Alberta Reliability Standard
Power System Stabilizer
VAR-501-WECC-AB-1

1. Purpose

The purpose of this **reliability standard** is to ensure that **power system stabilizers** on **generating units** are kept in service.

2. Applicability

This **reliability standard** applies to:

(a) the o**perator** of a **generating unit** equipped with a **power system stabilizer** that is either:

(i) directly connected to the **bulk electric system** or part of an industrial complex that is directly connected to the **bulk electric system**, and has a **maximum authorized real power** rating greater than eighteen (18) MW; or

(ii) within a power plant which:

(A) is not part of an **aggregated generating facility**;

(B) is directly connected to the **bulk electric system**; and

(C) has a combined **maximum authorized real power rating** greater than sixty-seven point five (67.5) MW;

(iii) a black start resource; or

(iv) regardless of **maximum authorized real power** rating, material to this **reliability standard** and to the **reliability** of the **bulk electric system** as the **ISO** determines and publishes on the AESO website and may amend from time to time in accordance with the process set out in Appendix 1.

3. Requirements

R1 Each **operator** of a **generating unit** equipped with a **power system stabilizer** must have the **power system stabilizer** in service ninety-eight (98%) of all operating hours except that the operating hours determined in accordance with requirements R 1.1 through 1.12 inclusive may be excluded to achieve the ninety-eight percent (98%) requirement.

R1.1 The operating hours during which the **generating unit** operates for less than five percent (5%) of all hours during any calendar quarter.

R1.2 The operating hours during which maintenance or testing on the **power system stabilizer** was performed, up to a maximum of seven (7) **days** per calendar quarter.

R1.3 The operating hours during which the **power system stabilizer** exhibits instability due to abnormal system configuration.

R1.4 The operating hours during which the **generating unit** is operating in the synchronous condenser mode and the **generating unit** is very near or at a zero (0) **real power** level.

R1.5 The operating hours during which the **generating unit** is generating less **real power** than its design limit for effective **power system stabilizer** operation.

R1.6 The operating hours during which the **generating unit** is passing through a range of output that is a known “rough zone” being a range in which a **generating unit** is experiencing excessive

vibration.

R1.7 The operating hours during which the **automatic voltage regulator** of the **generating unit** is not in service.

R1.8 The operating hours, up to a maximum of sixty (60) consecutive **days** per incident, during which the **power system stabilizer** is out of service for repair due to a component failure.

R1.9 The operating hours, up to a maximum of twelve (12) consecutive **months**, during which the **power system stabilizer** had a component failure, but only if the **operator** of a **generating unit** submitted documentation to the **ISO** identifying the need for time to obtain replacement parts and identifying a scheduled **outage**, if required.

R1.10 The operating hours, up to a maximum of twenty-four (24) consecutive **months**, during which the **power system stabilizer** had a component failure, but only if the **operator** of a **generating unit** submitted documentation to the **ISO** identifying the need for time to replace the **power system stabilizer** and to schedule an **outage**.

R1.11 The operating hours during which the **generating unit** is not in **commercial operation**.

R1.12 The operating hours for which the **ISO** has issued a **directive** to the **operator** of a **generating unit** to operate the **generating unit** when the **power system stabilizer** is unavailable for service

R2 Each **operator of a generating unit** must have documentation supporting the identification of the number of operating hours excluded for each requirement in requirements R1.1 through R1.12 inclusive.

4. Measures

The following measures correspond to the requirements identified in section 3 of this **reliability standard**. For example, MR1 is the measure for R1.

MR1 Evidence of having the **power system stabilizer** in service as required in requirement R1 exists. Evidence may include documentation that summarizes for each calendar quarter:

(a) the number of hours the **power system stabilizer** was in service while the **generating unit** was operating;

(b) the number of hours the **power system stabilizer** was out of service while the **generating unit** was operating;

(c) the number of operating hours excluded in accordance with requirements R1.1 through R1.12; and

(d) the percentage of operating hours that the **power system stabilizer** was in service excluding the number of operating hours determined in accordance with requirements R1.1 through R1.12

MR2 Evidence of having documentation as required in requirement R2 exists. Evidence may include a document identifying the subject of each exclusion, the date and the period of time that the exclusion refers to, reasons, the supporting data and the supporting logs.

5. Appendices

Appendix 1 – *Amending Process for List of Generating Units*

Revision History

Effective	Description
2013-10-01	

Appendix 1

Amending Process for List of Generating Units

In order to amend the list referenced in subsection (a)(iv) of section 2, *Applicability*, the **ISO** must:

(a) upon determining that a **generating unit** is to be added, notify each affected **operator** of a **generating unit** in writing and determine an effective date, which must be no less than thirty (30) **days** after the date of notice, for the **operator** to meet the applicable requirements;

(b) upon determining that a **generating unit** is to be deleted, notify each affected **operator** of a **generating unit** in writing and determine an effective date for the **operator** to no longer be required to meet the applicable requirements; and

(c) post the amended list with effective dates on the AESO website.