*.

6.4.18 [Intentionally left blank – section deleted]

6.4.19 Where:

6.4.19.1 the *IESO* recalls a *planned outage* that has already commenced; and

6.4.19.2 the *market participant* resubmits the *planned outage* to the *IESO*, in accordance with sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E within five *business days* of the recall,

the priority date of the *planned outage* prior to the recall will be deemed to be the priority date of the re-submitted *planned outage* for purposes of determining the priority to be given to the *planned outage*.

6.4.20 Where:

6.4.20.1 the *IESO* does not grant *quarterly advance approval* of a *planned outage* that was scheduled to start in the first three months of a six month period, starting with the next calendar quarter; and

6.4.20.2 the *market participant* re-submits the *planned outage* for *quarterly advance approval* no later than the start of the six month period, starting with the next calendar quarter, in which the *planned outage* that was not granted *quarterly advance approval* was scheduled to start; and

6.4.20.3 the scheduled start date of the re-submitted *outage* which was not granted *quarterly advance approval* is revised to a date which is after the first three months of the six month period, starting with the next calendar quarter;

the priority date of the *planned outage* which was not granted *quarterly advance approval* will be deemed to be the priority date of the re-submitted *planned outage* for purposes of determining the priority to be given to the *planned outage*.

6.4A Return of Equipment or Facilities to Service

6.4A.1 No *market participant* shall return to service any equipment or *facilities* that are undergoing a *planned outage* unless:

6.4A.1.1 immediately prior to its return to service, or at a pre-arranged time specified by the *IESO*, the *market participant* has requested and has received the *IESO's* approval to return the equipment or *facilities* to service; and

6.4A.1.2 the return to service of the relevant equipment or *facilities* is undertaken under the direction of the *IESO* where the *IESO* has made the determination referred to in section 6.4A.2.3.

6.4A.2 The *IESO* shall:

6.4A.2.1 approve the return to service of equipment or *facilities* that are undergoing a *planned outage* unless it determines that such return to service will or is reasonably likely to have an adverse impact on the *reliability* of the *IESO-controlled grid*;

6.4A.2.2 promptly notify the *market participant* if a determination is made that a return to service of equipment or *facilities* will or is reasonably likely to have an adverse impact on the *reliability* of the *IESO-controlled grid*; and

6.4A.2.3 when providing the approval referred to in section 6.4A.2.1, advise the *market participant* if the return to service of equipment or *facilities* is to be undertaken under the direction of the *IESO* where the *IESO* has made a determination that this is necessary to maintain the *reliability* of the *IESO-controlled grid*.

6.4A.3 Where the *IESO* does not approve the return to service of equipment or *facilities* pursuant to section 6.4A.2.1, the *IESO* shall, subject to final confirmation by the *IESO* pursuant to 6.4A.1, advise the *market participant* when the equipment or *facilities* may be returned to service.

6.4B Notification of Commencement and Completion of Planned Outages

6.4B.1 Each *market participant* shall notify the *IESO*:

6.4B.1.1 subject to section 6.4.3.3, of the commencement of a *planned outage* at the time the relevant equipment or *facilities* are removed from service; and

6.4B.1.2 subject to section 6.4A.1.1, of the completion of a *planned outage* at the time the relevant equipment or *facilities* are fully returned to service.

6.5 Information

6.5.1 Each *transmitter,* each *generator* and each *electricity storage participant* shall provide to the *IESO* such *outage* information as may be requested by the *IESO* to enable the *IESO* to review and schedule *outages*.

6.5.2 Subject to the confidentiality provisions of MR Ch.3, the *IESO* shall *publish* the *planned outage* information provided to it pursuant to section 6.5.1.

6.5.3 Notwithstanding any other provision of these *market rules*, *planned outage* information that is provided to the *IESO* by *market participants* pursuant to this Chapter may be exchanged between the *IESO* and other *security coordinators, control area operators*, and *interconnected transmitters* who are signatories to the *NERC confidentiality agreement* or who are otherwise legally bound to withhold the information from any person competing with the *market participant* that provided the information.

6.5.4 The *IESO* shall *publish generator outage* information aggregated by fuel type based on information provided to it by *market participants* and may also *publish* the *outage* information for *electricity storage participants*.

6.6 Tests

6.6.1 A *market participant* who wishes to engage in a test that could affect the *reliability* of the *IESO-controlled grid* or the operation of the *IESO-administered markets* shall provide the information referred to in section 6.6.2 to the *IESO*.

6.6.2 As a minimum, the information referred to in section 6.6.1 shall identify:

6.6.2.1 the equipment involved;

6.6.2.2 the relevant details of contracts or agreements as they relate to the test activities;

6.6.2.3 preferred and alternative dates and times for the conduct of the test activities;

6.6.2.4 unusual system configurations or setup;

6.6.2.5 the expected impact of the test activities on power flows, voltage and frequency, and of any other dynamic that could interfere with the *reliability* of the *IESO-controlled grid*;

6.6.2.6 details of special readings or observations, as available; and

6.6.2.7 the names of and methods of communication with personnel who will be involved in the test activities and who may be contacted with respect thereto.

6.6.3 Tests covered by the requirements of this section 6.6 shall include, but are not limited to:

6.6.3.1 the deliberate application of short circuits;

6.6.3.2 stability tests of generation facilities, electricity storage facilities and transmission facilities;

6.6.3.3 planned actions which could cause abnormal voltage, frequency or overload; and

6.6.3.4 planned abnormal station or system configurations with inherent risk.

6.6.4 The *IESO* shall permit a test referred to in this section 6.6 to be performed if the *IESO* determines that the performance of the test will not have an adverse effect on the *reliability* of the *IESO-controlled grid* or on the operation of the *IESO-administered markets.*

6.6.5 In permitting a test to be performed, the *IESO* shall endeavour to permit the test to be performed at the time and on the date preferred as identified by the *market participant* pursuant to section 6.6.2.3.

6.6.6 This section 6.6 also applies to tests conducted pursuant to MR Ch.4 s.5.

6.6.7 During performance testing, a *market participant* shall keep the *IESO* informed of the expected operating capability of the *market participant's generation facility* or *electricity storage facility* using the outage management process as specified in the applicable *market manual*.

6.7 Compensation

Revoke Advance Approvals or Recalls

6.7.1 *Transmitters* whose *outages* are rejected or have *advance approvals* revoked or have *outages* recalled by the *IESO* shall not be entitled to compensation for any costs, losses or damage associated with such rejection, revocation or recall.

6.7.2 *Generators*, *electricity storage participants, distributors* or *wholesale consumers* whose *outages* have *advance approval* revoked or have *outages* recalled by the *IESO* shall, subject to the exceptions defined in sections 6.7.3A and 6.7.3B, be entitled to compensation for out-of-pocket expenses associated with such revocation or recall only if:

6.7.2.1 the *outage* was originally provided *advance approval* by the *IESO* pursuant to 6.4.4 and was submitted in accordance with sections 6.4.1B, 6.4.1C, 6.4.1D and 6.4.1E;

6.7.2.2 the *outage* was recalled or had *advance approval* revoked by reason of a material error in the *IESO's* demand forecast, a failure of *generation facilities* within the *IESO control area,* a failure of *facilities* forming part of the *IESO-controlled grid* or a failure of *interconnection facilities*; and

6.7.2.3 the out-of-pocket expenses exceed $1000.00.

6.7.3 [Intentionally left blank – section deleted]

6.7.3A A *market participant* shall not be entitled to compensation under section 6.7.2 with respect to a *planned outage* of its *generation facility* or *electricity storage facility* that received a *quarterly advance approval* or *weekly advance approval* and that *advance approval* was subsequently revoked by the *IESO* if:

6.7.3A.1 the *IESO* revoked the *advance approval* as a result of a *forced outage* of another *generation facility* or *electricity storage facility* with the same *registered market participant* as the *generation facility* or *electricity storage facility* that was the subject of the *planned outage* and the *forced outage* occurred before 16:00 E.S.T. on the third *business day* prior to the scheduled start of the *planned outage*; or

6.7.3A.2 the *advance approval* was revoked as a result of a delayed return to service from a *planned outage* or *forced outage* of another *generation facility* or *electricity storage facility* with the same *registered market participant* as, respectively, the *generation facility* or *electricity storage facility* that was the subject of the *planned outage*.

6.7.3B A *market participant* shall not be entitled to compensation under section 6.7.2 with respect to a *planned outage* that is granted *quarterly advance approval* and scheduled to start in the last three months of a six month period, starting with the current calendar quarter, and where the *quarterly advance approval* is subsequently revoked no later than one month prior to the start of the next calendar quarter.

6.7.4 The out-of-pocket expenses claimed by *generators*, *electricity storage participants, distributors* or *wholesale consumers* pursuant to section 6.7.2 shall be subject to verification and audit by the *IESO* and shall, where paid, be recovered by the *IESO* in accordance with MR Ch.9 s.4.14.12.

6.7.5 A *generator*, *electricity storage participant, distributor* or *wholesale consumer* shall not be entitled to compensation for any costs, expenses, losses or damage associated with an *outage* which has been rejected by the *IESO* provided that, in exceptional circumstances and where a *generator*, *electricity storage participant, distributor* or *wholesale consumer* has suffered substantial financial harm as a direct result of such rejection, the *generator*, *electricity storage participant, distributor* or *wholesale consumer* may request that an *arbitrator* be appointed pursuant to MR Ch.3 s.2 to determine whether and the amount of any compensation which the *generator*, *electricity storage participant, distributor* or *wholesale consumer* shall be entitled to recover as a result of the rejection of the *outage* by the *IESO.* In the case of *generators* or *electricity storage participants*, no such compensation shall be recoverable under this section 6.7.5 unless the *generator* or *electricity storage participant* demonstrates that the amount claimed cannot be recovered through *market prices*.

6.7.6 Each act of revocation or recall by the *IESO* shall be treated separately for compensation purposes.

7. Forecasts and Assessments

7.1 Forecasts Prepared by the IESO

7.1.1 The *IESO* shall produce and *publish* the following ongoing *demand* forecasts for Ontario or parts thereof:

7.1.1.1 on a daily basis, a forecast of *demand* for each of the 34 days following the current day, by hour; and

7.1.1.2 on a quarterly basis, a forecast of *demand* for the next 18 months, by week.

7.1.2 The forecasts referred to in section 7.1.1 shall be prepared by the *IESO* in such form as may be specified in the applicable *market manual,* shall be used in conducting the assessments referred to in section 7.3, and shall, in the case of the forecast referred to in section 7.1.1.2, be included in the reports referred to in section 7.3.1.2.

7.1.3 The *IESO* shall *publish* the method to be used to perform the forecasts described in section 7.1.1.

7.1.4 If required by the *IESO* for the purpose of enabling the *IESO* to produce the forecasts referred to in section 7.1.1, each *distributor, connected wholesale customer, electricity storage participant* or other load-serving entity shall provide to the *IESO* the load forecasts described in the applicable *market manual* in such form, at such time and having such resolution as may be specified in such *market manual*.

7.2 Basis for IESO Forecasts

7.2.1 The *IESO* shall develop forecasts of peak *demand* and *energy demand*, by area, that may be based in part on forecasts provided pursuant to section 7.1.4 if required.

7.3 Advance Assessments of System Reliability

7.3.1 The *IESO* shall prepare for the purposes referred to in section 7.4 and based on the information received pursuant to section 7.5.1 and such other information as the *IESO* considers appropriate, and *publish,* the following reports of its findings in relation to such *reliability* assessments:

7.3.1.1 [Intentionally left blank – section deleted]

7.3.1.2 on a quarterly basis and no later than 5 *business days* prior to the end of each calendar quarter, an assessment covering an eighteen-month period commencing with the following calendar month;

7.3.1.3 [Intentionally left blank – section deleted]

7.3.1.4 on a daily basis and not later than 20:30 EST on each day, an assessment covering a 34-day period commencing on the following day; and

7.3.1.5 as required, an assessment of the *reliability* of the *IESO-controlled grid*.

7.3.2 Any information derived from the s*ecurity* and *adequacy* assessment process shall be used to provide a basis for informing *market participants* about expected conditions on the *IESO-controlled grid* and in the *IESO-administered markets*. It is expected that the information will trigger appropriate responses under other market processes, such as *outage* coordination, and transmission investment planning.

7.3A Liability

7.3A.1 Notwithstanding MR Ch.1 s.13.1.2, no *market participant* shall be entitled to compensation from the *IESO* for any costs, loss or damage sustained by the *market participant* as a result of any difference between:

7.3A.1.1 *demand* as forecasted pursuant to section 7.1.1 and actual *demand*;

7.3A.1.2 conditions on the *IESO-controlled grid* as forecasted in the assessments referred to in section 7.3.1 and actual conditions on the *IESO-controlled grid*; or

7.3A.1.3 information contained in succeeding forecasts *published* pursuant to section 7.1.1 or reports *published* pursuant to section 7.3.1 that cover in whole or in part the same time frame.

7.3B Succession of Forecasts and Reports

7.3B.1 Each forecast *published* pursuant to section 7.1.1 or report *published* pursuant to section 7.3.1 shall, to the extent that it covers in whole or in part the same time frame as that covered in a previous *published* forecast or report, supercede such previous *published* forecast or report.

7.4 Purpose of Assessments

7.4.1 [Intentionally left blank – section deleted]

7.4.2 The *IESO* shall conduct the quarterly assessments referred to in section 7.3.1.2 to:

7.4.2.1 provide forecasts, by month, of expected *demand*, *generation capacity*, *electricity storage capacity* and transmission capacity, *energy* capability of *generation resources*, and *electricity storage resources* and the possibility of any *security*-related events on the *IESO-controlled grid* that could require contingency planning by *market participants* or by the *IESO*;

7.4.2.2 allow the *IESO* to identify exigencies potentially impacting on the coordination of *outages* that could give rise to shortfalls in *generation capacity* and *electricity storage capacity* and thus provide information by

which *market participants* could act to reschedule *outage* plans to avoid such projected shortfalls; and

7.4.2.3 allow the *IESO* to meet its obligations to relevant *standards authorities* so as to enable the latter organizations to assess the expected *reliability* of the regional power systems to match generation and *demand*.

7.4.3 [Intentionally left blank – section deleted]

7.4.4 The *IESO* shall conduct the daily assessments referred to in section 7.3.1.4 to:

7.4.4.1 provide forecasts of:

7.4.4.1.1 expected hourly *demand*, *generation capacity*, *electricity storage capacity*, *energy* capability of *generation resources* and *electricity storage resources*, exports and imports of *energy*, and *operating reserve* requirements;

7.4.4.1.2 expected transmission limits with all elements in-service; and

7.4.4.1.3 expected transmission limits with *outages*;

that may affect the *security* of the *IESO-controlled grid* or affect operational decisions to be taken by the *IESO* that must be made more than a day in advance;

7.4.4.2 allow the *IESO* to meet its obligations to relevant *standards authorities* so as to enable the latter organizations to assess the expected *reliability* of regional power systems to match generation and *demand*, on a daily and hourly basis, particularly in peak seasons and in peak hours; and

7.4.4.3 allow the *IESO* to identify exigencies potentially impacting on the coordination of *outages* that may give rise to shortfalls in *generation capacity* and thereby assist *market participants* in finalizing *outage* plans and submitting *outage* schedules to the *IESO*.

7.4.5 The *IESO* shall conduct the assessments referred to in section 7.3.1.5 to:

7.4.5.1 meet its obligations to maintain the *reliability* of the *IESO-controlled grid*;

7.4.5.2 meet the requirements of *standards authorities*; and

7.4.5.3 assist the *OEB* in meeting their objectives.

7.5 Information Requirements

7.5.1 Each *market participant* shall, for the purpose of enabling the *IESO* to perform the *reliability* assessments referred to in section 7.3.1, provide to the *IESO* the

information described in the applicable *market manual* in such form, at such time and having such resolution as may be specified in such *market manual*.

7.6 The Reporting of Reliability Assessments

7.6.1 The reports referred to in section 7.3.1 shall be prepared by the *IESO* in such form and shall contain such information as may be specified in the applicable *market manual.*

7.7 Updated and Related Reports

Interim Updates

7.7.1 The *IESO* may *publish* additional updated versions of any of the assessment reports referred to in section 7.3.1 in the event of changes that, in the *IESO*'s opinion, are significant and should be communicated to *market participants*.

Related Reports

7.7.2 From the material and assessments in the assessment reports referred to in section 7.3.1, the *IESO* may produce additional related reports as required by relevant *standards authorities*, the *IESO Board*, the *OEB*, and the Government of Ontario.

Advisory Notices

7.7.3 The *IESO* may *publish* notifications in the event of changes that occur between scheduled *publication* times of the assessment reports referred to in section 7.3.1.4, in accordance with the applicable *market manual*. Where applicable, the corresponding information shall be included by the *IESO* in a subsequent *publication* of a scheduled report under section 7.3.1.4.

7.8 [Intentionally left blank – section deleted]

7.9 Provision of Information to Transmitters

7.9.1 Notwithstanding any other provision of these *market rules*, the *IESO* may, if necessary to enable *transmitters* to prepare plans for the expansion or modification of the *IESO-controlled grid*, provide to relevant *transmitters* information provided by *market participants* pursuant to this Chapter regarding their forecasts and plans. Any such information which is *confidential information* shall be provided to *transmitters* on a confidential basis and the receiving *transmitter* shall use all reasonable endeavours to protect such *confidential information* and shall use such *confidential information* solely for the purpose of preparing plans for the expansion or modification of the *IESO-controlled grid*.

7.9.2 Where the *IESO* intends to disclose to a *transmitter confidential information* pertaining to a *market participant* pursuant to section 7.9.1, the *IESO* shall provide the *market participant* with advance notice of such intention and shall provide the

market participant with a reasonable opportunity to make representation as to why the *confidential information* should not be disclosed.

7.10 IESO Actions

Actions Within Next Twelve Months

7.10.1 If the *IESO* identifies an adverse condition on the *IESO-controlled grid* that requires action to be initiated within the next twelve months in order to maintain the *reliability* of the *IESO-controlled grid*, the *IESO* may:

- conduct and *publish* a *reliability* assessment in accordance with section 7.3.1.5; and
- take any additional steps necessary to ensure that the *reliability* of the *IESO-controlled grid is* maintained.

7.10.2 If the *IESO* does not believe that *market participants* have or will voluntarily put forward reasonable commitments for technically feasible options to alleviate the condition identified in section 7.10.1, the *IESO* may direct the *transmitter(s)* in the relevant location(s) to prepare a detailed proposal for the enhancement of the *IESO-controlled grid*. The *transmitter(s)* shall submit the proposal to the *OEB* and other governmental agencies having authority to approve the proposal, in the form of an application for approval of the enhancement. The *IESO* shall notify the *OEB* of its identification of the adverse condition.

Actions Beyond the Next Twelve Months

7.10.3 If the *IESO* identifies an adverse condition on the *IESO-controlled grid* that does not require action to be initiated within the next twelve months, the *IESO* shall notify the *OEB* of its determination.

Actions Independent of IESO Recommendations

7.10.4 Nothing in this section 7.10 is intended to limit the ability of any *market participant* to file for approval a proposal to invest in *facilities* on the *integrated power system* that are not the subject of specific recommendations made by the *IESO*. A *market participant* interested in sponsoring a new or modified *connection* to the *IESO-controlled grid* may submit a *request for connection assessment* in accordance with MR Ch.4 s.6.1.6.

8. Remedial Action Schemes

8.1 Objectives

8.1.1 *Remedial action schemes* ("*RAS*") have been installed in a number of locations on the *IESO-controlled grid* which automatically initiate one or more of the following control actions:

8.1.1.1 load rejection;

8.1.1.2 generation rejection;

8.1.1.3 generation runback;

8.1.1.4 shunt capacitor switching;

8.1.1.5 shunt reactor switching; and

8.1.1.6 cross-tripping.

For further certainty, any of the control actions listed above may be applied by the *IESO* to *electricity storage facilities* if and as applicable.

8.1.2 The *IESO* shall direct the arming of *RASs* installed on the *IESO-controlled grid* as necessary to:

8.1.2.1 increase the capability of power transfers on the *IESO-controlled grid;* or

8.1.2.2 provide additional *security* beyond that required to manage *contingency events* in a *normal operating state*.

8.1.3 New *RASs* shall be installed and utilized on the basis of agreements between and/or among the parties involved.

8.2 Responsibilities of the IESO

8.2.1 The *IESO* shall classify all *RASs* and obtain approval for their use in accordance with all applicable *reliability standards.*

8.2.2 The *IESO* shall determine the need for utilizing an *RAS* for *security* reasons.

8.2.2A The *IESO* shall direct the arming of all *RASs* installed on the *IESO-controlled grid* in accordance with applicable *reliability standards* and applicable agreements including those negotiated under section 8.4.2.

8.2.3 The *IESO* shall direct the arming of an *RAS* to mitigate the adverse effects of specific extreme *contingency events* and to mitigate congestion provided that there are no overriding concerns related to the *security* of the *IESO-controlled grid*.

8.2.4 The *IESO* shall establish and *publish* criteria for arming and activation of *RASs* in sufficient detail and precision to allow a *market participant* whose *facility* forms part of an *RAS* to understand the conditions under which that *RAS* would be armed and activated. Prior to establishing changes to such criteria, the *IESO* shall consult with, and, where practicable, gain the agreement of, the *market participant* whose *facility* is part of the *RAS* to the intended changes. In the event that agreement cannot be reached, the *IESO* may change the criteria for the *RAS* if necessary to maintain *reliable* operation of the *IESO-controlled grid*.

8.2.5 The *IESO* shall from time to time review or cause to be reviewed the performance of *RASs*.

8.2.6 In the event that a *market participant* applies to the *IESO* for compensation under section 8.4.1, the *IESO* shall, upon verification that the amount being claimed is correct, pay such compensation by crediting the *market participant's preliminary settlement statement* for the last day of the month on the next *preliminary settlement statement* in which the *IESO* can reasonably incorporate the compensation.

8.3 Responsibilities of RAS Equipment Owners

8.3.1 Owners of *RAS* equipment shall:

8.3.1.1 maintain *RAS* equipment in accordance with all applicable *reliability standards*;

8.3.1.2 test and report operating statistics associated with an *RAS* to the *IESO* on an annual basis;

8.3.1.3 report the performance of an *RAS* when requested to do so by the *IESO*;

8.3.1.4 evaluate and notify the *IESO* of any request from affected *market participants* for permanent exemptions from *connection* to the *RAS*; and

8.3.1.5 provide written notice to the *IESO* of any proposal to install a new, or modify an existing, *RAS*, which notice shall be provided with sufficient lead time and in sufficient detail for the *IESO* to review and seek, if necessary, approval from the relevant *standards authorities* for such new or modified *RAS*; and

8.3.1.6 specify to the *IESO* and *market participants* whose *facilities* form part of an *RAS* the means used to arm the *RAS*.

8.4 Responsibilities of Market Participants Whose Facilities Form Part of an RAS

8.4.1 A *market participant* with a *facility* associated with a *non-quick start resource* and that is part of an *RAS* may apply to the *IESO* for compensation, if:

8.4.1.1 that *facility* is tripped offline as a result of the activation of the *RAS*;

8.4.1.2 the *non-quick start resource* associated with such *facility* does not receive a real-time make whole payment *settlement amount* pursuant to MR Ch.9 s.3.5 in relation to such *energy* for the same *metering interval*;

8.4.1.3 the *non-quick start resource* associated with such *facility* does not receive a *day-ahead market* balancing credit pursuant to MR Ch.9 s.3.3 in relation to such *energy* for the same *metering interval*;

8.4.1.4 the *day-ahead market locational marginal price* is less than the *real-time market locational marginal price* at the *delivery point* for the *non-quick start resource* associated with such *facility*; and

8.4.1.5 the actual quantity of *energy* the *non-quick start resource* associated with such *facility* injects into the *IESO-controlled grid* is less than its *day-ahead schedule*.

The amount of compensation that may be claimed is the difference between the applicable *real-time market locational marginal price* and the applicable *day-ahead market locational marginal price* at the *delivery point* for the *non-quick-start resource* multiplied by the difference between the *non-quick start resource's day-ahead schedule* and the actual quantity of *energy* it injects into the *IESO-controlled grid*.

8.4.2 *Market participants* whose *facilities* form part of an existing *RAS* or may form part of a new *RAS* may request notification and/or status annunciation of *RAS* arming, disarming and activation and may enter into agreements with the *RAS* equipment owner/operator and the *IESO* to determine the appropriate status annunciation and notification. The *market participant*, *RAS* equipment owner/operator and the *IESO* shall use the following criteria in determining and implementing the appropriate status annunciation and/or notification:

8.4.2.1 licensing/legal requirements of the *market participant* related to the operation of its *facility* that is part of the *RAS*;

8.4.2.2 practicality of status annunciation and/or notification;

8.4.2.3 cost-effectiveness of status annunciation and/or notification;

8.4.2.4 the status annunciation and/or notification does not adversely impact the intended use of the *RAS*; and

8.4.2.5 comparison to the notification and annunciation of *RAS* arming and activation provided to other *market participants* whose *facilities* form part of an *RAS.*

In the event that they cannot agree on the status annunciation and notification requirements and implementation, the *RAS* owner/operator, the *IESO* and the

market participant shall use the dispute resolution provisions in MR Ch.3 s.2 to resolve the issue.

8.4.3 *Market participants* whose *facilities* form part of an *RAS* shall notify the *IESO* in accordance with the applicable *market manual* or applicable agreements including those negotiated under section 8.4.2 if the *facility* is unavailable for *RAS* arming.

8.4.4 If an *RAS* has been armed and the *market participant* whose *facility* forms part of the *RAS* reasonably believes that a subsequent activation of that *RAS* would endanger the safety of any person, damage equipment or violate any *applicable law*, the *market participant* whose *facility* is part of that *RAS* may take action in accordance with applicable agreements including those negotiated under section 8.4.2 or may request that the *IESO* disarm the *RAS*. Upon such a request, the *IESO* shall, as soon as the *IESO* can take action to maintain reliable operation of the *IESO-controlled grid*, disarm the *RAS*.

9. Voltage Control

9.1 General

9.1.1 No *market participant* shall make changes in equipment status or operations that could materially adversely affect the voltage profile of the *IESO-controlled grid* without the prior approval of the *IESO*. To this end, each *market participant* shall notify the *IESO* of the *market participant's* intention to make any such change. The *IESO* shall approve such change unless it determines that the change is reasonably likely to adversely affect the *reliability* and voltage profile of the *IESO-controlled grid.*

9.2 Under Load Tap Changers

9.2.1 The *IESO* shall direct the operation of under loads tap changers installed on auto-transformers on the *IESO-controlled grid* to control the voltage profile of the *IESO-controlled grid* while ensuring that acceptable voltages at the *connections* to *IESO-controlled grid* are maintained. No *market participant* shall make any changes to such taps without the prior approval of the *IESO*. The *IESO* shall approve such changes unless it determines that such changes could affect the *IESO's* ability to control voltage on the *IESO-controlled grid*, that procedures for such changes cannot be adopted or both.

9.2A Under Load Tap Changers – Connection Transformers

9.2A.1 The *IESO* shall not direct the operation of under load tap changers on *connections* to the *IESO-controlled grid* unless, in the *IESO's* opinion, the operation of such equipment otherwise will or is likely to affect the *reliability* of the *IESO-controlled grid.*

9.3 Off Load Tap Changers

9.3.1 No *market participant* shall make any changes to off load taps of transformers on the *IESO-controlled grid* without the prior approval of the *IESO.* The *IESO* shall approve such change unless it determines that the change is reasonably likely to adversely affect the *reliability* and voltage profile of the *IESO-controlled grid.*

10. Demand Control

10.1 Introduction

10.1.1 This section 10 applies in situations on the *integrated power system* where there is insufficient capacity available to satisfy expected *demand*, where operating problems (such as frequency, voltage levels or thermal over-loads) exist which affect the ability to serve *demand*, or where there is a breakdown on any part of the *IESO-controlled grid*. This section 10 identifies actions that the *IESO* may take or direct *market participants* to take to assist in achieving reductions in *demand* to either avoid or alleviate such situations.

10.1.2 Pursuant to MR Ch.7, the *IESO* shall continuously inform *market participants* of conditions on the *IESO-controlled grid* that may require the *IESO* to initiate reductions in *demand* by *non-dispatchable loads* or *price responsive loads*.

10.2 Demand Control Initiated by a Market Participant

10.2.1 *Market participants* shall notify the *IESO* of any action initiated by them to control *demand* in accordance with this section 10.2.

10.2.2 Each *market participant* that can intentionally and directly cut withdrawals by a *dispatchable load* or by a *dispatchable electricity storage resource* shall provide the following information to the *IESO*:

10.2.2.1 the proposed date, time, and duration of the cuts by *connection point* on the *IESO-controlled grid*, by hour;

10.2.2.2 the proposed MW reduction of *demand* by *connection point* on the *IESO-controlled grid*, by hour; and

10.2.2.3 the details of the actual decrease in the withdrawals by a *dispatchable load* or the withdrawals by a *dispatchable electricity storage resource* that was achieved.

10.2.3 Each *transmitter* and *distributor* that intends to initiate a voltage reduction shall:

10.2.3.1 by 10:00 EPT each day, notify the *IESO* of all such planned voltage reductions and consequent reduction in load for the following day;

10.2.3.2 immediately notify the *IESO* of a voltage reduction that is planned after 10:00 EPT for the following day;

10.2.3.3 the proposed date, time, and duration of the voltage reduction by *connection point* on the *IESO-controlled grid*, by hour;

10.2.3.4 the proposed MW reduction by *connection point* on the *IESO-controlled grid*, by hour; and

10.2.3.5 details of the actual voltage reduction achieved, in MWs.

10.2.4 Each *distributor* or *transmitter* that intends to initiate a *disconnection* in load (including, but not limited to, interruptible loads and demand management activities) shall:

10.2.4.1 by 10:00 EPT each day, notify the *IESO* of all such planned *disconnections* in load and consequent reduction in loads for the following day;

10.2.4.2 immediately notify the *IESO* of a *disconnection* in load that is planned after 10:00 EPT for the following day;

10.2.4.3 the proposed date, time, and duration of the *disconnection* in load by *connection point* on the *IESO-controlled grid*, by hour;

10.2.4.4 the proposed reduction, in MWs, of loads by *connection point* on the *IESO-controlled grid*, by hour; and

10.2.4.5 details of the actual reduction in loads achieved, in MWs.

10.2.5 Each *distributor* and *transmitter* that has operational control over load shall:

10.2.5.1 make arrangements that enable it to *disconnect* load immediately under an *emergency operating state* declared by the *IESO*;

10.2.5.2 make arrangements that enable it to apply *disconnections* to load to individual or specific groups of *connection points* on the *IESO-controlled grid* as determined in a coordinated fashion by the *IESO* and *market participants*;

10.2.5.3 provide the *IESO* in writing, by week 24 in each calendar year, its total forecasted peak *demand* for the immediately following twelve-month period, by *connection point* on the *IESO-controlled grid*; and

10.2.5.4 provide the *IESO* in writing, by week 24 in each calendar year, the total forecasted peak *demand* for the immediately following twelve-month period that can be *disconnected* within the following time scales: immediately, 15 minutes, 1 hour and more than 1 hour. This information shall be provided by *connection point* on the *IESO-controlled grid.*

10.2.6 No *distributor* or *transmitter* that has *disconnected* load pursuant to section 10.2.4 shall reconnect the load until directions have been received from the *IESO* permitting it to do so. Such *distributor* or *transmitter* shall commence restoration of load immediately following receipt of such directions.

10.3 Demand Control Initiated by the IESO in an Emergency Operating State

10.3.1 When an *emergency operating state* has been declared by the *IESO*, the actions available to the *IESO* to safeguard the *security* of the *IESO-controlled grid* may include issuing directions to *market participants* to reduce *demand* for electricity.

10.3.2 Whenever possible, the *IESO* shall issue a warning by 16:00 EST on the previous day when requesting a reduction of *demand* through voltage reductions or interruptions.

10.3.3 Each *market participant* that receives a direction from the *IESO* to reduce *demand* shall achieve the reduction in *demand* within 5 minutes of receipt of the direction and shall notify the *IESO* that it has done so.

10.3.4 Each *market participant* may interchange customers to whom the *demand* reduction has been applied provided the necessary *demand* reduction required by the *IESO* is achieved by the interchange.

10.3.5 No *market participant* that has reduced *demand* pursuant to this section 10.3 shall restore *demand* until directions have been received from the *IESO* permitting it to do so. Such *market participant* shall commence restoration of *demand* immediately following receipt of such directions.

10.3.6 The *IESO* shall maintain, *publish* and revise as required, following appropriate consultations with *market participants*, the *Ontario Electricity Emergency Plan* regarding exclusions to load management activities that are undertaken for the purpose of controlling *demand*.

10.3.7 The *IESO* shall *publish* an estimate of aggregate load *curtailed* as soon as practicable following the return to a *normal operating state*.

10.4 Under-Frequency Load Shedding

10.4.1 Automatic under-frequency load shedding shall be accomplished to maintain the frequency of the *IESO-controlled grid* and to restore the *IESO-controlled grid* to normal frequency following frequency deviations outside of the range established by the *IESO*.

10.4.2 Each *transmitter* shall, where possible and upon receipt of an under-frequency alarm or an indication of declining frequency and voltage, identify to the *IESO* frequency values for stations under its control.

10.4.3 Each *transmitter* shall undertake the following actions immediately and independently as pre-authorized by the *IESO* pursuant to the Operating Agreement between the *transmitter* and the *IESO*:

10.4.3.1 when frequency is between 58.5 and 59.0 Hz, take immediate independent action to shed 25% of controlled load. The block of load to be shed shall not include load connected to under-frequency load-shedding relays; or

10.4.3.2 when frequency is below 58.5 Hz, take immediate independent action to shed affected load until the frequency is restored to 59.0 Hz or, in the case of known *electrical island* situations, to 60 Hz.

10.4.4 Each affected *transmitter* shall notify the *IESO* of the approximate amounts and locations of loads that were shed and of conditions on the *IESO-controlled grid*.

10.4.5 Once loads have been shed to maintain the frequency of the *IESO-controlled grid*, the *IESO* shall immediately report conditions on the *IESO-controlled grid* to affected *transmitters*.

10.4.6 Each *distributor* and *connected wholesale customer*, in conjunction with the relevant *transmitter*, shall make arrangements to enable the *disconnection* of automatic under-frequency *demand* of at least 30% of its total peak customer *demand*.

10.4.7 The *demand* of each *distributor* and *connected wholesale customer* that is subject to automatic under-frequency load shedding pursuant to section 10.4.6 shall be split into discrete MW blocks. The number, location, size and associated low frequency settings of these blocks shall be as specified by the *IESO*. Such specifications shall be established by the *IESO*, following consultations with the relevant *market participants*, by week 24 in each calendar year to cover the immediately following twelve-month period.

10.4.8 No *market participant* shall restore load that has been shed pursuant to this section 10.4 until directions have been received from the *IESO* permitting it to do so. Such *market participant* shall commence the restoration of load immediately following receipt of such direction.

10.4.9 Each *distributor* and *connected wholesale customer* shall provide the *IESO* with an estimate of the *demand* reduction that has occurred as a result of *disconnecting* under-frequency *demand*.

10.4.10 The amount of load rejected by automatic under-frequency load shedding shall conform to the minimum requirements set forth in all applicable *reliability standards.*

10.4.11 The *IESO* shall, maintain, *publish* and revise as required, following appropriate consultations with *market participants*, the applicable *market manual* regarding exclusions to load management activities that are undertaken for the purpose of shedding load during under-frequency conditions.

10.5 Generator Obligations During Abnormal Frequency

10.5.1 Abnormal frequency excursions on the *IESO-controlled grid* may require immediate actions by *generators* to restore the frequency to an acceptable level.

10.5.2 A g*enerator* that observes a frequency excursion greater than 60.2 Hz or less than 59.8 Hz shall immediately report this condition to the *IESO* and shall carry out frequency restoration actions as directed by the *IESO*.

10.5.3 No *generator* shall be precluded by the restoration actions referred to in section 10.5.2 from taking action for the purpose of ensuring the safety of any person, preventing the damage of equipment, or preventing the violation of any *applicable law*. Any such directives shall be immediately reported to the *IESO.*

10.5A Electricity Storage Participant Obligations During Abnormal Frequency

10.5A.1 Abnormal frequency excursions on the *IESO-controlled grid* may require immediate actions by *electricity storage participants* to restore the frequency to an acceptable level.

10.5A.2 An *electricity storage participant* that observes a frequency excursion greater than 60.2 Hz or less than 59.8 Hz shall immediately report this condition to the *IESO* and shall carry out frequency restoration actions as directed by the *IESO*.

10.5A.3 No *electricity storage participant* shall be precluded by the restoration actions referred to in section 10.5A.2 from taking action for the purpose of ensuring the safety of any person, preventing the damage of equipment, or preventing the violation of any *applicable law*. Any such directives shall be immediately reported to the *IESO.*

11. Emergency Preparedness and System Restoration

11.1 Objective

11.1.1 The objective of this section 11 is to establish the means by which the *IESO* and *market participants* will fulfil their respective *emergency* preparedness and system restoration obligations, including regular and real-time testing; the preparation by the *IESO* of the *Ontario electricity emergency plan* and the *Ontario power system restoration plan*; the preparation by *market participants* of *emergency preparedness plans* that support and are coordinated with the *Ontario electricity emergency plan*; and the preparation of *restoration participant attachments* that support and are coordinated with the *Ontario power system restoration plan*. This objective will be met through co-operation and in consultation with all relevant *market participants.*

11.2 Emergency Preparedness Plans and Ontario Electricity Emergency Plan

11.2.1 The *IESO* shall develop and maintain, in consultation with all relevant *market participants*, the *Ontario electricity emergency plan* describing the responsibilities of, and coordinating the actions of, *market participants* and the *IESO* for the purpose of alleviating the effects of an *emergency* on the *electricity system,* having regard to the mitigation of the impact of an *emergency* on public health and safety as identified in each *market participant's emergency preparedness plan.*

11.2.2 The *IESO* shall file with the *Minister* the *Ontario electricity emergency plan* and such other emergency plans as the *Minister* may require pursuant to subsection 39(1) of the *Electricity Act, 1998*.

11.2.3 In order to assist the *IESO* in fulfilling its responsibilities under section 39 of the *Electricity Act, 1998*, each *market participant* shall prepare and submit to the *IESO* an *emergency preparedness plan* and such other *emergency* preparedness-related information as the *IESO* considers necessary. Each *market participant* shall ensure that its *emergency preparedness plan* complies with section 11.2.4 and is submitted to the *IESO* during registration to become a *market participant*, or at such later times as the *IESO* shall specify.

11.2.4 Each *market participant* shall ensure that its *emergency preparedness plan*:

11.2.4.1 describes such planning, testing, information, communication and other elements designated by the *IESO*;

11.2.4.2 complies with such *emergency* planning criteria as may be designated by the *IESO*;

11.2.4.3 complies with all relevant *reliability standards*;

11.2.4.4 is consistent with the *emergency* planning and preparedness procedures established by relevant government authorities;

11.2.4.5 indicates the manner in which the impact of an *emergency* on public health and safety will be mitigated;

11.2.4.6 indicates the manner in which the *market participant* will minimize the cutting and expedite the restoration of critical loads and priority loads during short and prolonged *emergencies*; and

11.2.4.7 is submitted with a statement certified by an officer or equivalent of the *market participant* stating that the *emergency preparedness plan* is a true and complete copy as at the date of the certification.

11.2.5 The *IESO* shall assist *market participants* in the development of *emergency preparedness plans* for the purpose of ultimately establishing *emergency*

preparedness plans that support and are coordinated with the *Ontario electricity emergency plan*.

11.3 Ontario Power System Restoration Plan and Restoration Participant Attachments

11.3.1 The *IESO* shall develop and maintain, in consultation with all relevant *market participants*, the *Ontario power system restoration plan* for restoring the *security* of the *IESO-controlled grid* following a major *contingency event* or *emergency* as required by all applicable *reliability standards* and considered prudent by the *IESO* for Ontario.

11.3.2 The *Ontario power system restoration plan* shall cover each of the planning, testing, information, load reduction, load restoration, communication and other elements described in section 10 and section 11 and such other elements as the *IESO* deems necessary to implement effective system restoration.

11.3.3 The *Ontario power system restoration plan* shall include, but not be limited to:

11.3.3.1 plans for managing major disturbances on the *IESO-controlled grid* that blackout all or a portion of the *IESO-controlled grid*;

11.3.3.2 plans for the testing and verification of *emergency* preparedness facilities and procedures; and

11.3.3.3 descriptions of the roles of the *IESO* and various *restoration participants* in the *Ontario power system restoration plan*.

11.3.4 The *IESO* shall file with the *Minister* the *Ontario power system restoration plan* and such other restoration documentation as the *Minister* may require under subsection 39(1) of the *Electricity Act, 1998*.

11.3.5 Each *restoration participant* shall prepare and submit to the *IESO* a *restoration participant attachment* to the *Ontario power system restoration plan* and such other system restoration-related information as the *IESO* considers necessary. Each *restoration participant* shall ensure that its *restoration participant attachment* complies with section 11.3.6 and is submitted to the *IESO* during registration to become a *market participant*, or at such later times as the *IESO* shall specify.

11.3.6 Each *restoration participant* shall ensure that its *restoration participant attachment*:

11.3.6.1 includes the elements described in section 11.3.7;

11.3.6.2 complies with such restoration planning criteria as may be designated by the *IESO*; and

11.3.6.3 complies with all relevant *reliability standards,* subject to the information reporting requirements specified in section 14.1.2.

11.3.7 Each *restoration participant* shall ensure that its *restoration participant attachment* includes:

11.3.7.1 a statement describing that the *restoration participant*: (i) has an operator training program in place, (ii) uses trained operating personnel, and (iii) maintains operator training records;

11.3.7.2 documentation detailing organizational responsibility for co-ordinating with the *IESO* the development of and participation in system restoration drills. Such development and participation shall be conducted by the *restoration participant* at its own expense;

11.3.7.3 a statement describing the program in place to test the *restoration participant's* equipment as may be designated in the *Ontario power system restoration plan*. Such testing shall be conducted by the *restoration participant* at its own expense;

11.3.7.4 a statement of policy and supporting documentation demonstrating how the *restoration participant* will minimize the cutting and expedite the restoration of critical loads and priority loads under system restoration conditions;

11.3.7.5 any other documentation that the *IESO* deems necessary to support or facilitate the successful implementation of the *Ontario power system restoration plan*; and

11.3.7.6 a statement certified by an officer or equivalent of the *market participant* stating that the *restoration participant attachment* is a true and complete copy as at the date of the certification.

11.3.8 [Intentionally left blank]

11.3.9 The *IESO* shall assist *restoration participants* in the development of *restoration participant attachments* that support and are coordinated with the *Ontario power system restoration plan* for the purpose of ultimately establishing one integrated restoration plan for Ontario.

11.3.10 Each *restoration participant* shall ensure that the guidelines and procedures applicable to it and set forth in the *Ontario power system restoration plan* are carried out by trained operating staff with sufficient authority to take any action that may be necessary to ensure that all relevant equipment is operated in a timely, stable and reliable manner.

11.3.11 The *IESO* shall direct *market participants* in restoring the *IESO-controlled grid* following major disturbances. Each such *market participant* shall be responsible for carrying out these *IESO* directions, in accordance with the provisions of the *Ontario power system restoration plan.*

11.4 Review and Audit

11.4.1 The *IESO* shall review each *emergency preparedness plan* and each *restoration participant attachment* submitted to it, in accordance with sections 11.2.3 and 11.4.3, and shall prepare and provide to the relevant *market participant* or *restoration participant* a *record of review* indicating the changes, if any, required to be made and the date by which the revised *emergency preparedness plan* or *restoration participant attachment* must be submitted with the *IESO*.

11.4.2 Each *market participant* shall make such changes to its *emergency preparedness plan* or *restoration participant attachment* as may be required by the record of review and shall submit to the *IESO* a revised *emergency preparedness plan* or *restoration participant attachment* within the time specified in the record of review or within such other period as may be agreed with the *IESO*.

11.4.3 Each *restoration participant* shall review its *emergency preparedness plan* and *restoration participant attachment* at least annually, or as required, and shall, following such review, submit to the *IESO*:

11.4.3.1 a statement certified by an officer or equivalent of the *restoration participant* confirming that the review has not required any change to be made to its *emergency preparedness plan* or its *restoration participant attachment*; or

11.4.3.2 a revised version of its *emergency preparedness plan* or *restoration participant attachment*, amended as may be required by the results of the review, together with a statement certified by an officer or equivalent of the *restoration participant* identifying such amendments, as the case may be. Each *restoration participant* shall ensure that any revised *emergency preparedness plan* or *restoration participant attachment* prepared and submitted pursuant to this section 11.4.3 complies with section 11.2.4 or 11.3.6, respectively.

11.4.4 When directed by the *IESO*, the *market participant* shall have an independent audit of its *emergency preparedness plan* and/or *restoration participant attachment* conducted. The independent audit may be conducted by, without limitation, the *market participant's* internal auditors or before a peer review team having diverse membership or industry *emergency preparedness* expertise. The cost of conducting such an audit shall be borne by the *market participant*. Each *market participant* shall, following such audit, submit to the *IESO* a copy of the audit report, together with:

11.4.4.1 a statement certified by an officer or equivalent of the *market participant* confirming that the audit has not required any change to be made to its *emergency preparedness plan* or its *restoration participant attachment*; or

11.4.4.2 a revised version of its *emergency preparedness plan* or *restoration participant attachment*, amended as may be required by the results of the audit, together with a statement certified by an officer or equivalent of

the *market participant* identifying such amendments, as the case may be. Each *market participant* shall ensure that any revised *emergency preparedness plan* or *restoration participant attachment* prepared and submitted pursuant to this section 11.4.4 complies with section 11.2.4 or 11.3.6, respectively.

11.4.5 The *IESO* shall review its *emergency preparedness plan,* the *Ontario electricity emergency plan* and the *Ontario power system restoration plan* at least annually, or as required. When directed by the *Minister*, the *IESO* shall have an independent audit conducted of these plans. The independent audit may be conducted by, without limitation, the *IESO's* internal auditors or before a peer review team having diverse membership or industry *emergency preparedness* expertise. The cost of such an audit shall be borne by the *IESO*.

11.5 [Intentionally left blank]

11.6 Emergency Facilities

11.6.1 The *IESO* may evacuate its principal control centre in the event that a circumstance arises that poses a hazard to *IESO* personnel. During and following such evacuation, operation of the *IESO-controlled grid* shall be effected in accordance with this section 11.6.

11.6.2 The *IESO-administered markets* shall continue to operate during an evacuation of the *IESO*'s principal control centre unless conditions exist that would warrant a suspension of market operations as described in MR Ch.7.

11.6.3 During the interval between the evacuation of the *IESO's* principal control centre and the establishment of a backup control centre:

11.6.3.1 the *IESO* shall designate an interim emergency system coordinator to act in its stead, as required; and

11.6.3.2 all *generators, electricity storage participants* and *transmitters* shall manage their *facilities* and support the emergency system coordinator in the operation of the *IESO-controlled grid.*

11.6.4 The *IESO* shall test the backup control centre and associated procedures and facilities on a regular basis, and each *market participant* connected to the *IESO-controlled grid* shall, at its own expense and as directed by the *IESO*, support and actively participate in evacuation tests and simulations.

11.7 Testing

11.7.1 Each *market participant* shall ensure that the capability and reliability of its personnel, procedures, and equipment are maintained to the extent necessary to fulfill its obligations under its *emergency preparedness plan* and its *restoration participant attachment*.

11.7.2 The *IESO* shall develop, schedule, implement and conduct such tests as are provided for in the *Ontario electricity emergency plan* and the *Ontario power system restoration plan.*

11.7.3 [Intentionally left blank]

11.7.4 Each *market participant* shall support and actively participate, at its own expense and as directed by the *IESO*, in the implementation and testing of its *emergency preparedness plan*, its *restoration participant attachment*, the *Ontario electricity emergency plan,* the *Ontario power system restoration plan* and voice communications facilities.

11.7.5 The *IESO* shall schedule the tests referred to in section 11.7.4 at an appropriate time of the year and time of day, in consideration of the needs of *market participants* and of the desire to minimize their costs relating to such tests. To the extent practicable, such tests of the *restoration participant attachment* shall be scheduled in a manner consistent with the *outage* coordination process described in section 6.

11.8 Enforcement

11.8.1 Failure by a *market participant* to take any action required to be taken in, or to act in a manner consistent with, its *emergency preparedness plan*, its *restoration participant attachment* or its accountabilities within the *Ontario power system restoration plan* shall be deemed to constitute a breach of the *market rules.*

12. Communications

12.1 Communication Methods

12.1.1 Communication between the *IESO* and:

12.1.1.1 *market participants*;

12.1.1.2 *embedded generators* required by MR Ch.2 App.2.2 to provide or install and maintain voice communication facilities, facilities relating to monitoring and control or both;

12.1.1.3 *embedded load consumers* required by MR Ch.2 App.2.2 to provide or install and maintain voice communication facilities, facilities relating to monitoring and control or both; and

12.1.1.4 *embedded electricity storage participants* required by MR Ch.2 App.2.2 to provide or install and maintain voice communication facilities, facilities relating to monitoring and control, or both;

shall take place through a combination of methods as identified in MR Ch.2 App.2.2 and as directed by the *IESO* pursuant to section 12.2.3.2.

12.1.2 For the purposes of section 12.1.1 and with the exception of section 12.1.2A, the *IESO* shall provide and maintain, at its cost, a dedicated, real-time communication network from the *IESO's* facilities to the communication terminal point between such network and:

12.1.2.1 the monitoring and control devices; and

12.1.2.2 where applicable, the *dispatch workstation*

of the persons referred to in sections 12.1.1.1 to 12.1.1.3 to enable communication between the *IESO* and such persons.

12.1.2A Subject to section 12.1.6, for a *variable generator* that is a *registered market participant*, the *registered market participant* shall, if a dedicated communication network in accordance with section 12.1.2 is not already in place, provide and maintain, at its cost, a dedicated, internet based real-time communication network from the *IESO's* facilities to the communication terminal point between such network and a *dispatch workstation.* Any such internet-based real-time communication network shall meet the applicable specifications and other requirements set forth in the *participant technical reference manual.*

12.1.3 The *IESO* shall provide real-time communication network channels to the persons referred to in sections 12.1.1.1 to 12.1.1.3 as follows:

12.1.3.1 one communication channel and, where available and justified for *reliable* operation of the *IESO-controlled grid* and efficient operation of the *IESO-administered markets*, a redundant physically diverse communication channel, for:

a. each *facility* to which the high performance information monitoring standard applies in accordance with MR Ch.4 Apps.4.19 to 4.23, and

b. each *facility* that is providing monitoring information for two or more *facilities*;

12.1.3.2 one communication channel for each *facility* to which the medium performance information monitoring standard applies in accordance with MR Ch.4 Apps.4.19 to 4.23.

12.1.4 The *IESO* may, in respect of a given *facility*, provide additional real-time network communication channels in addition to those referred to in section 12.1.3 where the *IESO* considers, based on the size and location of the *facility*, and, where applicable, the number of *facilities* monitored at a single *facility*, that such additional channels are desirable for purposes of maintaining the *reliability* of the *IESO-controlled grid*.

12.1.5 Where a *market participant* wishes to submit *dispatch data*, *physical bilateral contract data*, or *TR bids* in the *TR market* using private network dedicated communication links, all costs associated with such use, including but not limited to the cost of the provision and maintenance of the required communication channel, shall be borne by the *market participant*.

12.1.6 Where problems exist which require methods of communication other than those referred to in section 12.1.1 or 12.1.2A, such alternative communication capabilities as shall be selected by the *IESO*, including facsimile capability, shall be used.

12.2 Voice Communication

12.2.1 [Intentionally left blank]

12.2.2 [Intentionally left blank]

12.2.3 Each *market participant*, *embedded generator*, *embedded electricity storage participant* and *embedded load consumer* shall provide and maintain:

12.2.3.1 the applicable voice communication facilities required by MR Ch.2 App. 2.2 and that meet the requirements of that Appendix; and

12.2.3.2 such additional or other voice communication facilities as the *IESO* may direct in respect of *facilities* that the *IESO* considers to be significant for purposes of maintaining the *reliability* of the *IESO-controlled grid*.

12.2.4 Each person referred to in section 12.2.3 shall ensure that the overall mean time between failures of the voice communication facilities referred to in section 12.2.3 is no less than five years.

12.2.5 Each person referred to in section 12.2.3 shall respond to an outage of or defect in the voice communication facilities referred to in section 12.2.3:

12.2.5.1 immediately, in the case of an outage of or defect in a *high priority path facility*; and

12.2.5.2 no later than the next day following the day on which the outage or defect is discovered, in the case of an outage of or defect in a *normal priority path facility.*

12.2.6 Each person referred to in section 12.2.3 shall ensure that the voice communication facilities referred to in section 12.2.3 are restored to a fully operational state following an *outage* of or defect in such facilities as follows:

12.2.6.1 in the case of the *high priority path facilities* referred to in section 12.2.5.1, within 24 hours of the time at which the *outage* or defect is discovered;

12.2.6.2 in the case of the *normal priority path facilities* referred to in section 12.2.5.2, within 48 hours of the time at which the *outage* or defect is discovered; and

12.2.6.3 in all other cases, within 14 days of the time at which the *outage* or defect is discovered.

12.2.7 The *IESO* may direct a person referred to in section 12.2.3 to respond and restore a voice communication facility to a fully operational state following an *outage* of or defect in such facility within such longer or shorter time periods than those referred to in sections 12.2.5 and 12.2.6 based on the immediate or short-term impact of the unavailability of the voice communication facility on the *reliable* operation of the *IESO-controlled grid*.

12.2.8 Each person referred to in section 12.2.3 shall notify the *IESO* of any *planned outage* of the voice communication facilities referred to in section 12.2.3 no less than four days prior to the *planned outage*.

12.2.9 The *IESO* shall:

12.2.9.1 maintain, at each of its principal control centre and back-up control centre, *high priority path facilities* and *normal priority path facilities* that meet the requirements of MR Ch.2 App.2.2 ss.1.1.7 and 1.1.8, respectively, for the purpose of voice communication with the persons referred to in section 12.2.3 and with neighbouring *security coordinators*; and

12.2.9.2 ensure that its voice communication facilities include facilities that permit telephone conference calls between six parties.

12.2.10 The *IESO* shall develop, in consultation with all relevant *market participants*, test plans and procedures for voice communication during an *emergency* on or a major disturbance of the *IESO-controlled grid*.

12.2.11 Each person referred to in section 12.2.3 shall, at its own expense, not less than annually or more frequently as may be directed by the *IESO*, monitor and test its voice communication facilities and shall, at its own expense and as directed by the *IESO*, support and actively participate in the testing of voice communication facilities.

12.2.12 Where problems exist which require methods of communication other than those referred to in section 12.2.3, such alternative communication capabilities as shall be selected by the *IESO*, including facsimile capability, shall be used.

12.3 Electronic Data

12.3.1 Energy management system information shall be exchanged between the communication system of the *IESO* and the communication system of each *market participant* in order to support real-time functions such as:

12.3.1.1 the monitoring of the *IESO-controlled grid*;

12.3.1.2 the control and analysis of generation facilities and electricity storage facilities;

12.3.1.3 an analysis of the *security* of the *IESO-controlled grid*;

12.3.1.4 the scheduling of generation facilities and electricity storage facilities;

12.3.1.5 the monitoring of compliance with *dispatch instructions*; and

12.3.1.6 reports.

12.3.2 The *IESO* and *market participants* shall exchange energy management system information between their respective communication systems via dedicated data circuits.

12.3.3 For the exchange of schedules referred to in MR Ch.7 and of *outage* and planning data between *market participants* and the *IESO*, a computer path distinct from the energy management system path shall be used. Communications shall occur over separate data links using a different protocol than that used for energy management system information. Real-time *dispatch instructions* for *generation facilities, electricity storage facilities,* transmission *facilities* and load shall be communicated electronically through the energy management system path and shall be integrated with the energy management system messaging system for logging purposes.

12.4 Voice Links and Other Communications

12.4.1 The *IESO* shall develop and notify all *market participants* of standard operating terms, abbreviations and definitions that shall be approved for use in communications between the *IESO* and *market participants*. Such approved, standard operating terms, abbreviations and definitions shall wherever possible be used by the *IESO* and *market participants* in their communications with one another.

12.4.2 All communications between a *market participant* and the *IESO* with respect to the *reliability* of the *IESO-controlled grid* shall be recorded and the records shall be retained by the *IESO* for 7 years.

12.4.3 The *IESO* shall maintain a log of activities related to the *reliable* operation of the *IESO-controlled grid.*

13. Prior Arrangements

13.1 Market Participant Review of Arrangements

13.1.1 Each *market participant* shall review any contractual or other arrangements relating to the *reliability* of the *IESO-controlled grid* which it may have with other *market participants* or with *interconnected systems* on the date of coming into force of this Chapter for the purpose of determining whether such arrangements are consistent with the requirements of, or the obligations imposed on the *market participant* by, this Chapter. Where such contractual or other arrangement is consistent with the requirements and obligations imposed on the *market participant* by this Chapter, no further action with respect to such contract or arrangement is required.

13.1.2 Where a *market participant* determines that a contractual or other arrangement referred to in section 13.1.1 is inconsistent with the requirements of, or the obligations imposed on the *market participant* by, this Chapter, the *market participant* shall:

13.1.2.1 negotiate an amendment to the contract or a modification to the arrangement which removes the inconsistency; or

13.1.2.2 report the inconsistency to the *technical panel*, which shall make a determination as to whether the inconsistency will or is reasonably likely to have an adverse effect on the *reliability* of the *IESO-controlled grid*.

13.1.3 Where the *technical panel* determines under section 13.1.2 or 13.1.4 that the inconsistency will or is reasonably likely to have an adverse effect on the *reliability* of the *IESO-controlled grid*, the *IESO* shall take appropriate actions to mitigate the effect of the inconsistency until the inconsistency is removed.

13.1.4 Where the *IESO* becomes aware that a contractual or other arrangement referred to in section 13.1.1 is inconsistent with the requirements of, or the obligations imposed on a *market participant* by, this Chapter, it may report the inconsistency to the *technical panel* notwithstanding that the inconsistency may not have been reported by the *market participant* and the *technical panel* shall make the determination referred to in section 13.1.2.2 in respect of that inconsistency.

14. Information and Reporting Requirements

14.1.1 The *reliable* operation of the *IESO-controlled grid* requires the rapid and continuous flow of accurate information among the *IESO*, *market participants* and *interconnected systems*, with due regard for maintaining the confidentiality of information where appropriate. To that end, the *IESO* shall establish and periodically up-date and inform all *market participants* with respect to the specific information it requires from *market participants* for *reliability* purposes.

14.1.2 Each *market participant* shall provide the information referred to in section 14.1.1 to the *IESO* in the manner and within the time prescribed by the *IESO.* By submitting such information to the *IESO,* a *market participant* is considered to have fulfilled any requirement under a *reliability standard* to report such information to one or more *standards authorities*. The *IESO* shall provide such information to other *standards authorities,* as required.

14.1.3 The *IESO* shall establish a catalogue of reporting requirements listing the *reliability*-related information to be exchanged between the *IESO* and *market participants.* Such reporting requirements shall include, but not be limited to, the following:

14.1.3.1 each *market participant* shall report to the *IESO* the planned implementation of a change to a setting on a fixed-tap transformer. This information shall be reported to the *IESO* in writing one week prior to the date scheduled for implementation of such change, provided that where such change is effected on an unplanned, emergency basis, the information shall be reported to the *IESO* within one *business day* of implementation of the change;

14.1.3.2 each *market participant* shall report to the *IESO* any change in equipment and *facilities* to that which has been provided pursuant to MR Ch.4;

14.1.3.3 each *market participant* shall report to the *IESO* a list of all of its equipment for which periodic maintenance has been performed on *remedial action schemes* in the previous 12 months, as required by relevant *standards authorities*. This information shall be reported no later than the first day of December in each year;

14.1.3.4 each *market participant* shall provide to the *IESO* a report describing any modification proposed to be made to protection on a primary relay. The report shall be delivered to the *IESO* within one week of the date on which the *IESO* approves such modification pursuant to MR Ch.4 s.6, or, where the modification is effected on an unplanned, emergency basis, within one week of the date of modification;

14.1.3.5 each *market participant* shall annually provide to the *IESO* a written summary of actions taken to control *demand* in the previous 12 months;

14.1.3.6 each *market participant* shall annually provide to the *IESO* a written summary of automatic under-frequency load shedding activities taken in the previous 12 months; and

14.1.3.7 each *market participant* shall annually provide to the *IESO* a report of *reliability*-related performance measures for transmission *facilities* and *connections* to the *IESO-controlled grid* in accordance with all applicable *reliability standards*.

14.1.4 Each *market participant* shall provide to the *IESO* such data as may be required by the *IESO* to enable it to satisfy a request by a *standards authority.*

14.1.5 The *IESO* shall file such reports including, but not limited to, disturbance reports, and participate in such discussions as may be required by relevant *standards authorities*. Each *market participant* shall provide to the *IESO* such information and reports as may be required by the *IESO* to facilitate preparation by the *IESO* of such disturbance reports.

Chapter 5
Power System Reliability - Appendices

Appendix 5.1 – Performance Standards for Ancillary Services

1.1 Regulation

1.1.1 A *market participant* whose *resource* is providing *regulation* shall submit to the energy management system referred to in section 12 of Chapter 5 the monitoring and control information required to be provided pursuant to MR Ch.4.

1.1.2 The telemetering between the energy management system referred to in section 12 of Chapter 5 and a *resource* providing *regulation* shall indicate:

1.1.2.1 whether the *resource* is synchronized to the *IESO-controlled grid,* associated with a *facility* connected to a *distribution system,* or associated with a *facility* connected to another *market participant's facility*;

1.1.2.2 whether the *resource* is providing *regulation* or not; and

1.1.2.3 the net injection or withdrawal of the *resource*.

1.1.3 A *resource* providing *regulation* must achieve at least the ramp rate specified in its *contracted ancillary services* contract for the full amount of *regulation* capacity offered in such contract.

1.1.4 A *resource* providing *regulation* must be able to adjust its output or consumption at least at the ramp rate specified in its *contracted ancillary services* contract to the maximum and minimum values specified in such contract.

1.1.5 No *market participant* shall *offer* for a *resource* to provide *regulation* capacity that exceeds an amount equal to the *resource's* maximum ramp rate multiplied by ten minutes.

1.1.6 A *facility* associated with a *resource* providing *regulation* must be capable of receiving control signals sent from the *IESO* at the rate of at least one signal every two seconds. If the *regulation* control signals are received by a *control centre*, the *control centre* must forward these signals to the *facility* associated with the *resource* providing *regulation* within two seconds of having received the signal from the *IESO*.

1.1.7 All *facilities* associated with *resources* providing *regulation* must meet, at a minimum, the performance requirements for off-nominal frequency, speed/frequency regulation and voltage ride through specified in MR Ch.4 App.4.2. For greater certainty, the foregoing obligation applies to all such *facilities* providing *regulation*, regardless of size, technology or connection location.

1.2 Operating Reserve

Ten-Minute Operating Reserve

1.2.1 An *ancillary service provider* offering *ten-minute operating reserve* shall ensure that each *resource* that it has scheduled to provide *ten-minute operating reserve* is available for *dispatch* as scheduled.

1.2.2 An *ancillary service provider* offering *ten-minute operating reserve* shall be capable of achieving at least the ramp rate stated in its *offer* for the full amount of *ten-minute operating reserve* offered.

1.2.3 When activated by the *IESO*, *ten-minute operating reserve* shall be available for *dispatch* for at least one hour.

Thirty-Minute Operating Reserve

1.2.4 An *ancillary service provider* offering *thirty-minute operating reserve* shall ensure that each *resource* that it has scheduled to provide *thirty-minute operating reserve* is available for *dispatch* as scheduled.

1.2.5 An *ancillary service provider* offering *thirty-minute operating reserve* shall be capable of achieving at least the ramp rate stated in its *offer* for the full amount of *thirty-minute operating reserve* offered.

1.2.6 When activated by the *IESO*, *thirty-minute operating reserve* shall be available for *dispatch* for at least one hour.

1.3 Reactive Support and Voltage Control – Generation Facilities and Electricity Storage Facilities

1.3.1 All *facilities* associated with a *generation unit* or an *electricity storage unit* that provides *reactive support service* and *voltage control service* must be capable of meeting the requirements specified in MR Ch.4.

1.3.2 Subject to section 1.3.6, *automatic voltage regulation* shall be in service and in automatic mode as indicated in MR Ch.4 unless the *generation unit* or *electricity storage unit* is specifically directed by the *IESO* to operate the *automatic voltage regulation* in manual mode.

1.3.3 Subject to section 1.3.4, *generation units* or *electricity storage units* providing *reactive support service* and *voltage control service* shall be operated to within the standard power factor range described in MR Ch.4 App.4.2.

1.3.4 The *IESO* may direct a a *generation unit* providing *reactive support service* and *voltage control service* to operate in an under- or over-excited state for a certain period of time in order to maintain prescribed voltages on the *IESO-controlled grid*.

Such direction may require the *generation unit* to operate in condense mode or to reduce active power output in order to increase its ability to provide reactive power.

1.3.4A The *IESO* may direct an *electricity storage unit* to provide *reactive support service* and *voltage control service* to absorb reactive power or inject reactive power for a certain period of time in order to maintain the prescribed voltages on the *IESO-controlled grid*. If applicable and required, the *IESO* may direct such *electricity storage unit* to reduce the withdrawal or injection of active power in order to increase its ability to provide reactive power.

1.3.5 Unless otherwise specified by the *IESO*, each *generation unit* or *electricity storage unit* providing *reactive support service* and *voltage control service* shall respond to voltage or reactive power schedules immediately following receipt of the *IESO's* request. Where the *generation unit* or *electricity storage unit* cannot be *dispatched* as directed by the *IESO*, the *ancillary service provider* shall immediately provide the *IESO* with notice to this effect.

1.3.6 Each *ancillary service provider* shall:

1.3.6.1 notify the *IESO* immediately upon the *forced outage* of the *automatic voltage regulation* at its *generation unit* or *electricity storage unit* being forced out of service; or

1.3.6.2 for *planned outages,* prior to the *automatic voltage regulation* being removed from its *generation unit* or *electricity storage unit* for maintenance, follow the procedures outlined in section 6 of Chapter 5.

1.3.7 Following a *contingency event*, each *generation unit* or *electricity storage unit* shall automatically respond to provide or absorb the reactive power in accordance with its established maximum and minimum reactive power capabilities. Each *ancillary service provider* shall immediately notify the *IESO* whenever its *generation unit or electricty storage unit* cannot perform to its established maximum and minimum reactive power capabilities.

1.4 Reactive Support and Voltage Control – Facilities that are neither Generation nor Electricity Storage

1.4.1 Except for *forced outages* and *planned outages* coordinated with the *IESO* pursuant to these *market rules*, each *transmitter* shall keep its transmission assets in service at all times unless released from service by the *IESO* or directed by the *IESO* to be removed from service pursuant to this section 1.4.

1.4.2 The *IESO* may direct a *transmitter* to remove transmission assets from service to the extent necessary to maintain *reactive support service* and *voltage control service*.

1.4.3 Each *connected wholesale customer*, *transmitter* and *distributor connected* to the *IESO-controlled grid* providing *reactive support service* and *voltage control service*

shall respond immediately following receipt of a direction from the *IESO* with respect to directions concerning but not limited to, static capacitors, static VAR compensators and reactors. For directions concerning synchronous condensers, the response time will be as soon as practicable recognizing the device characteristics and operating state of the device at the time of receipt of the *IESO's* direction. Each such *ancillary service provider* shall immediately notify the *IESO* whenever the devices referred to in this section 1.4.3 cannot be switched in accordance with the *IESO* direction.

1.5 Black Start

1.5.1 A *certified black start facility* will be tested and/or assessed for its ability to comply with the performance standards as specified in its *contracted ancillary services* contract for *certified black start facilities*.

1.5.2 Prior to registering a *generation facility* as a *certified black start facility,* the *IESO* shall be satisfied that the *generator* has demonstrated through completion of tests and assessments that the *generation facility* can provide sufficient MWs and MVARs to:

1.5.2.1 energize or assist in energizing the specified transmission path within the applicable time period referred to in section 1.5.7;

1.5.2.2 provide *energy* requirements along such transmission path, including the requirements of any load connected to the transmission path; and

1.5.2.3 provide start-up power to the *generation facility* as specified by the *IESO* which will meet the objectives and priorities of the *Ontario power system restoration plan*.

1.5.3 A *certified black start facility* will be tested and/or assessed for its ability to maintain voltage within emergency voltage limits over a range of loading from no external load to full external load in accordance with *reliability standards*.

1.5.4 A *certified black start facility* must be equipped with governors that are capable of operating in an isochronous mode.

1.5.5 Adequate transmission capacity shall be available to connect the *certified black start facility* to the source providing station services to other specified generation stations referred to in 1.5.8.

1.5.6 A *generator* operating a *certified black start facility* shall make efforts consistent with *good utility practice* to comply with a direction from the *IESO* to deliver power without assistance from the electrical system unless:

1.5.6.1 the *certified black start facility* is on an *outage*, which *outage* is not a removal of the *certified black start facility* from service caused by the de-energization of the electrical network to which the *certified black start facility* is connected, or

1.5.6.2 where to do so would endanger the safety of any person, damage equipment, or violate any *applicable law*, or operating limit.

1.5.7 A *certified black start facility* will be tested and/or assessed for its ability to start and energize the applicable transmission path specified in 1.5.2.1 as follows:

1.5.7.1 if the *certified black start facility* is comprised of a hydroelectric *generation unit* or a *generation unit* that generates using aero-derivative gas turbines, within 30 minutes of the initiation of the black start process;

1.5.7.2 if the *certified black start facility* is comprised of a *generation unit* that generates using industrial gas turbines, within 60 minutes of the initiation of the black start process;

1.5.7.3 if the *certified black start facility* is comprised of a *generation unit* that generates using hot, steam-driven turbines, within 2.5 hours of the initiation of the black start process; and

1.5.7.4 if the *certified black start facility* is in another operating state or is comprised of an unspecified technology, within such time as may be specified in its *contracted ancillary services* contract for *certified black start facilities*.

1.5.8 A *certified black start facility* will be tested and/or assessed for its ability to provide startup power for the period of time it takes to switch the applicable transmission path specified in section 1.5.2.1 into service and to complete the start-up process at the generating station specified in section 1.5.2.3.

1.5.9 A *certified black start facility*:

1.5.9.1 referred to in section 1.5.7.1, 1.5.7.2 or 1.5.7.3 will be tested and/or assessed for its ability to complete three successive starts within eight hours of the initiation of the black start process; or

1.5.9.2 referred to in section 1.5.7.4, will be tested and/or assessed for its ability to complete such number of successive starts within such period of time as may be specified in its *contracted ancillary services* contract for *certified black start facilities*.

1.5.10 A *certified black start facility* will be tested and/or assessed for its ability to produce the range of reactive power required by the *IESO-controlled grid* as described in MR Ch.4, 5 and 7.

1.5.11 A *certified black start facility* must participate in the training activities and restoration drills referred to in sections 11.3.7.1 and 11.3.7.2 of Chapter 5, respectively.