Alberta Reliability Standard
Coordination of Generating Unit or Plant Capabilities, Voltage Regulating Controls, and Protection
PRC-019-AB-2

1. Purpose

The purpose of this **reliability standard** is to verify coordination of **generating unit** or synchronous condenser voltage regulating controls, limit functions, equipment capabilities, and protection system settings.

2. Applicability

This **reliability standard** applies to:

(a) the **legal owner** of a **transmission facility** that owns a synchronous condenser greater than 20 MVA (gross nameplate rating) directly connected to the **transmission system**;

(b) the **legal owner** of a **generating unit** whose **generating unit** has a **maximum authorized real power** rating greater than 18 MW that is:

(i) directly connected to the **transmission system**;

(ii) directly connected to **transmission facilities** within the City of Medicine Hat; or

(iii) part of an industrial complex that is directly connected to the **transmission system**;

(c) the **legal owner** of a **generating unit** whose **generating unit** is within a power plant that has a combined **maximum authorized real power** rating greater than 67.5 MW and that:

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

(ii) is directly connected to the **transmission system** or to **transmission facilities** within the City of Medicine Hat;

(d) the **legal owner** of an **aggregated generating facility** that has a **maximum authorized real power** rating greater than 67.5 MW, where voltage regulating control for the facility is performed solely at the individual **generating units** of the **aggregated generating facility**, and the **aggregated generating facility** is:

(i) directly connected to the **transmission system**;

(ii) directly connected to **transmission facilities** within the City of Medicine Hat; or

(iii) part of an industrial complex that is directly connected to the **transmission system**;

(e) the **legal owner** of a **generating unit** whose **generating unit** is a **blackstart resource**; and

(f) the **legal owner** of a **generating unit**, the **legal owner** of a **aggregated generating facility** and the **legal owner** of a **transmission facility** whose resource is material to this **reliability standard** and to the **reliability** of either the **interconnected electric system** or the City of Medicine Hat electric system as the **ISO** determines and includes on a list published on the AESO website, which the **ISO** may amend from time to time in accordance with the process set out in Appendix 1.

3. Requirements

R1 Each **legal owner** of a **transmission facility**, **legal owner** of a **generating unit** and **legal owner** of an **aggregated generating facility** must, by the effective date of this **reliability standard** and at a maximum of every 5 calendar years, coordinate the voltage regulating system controls, including in-service limiters and protection functions, with the applicable equipment capabilities and settings of the applicable **protection system** devices and functions, assuming normal automatic voltage

regulator control loop and steady-state system operating conditions, by verifying the following coordination items for each applicable facility:

(a) the in-service limiters are set to operate before the **protection system** of the applicable facility in order to avoid disconnecting the **generating unit** or synchronous condenser unnecessarily; and

(b) the applicable in-service **protection system** devices are set to operate to isolate or de-energize equipment in order to limit the extent of damage when operating conditions exceed equipment capabilities or stability limits.

R2 Each **legal owner** of a **transmission facility**, **legal owner** of a **generating unit** and **legal owner** of an **aggregated generating facility** must:

(a) by the later of either the effective date of this **reliability standard** or within 90 **days** following the identification of unplanned systems, equipment or setting changes that will affect the coordination described in requirement R1; or

(b) prior to electrically connecting to the **transmission system**:

(i) a **generating unit**;

(ii) a synchronous condenser; or

(iii) a **generating unit** that is part of an **aggregated generating facility**;

any of which are impacted by planned system, equipment or setting changes that will affect the coordination as described in requirement R1,

perform the coordination described in requirement R1.

4. Measures

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

MR1 Evidence of coordinating the voltage regulating system controls by verifying the coordination items as required in requirement R1 exists. Evidence may include dated documentation that demonstrates the coordination was performed, or other equivalent evidence.

MR2 Evidence of performing the coordination as described in requirement R1 in accordance with the requirements in requirement R2 exists. Evidence may include dated documentation that demonstrates the specified interval in requirement R2(a) has been met or an operator log, or other equivalent evidence.

5. Appendices

Appendix 1 – *Amending Process for List of Generating Units, Synchronous Condensers and Aggregated Generating Facilities*

Revision History

Date	Description
2022-01-01	Initial release.

Appendix 1
Amending Process for List of Generating Units, Synchronous Condensers and Aggregated Generating Facilities

In order to amend the list referenced in subsections (f) of section 2, Applicability, the **ISO** must:

(a) upon determining that a **generating unit**, synchronous condenser, or **aggregated generating facility** is to be added, notify the **legal owner** in writing and determine an effective date, which must be no less than 4 full calendar quarters after the date of notice, for the **legal owner** to meet the applicable requirements;

(b) upon determining that a **generating unit**, synchronous condenser, or **aggregated generating facility** is to be deleted, notify the **legal owner** in writing and determine an effective date for the **legal owner** to no longer be required to meet the applicable requirements; and

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