

ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



External Consultation~~Final~~ Draft
September 28, 2017

Applicability

- 1 Section 205.5 applies to:
- (a) a **pool participant**; and
 - (b) the **ISO**.

Requirements

Application for Qualification to Provide Spinning Reserve

- 2(1) A **pool asset** must be qualified by the **ISO** in order to provide **spinning reserve**.
- (2) A **pool participant** seeking to have a **pool asset** qualified by the **ISO** to provide **spinning reserve** provide the **ISO** with:
- (a) a completed application form, available on the AESO website; and
 - (b) the data and records that the **ISO** specifies in the application form.

Eligibility to Provide Spinning Reserve

- 3(1) A **pool participant** seeking to have its **pool asset** qualified by the **ISO** to provide **spinning reserve** ~~must~~ ensure that its **pool asset** has at least one (1) **spinning reserve resource** that is:

- (a) at a minimum, capable of providing:
 - (i) 10 MW of **spinning reserve**; and
 - (ii) the amount of **real power** applied for under subsection 2(2) for a period of sixty (60) minutes.
- (b) equipped with a **governor** or **governor system** that:
 - (i) is responsive to both over frequency and under frequency events;
 - (ii) has a total deadband of equal to or less than 0.036 Hz;
 - (iii) has a droop setting equal to or greater than 3% but less than or equal to 5% based on the maximum operating range of the **spinning reserve resource**, as specified by the **ISO**;
 - (iv) has no time delays, ramp characteristics or other control settings that prevent the **spinning reserve resource** from providing an immediate, automatic and sustained response to frequency deviations;
 - (v) has a sample rate of at least 20 samples per second;
 - (vi) has a resolution of at least 0.004 Hz; and
 - (vii) is not acting as a **governor** or **governor system** for more than one (1) **spinning reserve resource**.

ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



(2) The requirements set out in subsections 3(1)(b)(v) and (vi) do not apply to a **pool asset** that provides **spinning reserve** from a **generating unit** that is equipped with an analog **governor**, as of December 23, 2014, until such time as the **governor** is replaced.

Qualification of a Pool Asset to Provide Spinning Reserve

4(1) The **ISO** may qualify a **pool asset** to provide **spinning reserve** if one (1) or more **spinning reserve resources** of the **pool asset** meet the eligibility criteria set out in subsection 3.

(2) The **ISO** must, after qualifying a **pool asset** under subsection 4(1), determine the **real power** quantity in MW that each **spinning reserve resource** of the **pool asset** is capable of providing, with consideration given to the following:

- (a) whether the **spinning reserve resource** participates in a **remedial action scheme**;
- (b) the total **operating reserve** that could be lost during a single **contingency**;
- (c) the maximum **real power** capability and minimum **real power** capability of each **spinning reserve resource** of the **pool asset**; and
- (d) any other factors that the **ISO** considers relevant.

(3) The **ISO** must advise a **pool participant** whether its **pool asset** is qualified to provide **spinning reserve** within sixty (60) **days** of the **ISO** receiving a completed application under subsection 2(2).

Performance Requirements when under Dispatch to Provide Spinning Reserve

5(1) A **pool participant** must ensure that, following the receipt of a **dispatch** to provide **spinning reserve**, one (1) or more **spinning reserve resources** of the **pool asset** are positioned to provide the **real power** set out in the **dispatch**, within a total tolerance of minus:

- (a) 1 MW for a **dispatch** of less than or equal to 20 MW; or
- (b) 5% of the **dispatch** quantity for a **dispatch** greater than 20 MW.

(2) A **pool participant** must ensure that each **spinning reserve resource** being used to provide **spinning reserve** meets the requirements set out in subsection 5(1) beginning at:

- (a) the time stated in the **dispatch**, for a **dispatch** with a time more than fifteen (15) minutes from the time the **pool participant** receives the **dispatch**; or
- (b) the time stated in the **dispatch** or as soon as possible thereafter, but in any event, not more than fifteen (15) minutes after receiving the **dispatch**, for a **dispatch** with a time fifteen (15) minutes or less from the time the **pool participant** receives the **dispatch**.

(3) A **pool participant** will not be paid for **spinning reserve** unless the **pool participant** ensures that the **spinning reserve resources** being used to provide **spinning reserve** meet the requirements set out in subsections 5(1) and 5(2).

Frequency Response Requirements when under Dispatch to Provide Spinning Reserve

6(1) A **pool participant** must ensure that, while its **pool asset** is under **dispatch** to provide **spinning reserve**, the **governor** or **governor system** of each **spinning reserve resource** providing **spinning reserve** is operating such that it is:

- (a) in service at all times; and

ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



- (b) operating without load limiters or other control systems including outer control loops that would prevent the **governor** or **governor system** from achieving the maximum frequency response.

(2) A **pool participant** must ensure that, while its **pool asset** is under **dispatch** to provide **spinning reserve**, the change in **real power** of each **spinning reserve resource** being used to provide **spinning reserve** is:

- (a) continuously proportional to the measured frequency;
- (b) in accordance with the droop setting set out in subsection 3(1)(b)(iii); and
- (c) limited to the maximum **real power** capability of the **spinning reserve resource** that is available at the time of the frequency event

for any change in frequency where the frequency goes outside the deadband set out in subsection 3(1)(b)(ii).

(3) A **pool participant** must ensure that, while its **pool asset** is under **dispatch** to provide **spinning reserve**, each **spinning reserve resource** being used to provide **spinning reserve** sustains the change in **real power** set out in subsection 6(2) for any change in frequency where the frequency is outside the deadband set out in subsection 3(1)(b)(ii).

(4) A **pool participant** must ensure that, while its **pool asset** is under **dispatch** to provide **spinning reserve**, for any change in frequency where the frequency is outside the deadband set out in subsection 3(1)(b)(ii), other resources within the **pool asset** do not change their **real power** load level as a result of the change in **real power** of the **spinning reserve resource**, unless such a change does not negatively impact frequency response of the **pool asset**.

(5) A **pool participant** must ensure that, for the applicable minimum time period set out in Appendix 1, each **spinning reserve resource** being used to provide **spinning reserve** will not trip as a result of under frequency or over frequency deviations while the **pool asset** is under **dispatch** to provide **spinning reserve**.

Maintaining Connection when under Dispatch to Provide Spinning Reserve

7 A **pool participant** must ensure that, while its **pool asset** is under **dispatch** to provide **spinning reserve**, the **spinning reserve resource** remains connected to the **interconnected electric system** and remains frequency responsive in accordance with the requirements set out in subsection 6.

Measuring Frequency Response when under Dispatch to Provide Spinning Reserve

8 For the purpose of subsection 6, frequency response performance is measured at:

- (a) the stator winding terminals of the **generating unit**;
- (b) the circuit breaker or disconnection device that is electrically closest to each load;
- (c) the alternating current terminal closest to each inverter based technology;
- (d) the **collector bus** for **aggregated generating facilities**; or
- (e) a point designated by the **ISO**.

ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



Other Facility Arrangements

9 The **ISO** may, for the purposes of evaluating frequency response performance, consider other facility arrangements if the combined change in **real power** demonstrates in aggregate that they meet the technical requirements set out in subsection 6 for a single **spinning reserve resource**.

Performance Requirements when Responding to a Directive to Provide Spinning Reserve

10(1) A **pool participant** must, within ten (10) minutes following receipt of a **directive** to provide **spinning reserve**, ensure that its **pool asset** is providing a quantity of **real power** equal to the instantaneous amount of **real power** of the **pool asset** at the time of the **directive** and the amount of **real power** set out in the **directive**.

(2) A **pool participant** must ensure that, from the first time its **pool asset** achieves the response set out in subsection 10(1) to the time fifteen (15) minutes following receipt of the **directive**, the **pool asset** is providing an average response equal to or greater than the amount of **real power** set out in the **directive**.

(3) A **pool participant** must ensure that, for each consecutive ten (10) minute interval beginning fifteen (15) minutes following receipt of a **directive**, the average response from the **pool asset** equals the amount of **real power** set out in the **directive**, within a tolerance of plus or minus:

- (a) 5 MW for a **pool asset** with a **maximum capability** of 200 MW or less; or
- (b) 10 MW for a **pool asset** with a **maximum capability** of greater than 200 MW.

(4) Where a **pool asset** does not have a **maximum capability**, the tolerances set out in subsection 10(3) will be measured against the maximum qualified facility capacity of the **pool asset** prescribed by the **ISO**.

(5) A **pool participant** must ensure that its **pool asset** continues to meet the requirements set out in subsection 10(3) for as long as the **directive** to provide **spinning reserve** is in effect.

(6) A **pool participant** must ensure that its **pool asset** is in the position set out in subsection 5(1) as soon as possible or, in any event, not more than fifteen (15) minutes after receiving cancellation of the **directive** for **spinning reserve**.

Measuring Response to a Directive

11 A **pool participant** must ensure that each **pool asset** complies with the requirements set out in subsection 10 as measured at:

- (a) the stator winding terminals of each **generating unit**;
- (b) the circuit breaker or disconnection device that is electrically closest to each load;
- (c) the alternating current terminal closest to each inverter based technology;
- (d) the **collector bus** for **aggregated generating facilities**; or
- (e) a point designated by the **ISO**.

Test Requirements

12 The **ISO** may request a **pool participant** to test a **spinning reserve resource**:

- (a) prior to allowing the **spinning reserve resource** to provide **spinning reserve**;

ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



- (b) if the **ISO** provides evidence that the **spinning reserve resource** exhibits behaviour that is inconsistent with the requirements of this Section 205.5; or
- (c) if the **ISO** otherwise determines that such testing is necessary.

Maintaining Eligibility to Provide Spinning Reserve

13(1) The **ISO** may issue a notice suspending the ability of a **pool participant** to provide **spinning reserve** if the **pool participant** does not comply with:

- (a) a testing request pursuant to subsection 12;
- (b) any other provision of this Section 205.5; or
- (c) other **ISO rules** that affect the provision of **spinning reserve**.

(2) A **pool participant** that has received a suspension notice issued pursuant to subsection 13(1) may not submit an **offer** for **spinning reserve** until the **ISO** confirms that the **pool participant** is compliant with this Section 205.5 and all other **ISO rules** that affect the provision of **spinning reserve**.

Appendices

Appendix 1 – *Frequency Ranges*

Revision History

Date	Description
yyyy-mm-dd	
2015-03-27	Replaced “effective date” within the initial release date in section 3(5); and replaced the word “Effective” in the Revision History to “Date”.
2014-12-23	Initial release

ISO Rules

Part 200 Markets

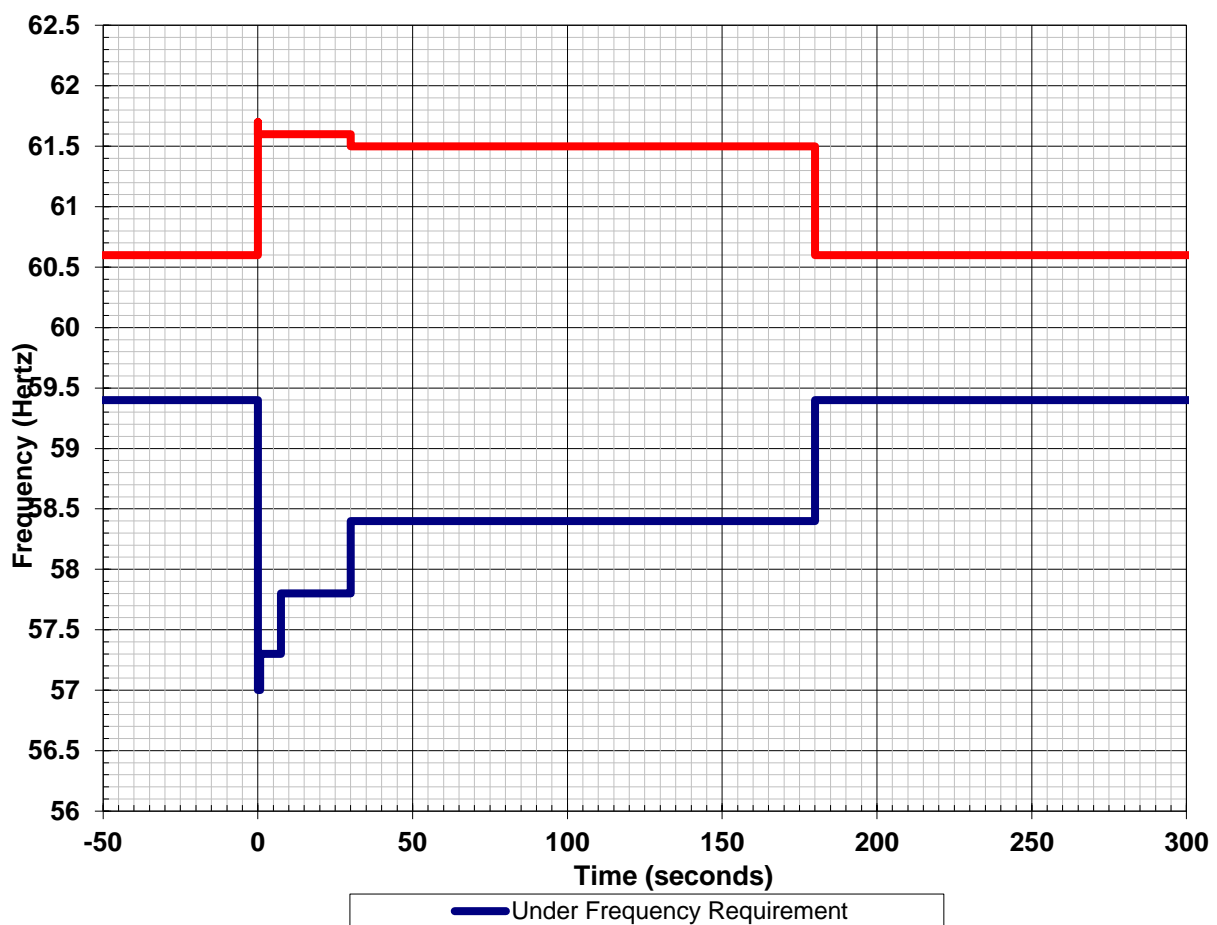
Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards



Appendix 1 Frequency Ranges

High Frequency Duration		Low Frequency Duration	
Frequency (Hz)	Time (seconds)	Frequency (Hz)	Time (seconds)
≥ 61.7	Instantaneous trip	≤ 57.0	Instantaneous trip
≥ 61.6	30	≤ 57.3	0.75
≥ 60.6	180	≤ 57.8	7.5
< 60.6	Continuous operation	≤ 58.4	30
		≤ 59.4	180
		> 59.4	Continuous operation



ISO Rules

Part 200 Markets

Division 205 Ancillary Services

Section 205.5 Spinning Reserve Technical Requirements and Performance Standards

