Market Rule Amendment Written Submission

This form is used to provide comment on a *market rule* amendment under consideration by the *IESO*. Please complete all four sections of this form and submit the completed form by email or fax to the following:

Email Address: Rule.Amendments@ieso.ca
Fax No.: (416) 506-2847 **Attention: Market Rules Group**
Subject: Market Rule Written Submission

All information submitted in this process will be used by the *IESO* solely in support of its obligations under the *Electricity Act, 1998*, the *Ontario Energy Board Act, 1998*, the *Market Rules* and associated policies, standards and procedures and its licence. All submitted information will be assigned the *confidentiality classification* of "Public" upon receipt. You should be aware that the *IESO* intends to *publish* this written submission.

Terms and acronyms used in this Form that are italicized have the meanings ascribed thereto in Chapter 11 of the *Market Rules*.

PART 1 – SUBMITTER'S INFORMATION

Please enter your organization and contact information in full.

Name: Ontario Power Generation

(if applicable) *Market Participant* / *Metering Service Provider* No.[1]: 102200

Market Participant Class: Generator

Telephone: 416-592-8256

Fax:

E-mail Address: jim.gray@opg.com

PART 2 – MARKET RULE AMENDMENT REFERENCE

Type of Rule Amendment Being Commented on (please indicate with x):

☐ Amendment Submission ☒ Proposed Rule Amendment ☐ Recommended Rule Amendment

MR Number: MR00359

This *Market Rule* number is located on the "Current Market Rule Amendment" web page.

Date Relevant *Amendment Submission*, Proposed or Recommended Rule Amendment Posted for Comment: November 26, 2009

[1] This number is a maximum of 12 characters and does not include any spaces or underscore.

PART 3 – COMMENTS ON RULE AMENDMENT

Provide your comments.

In general OPG feels that tracking the performance requirements of individual generator systems will be an onerous task requiring the IESO and market participant to continually reconcile performance standards to equipment.

OPG offers the following comments and suggested wording changes based on revised wording provided following a December 16, 2009 meeting with the IESO:

Preamble

The performance requirements set out below shall apply to *generation facilities* subject to a *connection assessment* finalized after March 5, 2010. To determine whether a performance requirement in this section is satisfied, performance of alternative technologies will be compared at the point of connection to the *IESO-controlled grid* with the performance of a conforming conventional synchronous generation unit with an equal apparent power rating.

Each *generation facility* that was authorized to connect to the *IESO-controlled grid* prior to March 5, 2010 shall remain subject to the performance requirements in effect for each system either at the time of its authorization to connect to the *IESO-controlled grid* was granted or as agreed to by the market participant and the IESO (i.e. the "original performance requirements"). These original performance requirements shall prevail until the main elements of an associated system (e.g. governor control mechanism, main exciter) are replaced or substantially modified. At that time, the replaced or substantially modified system shall be brought into compliance with the performance requirements set out below. All other systems, not affected by replacement or substantial modification, shall remain subject to the original performance requirements.

The IESO shall develop, and include in the applicable market manual, a list of new or modified equipment that would be subject to the performance standards effective March 5, 2010.

The IESO shall maintain and provide a record of each market participant generator facility system and the applicable standard. This record will be provided to the market participant upon request.

Comments on specific requirements:

Requirement 1: Off-Nominal Frequency

OPG accepts as written

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Requirement 2: Speed/Frequency Regulation

Suggested wording:

OPG accepts as written

PART 3 – COMMENTS ON RULE AMENDMENT

Requirement 3: Low Voltage Ride Through
Suggested wording:
Each *generation facility* shall be able to ride through a transient voltage sag defined in the "Ontario Resource and Transmission Assessment Criteria" (IESO document IMO-REQ-0041) unless disconnected by configuration.
~~To ride through design criteria contingencies assuming standard fault detection, auxiliary relaying, communication, and rated breaker interrupting times unless disconnected by configuration.~~

Requirement 4: Active Power
Suggested wording:
To supply continuously all levels of active power output for 5% deviations in terminal voltage. Rated active power is the ~~smaller output at either rated ambient conditions (e.g. temperature, head, wind speed, solar radiation)~~lesser of the applicable registered summer/winter Maximum Continuous Rating or 90% of rated apparent power. To satisfy steady-state reactive power requirements, active power reductions to rated active power are permitted.
Comment: The "summer/winter Maximum Continuous Rating" is submitted by the market participant on IMO-FORM-1004.

Requirement 5: Reactive Power

OPG accepts as written.

Comment: With respect to hydroelectric units OPG is concerned with the coupling of requirements 4 and 5. Due to changes in materials and design, hydroelectric turbine replacement generally results in an incremental increase in generator MW output. As turbine replacement is not always carried out at the same time as generator winding replacement the generator would be unable to dynamically meet the reactive requirement at the new maximum MW output. The generator would continue to meet its existing capability.
It is understood that when the generator windings are replaced the reactive capability must be brought up to the current standard but the provision of the additional renewable energy achieved by a turbine upgrade may be significantly delayed if tied to a generator re-wind.

Requirement 6: Automatic Voltage Regulator (AVR)

OPG accepts as written.

Requirement 7: Excitation System

OPG accepts as written.

Requirement 8: Power System Stabilizer (PSS)

OPG accepts as written.

Requirement 9: Phase Unbalance

OPG accepts as written.

PART 3 – COMMENTS ON RULE AMENDMENT

Requirement 10: Armature and Field Thermal Limiters

Suggested wording:

Thermal limiters shall be co-ordinated to permit utilization of generator short-time capabilities specified in IEEE/ANSI 50.13 and continuous capability determined by either field current, armature current, or core-end heating. Non-thermal limiting functions (e.g. steady-state stability) shall not be enabled without IESO approval.

Requirement 11: Performance Characteristics

OPG accepts as written.

PART 4 – EXTERNAL CONSULTATION MEETING

If you believe that a special meeting of stakeholders would be necessary/desirable to discuss the issues raised by the rule amendment, please complete the following information:

External Stakeholdering meeting necessary/desirable (please indicate with x): ☐

Reason(s) why you believe a meeting is necessary/desirable: