Alberta Reliability Standard
System Operating Limits Methodology for the Operations Horizon
FAC-011-AB-2

1. Purpose

To ensure that **system operating limits** used in the reliable operation of the **bulk electric system** are determined based on an established methodology or methodologies.

2. Applicability

This **reliability standard** applies to:

(a) the **ISO**.

3. Requirements

R1 The **ISO** must have a documented methodology for use in developing **system operating limits** (**system operating limit** methodology) within its area. This **system operating limit** methodology must:

R1.1 be applicable for developing **system operating limits** used in the operations horizon;

R1.2 state that **system operating limits** must not exceed associated **facility ratings**; and

R1.3 include a description of how to identify the subset of **system operating limits** that qualify as **interconnection reliability operating limits**.

R2 The **system operating limit** methodology of the **ISO** must include a requirement that **system operating limits** provide **bulk electric system** performance consistent with the following:

R2.1 in the **pre-contingency** state, the **bulk electric system** must demonstrate transient, dynamic and voltage stability; all facilities must be within their **facility ratings** and within their thermal, voltage and stability limits. In the determination of **system operating limits**, the **bulk electric system** condition used must reflect current or expected system conditions and must reflect changes to system topology such as facility outages;

R2.2 following the single **contingencies**[1] identified in requirement 2.2.1 through requirement 2.2.3, the system must demonstrate transient, dynamic and voltage stability; all facilities must be operating within their **facility ratings** and within their thermal, voltage and stability limits; and **cascading** or uncontrolled separation must not occur:

R2.2.1 single line to ground or three (3) -phase **fault** (whichever is more severe), with **normal clearing**, on any **generating unit**, **aggregated generating facility**, line, transformer, or shunt device that is **faulted**;

R2.2.2 loss of any **generating unit**, **aggregated generating facility**, line, transformer, or shunt device without a **fault**; and

R2.2.3 single pole block, with **normal clearing**, in a monopolar or bipolar high voltage direct current system;

R2.3 in determining the system's response to a single **contingency**, the following will be acceptable:

R2.3.1 planned or controlled interruption of electric supply to radial customers or some local network customers connected to or supplied by the **faulted** facility or by the affected area;

[1] The **contingencies** identified in FAC-011-AB-2 requirement R2.2.1 through requirement R2.2.3 are the minimum **contingencies** that must be studied but are not necessarily the only **contingencies** that are studied.

R2.3.2 interruption of other network customers, (a) only if the system has already been adjusted, or is being adjusted, following at least one prior outage, or (b) if the ~~real-time operating conditions are more adverse than anticipated in the~~ corresponding studies; and

R2.3.3 system reconfiguration through manual or automatic control or protection actions; and

R2.4 to prepare for the next **contingency**, system adjustments may be made, including changes to generation, uses of the **transmission system**, and the **transmission system** topology.

R3 The **ISO**'s methodology for determining **system operating limits**, must include, as a minimum, a description of the following, along with any **reliability** margins applied for each:

R3.1 study model (must include at least the entire **ISO** area as well as the critical modeling details from other **reliability coordinator areas** that would impact the facility or facilities under study);

R3.2 selection of applicable **contingencies**;

R3.3 a process for determining which of the stability limits associated with the list of multiple **contingencies** (as determined by the **ISO** in accordance with FAC-014 requirement R6) are applicable for use in the operating horizon given the actual or expected system conditions;

R3.3.1 this process must address the need to modify these limits, to modify the list of limits, and to modify the list of associated multiple **contingencies**;

R3.4 level of detail of system models used to determine **system operating limits**;

R3.5 allowed uses of **remedial action schemes** or remedial action plans;

R3.6 anticipated **transmission system** configuration, generation **dispatch** and load level; and

R3.7 criteria for determining when violating a **system operating limit** qualifies as an **interconnection reliability operating limit** and criteria for developing any associated **interconnection reliability operating limit Tv**.

R4 The **ISO** must issue its **system operating limit** methodology and any changes to that methodology, prior to the effective date of the methodology or of a change to the methodology, to all of the following:

R4.1 each adjacent **reliability coordinator** and each **reliability coordinator** that indicated it has a reliability-related need for the methodology.

R4.2 each **planning authority** and **transmission planner** that models any portion of the **ISO**'s area.

R4.3 each **operator** of a **transmission facility** that operates in the **ISO**'s area.

R5 Intentionally left blank.

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 The **system operating limit** methodology of the **ISO** may address all of the items listed in requirement R1.1 through requirement R1.3. Evidence may include, but is not limited to, a documented **system operating limit** methodology, or other equivalent evidence as required in requirement R1.

MR2 Evidence of including requirements in the **system operating limit** methodology as set out in requirement R2. Evidence may include, but is not limited to, a documented **system operating limit** methodology, or other equivalent evidence as set out in requirement R2.

MR3 Evidence of including all of the items as required in requirement R3.1 through R3.7 in the **system operating limit** methodology. Evidence may include, but is not limited to, a documented **system operating limit** methodology, documented processes or other equivalent evidence as required in requirement R2.

MR4 The **ISO** may have evidence of issuing the **system operating limit** methodology, and any changes to that methodology, including the date they were issued, as required in requirement R4. Evidence may include, but is not limited to, emails, or other equivalent evidence.

MR5 Intentionally left blank.

Revision History

Date	Description
2019-xx-xx	Unbolded “real-time”
2015-09-01	Initial release.