

May 30, 2019

**To: Alberta Utilities Commission (“Commission”)**

**Re: Forwarding Notice – Alberta reliability standards:**

- a) **Adoption of new PRC-025-AB-2, *Generator Load Reliability* (“new PRC-025-AB-2”);**
- b) **Adoption of new PRC-023-AB-4, *Transmission Relay Loadability* (“new PRC-023-AB-4”); and**
- c) **Retirement of existing PRC-023-AB-2, *Transmission Relay Loadability* (“existing PRC-023-AB-2”).**

The Alberta Electric System Operator (“AESO”) recommends that the Commission approve:

- (a) adoption of new PRC-025-AB-2
- (b) adoption of new PRC-023-AB-4; and
- (c) retirement of existing PRC-023-AB-2,

pursuant to Section 19 of the *Transmission Regulation*.

As the North American Electric Reliability Corporation (“NERC”) is recognized as the Electric Reliability Organization (“ERO”) by the Minister of Energy in Alberta, the AESO reviews the NERC reliability standards as they are approved by the Federal Energy Regulatory Commission (“FERC”) and recommends to the Commission whether, when and how they should be adopted in Alberta based on the applicable requirements of the *Transmission Regulation*.

## **Background**

PRC-023-AB-2 applies to both transmission and generation facilities. The requirements for those facilities have now been split into separate reliability standards with PRC-023-AB-4 applying only to transmission facilities and PRC-025-AB-2 applying only to generation facilities.

### ***Proposed New PRC-025-AB-2***

The purpose of proposed new PRC-025-AB-2 is to set load-responsive protection relays associated with generation facilities at a level to prevent unnecessary tripping of a generating unit or an aggregated generating facility during a disturbance for conditions that do not pose a risk of damage to the associated equipment.

The NERC has analyzed many of the major disturbances in the last 25 years on the North American interconnected power system and has determined that generating units have tripped for conditions that did not pose a direct risk to those generating units and associated equipment within the time period when the tripping occurred. This tripping was often determined to have increased the geographic size of the area affected and/or extended the duration of the disturbances. This was a serious issue during the August 2003 North American continent black out event.

During the recoverable phase of a disturbance, the disturbance may exhibit a “voltage disturbance” behavior pattern, where system voltage may be widely depressed and may fluctuate. In order to support the system during this transient phase of a disturbance, proposed new PRC-025-AB-2 establishes criteria for setting load-responsive protective relays, such that individual generating units and aggregated generating facilities may provide reactive power within their dynamic capability to help the system recover from the voltage disturbance. The premature or unnecessary tripping of generating units and aggregated generating facilities, caused by improperly set load-responsive protection relays, removes the dynamic reactive power it provides and exacerbates the severity of the voltage disturbance. This changes the character of the voltage disturbance. In addition, the loss of real power could initiate or exacerbate a frequency disturbance.

### ***Background Proposed New PRC-023-AB-4***

The purpose of proposed new PRC-023-AB-4 is to ensure that protection relay settings do not limit transmission loadability, do not interfere with an operator's ability to take remedial action to protect the reliability of the transmission system, and are set to reliably detect all fault conditions and protect the electrical network from these faults.

PRC-023-AB-2 is already in effect in Alberta. Proposed new PRC-023-AB-4 has been updated to: remove content that overlaps with proposed new PRC-025-AB-2; to permit a load encroachment function within protection relays; and to align with reliability standard FAC-008-AB-3, *Facility Ratings*, all as described below.

### **Retirement of existing PRC-023-AB-2**

The purpose of existing PRC-023-AB-2 is to ensure that protective relay settings do not limit transmission loadability, do not interfere with an operator's ability to take remedial action to protect the reliability of the system, and are set to reliably detect all fault conditions and protect the electrical network from these faults.

On January 10, 2019, the AESO issued a consultation letter on proposed new PRC-025-AB-2 and amended PRC-023-AB-4. As a result of this consultation, stakeholders submitted comments for the proposed new PRC-025-AB-2 and amended PRC-023-AB-4. On April 25, 2019, the AESO posted replies to comments received on January 31, 2019, for the proposed new PRC-025-AB-2 and amended PRC-023-AB-4.

During the drafting of replies, the AESO identified that the proposed amended PRC-023-AB-4 was actually a new NERC version and not an Alberta amendment of a reliability standard. Therefore, the AESO is now consulting on the proposed retirement of existing PRC-023-AB-2 and notifying stakeholders of the change to the previously consulted on amended PRC-023-AB-4. PRC-023-AB-4 was previously consulted on as a proposed amendment and is now being consulted on as a proposed new reliability standard. There are no material changes in the content between the previously consulted on proposed amended PRC-023-AB-4 and proposed new PRC-023-AB-4.

With the status of PRC-023-AB-4 being changed from a proposed amendment to a proposed new reliability standard, the existing PRC-023-AB-2 is proposed for retirement.

No comments were received on the proposed retirement of existing PRC-023-AB-2.

### **Summary of Proposed Changes**

In developing the proposed new PRC-025-AB-2 and proposed new PRC-023-AB-4 the AESO determined that certain Alberta variances and administrative amendments were required in order to ensure that the NERC PRC-025-2, *Generator Relay Loadability* ("NERC PRC-025-2") and the NERC PRC-023-4, *Transmission Relay Loadability* ("NERC PRC-023-4") are capable of being applied in Alberta and do not require a material change in the framework for the market for electric energy. A summary of these Alberta variances and administrative amendments are as follows:

#### **Proposed New PRC-025-AB-2**

The proposed new PRC-025-AB-2 is in alignment with the NERC PRC-025-2 and no Alberta variances have been taken.

Administrative amendments:

- the NERC PRC-025-2 "Applicability" section has been redrafted, in order to correctly identify the applicable entities in Alberta.

#### **Proposed New PRC-023-AB-4**

NERC PRC-023-4 Alberta variances:

- requirement R1 has been amended to permit the use of either a mho function or a load encroachment function within phase protection relays used to protect transmission lines to meet requirement R1(a) and R1(b); and
- requirement R1.2 has been amended to revise the duration of emergency ratings from 15 minutes to 10 minutes to align with emergency rating duration as specified in reliability standard FAC-008-AB-3, *Facility Ratings* for application in Alberta.

Retirement of Requirement R1.6 overlapping provisions:

- Appendix 3 outlines the retirement of requirement R1.6 of proposed amended PRC-023-AB-4 as of midnight the day before the effective date of reliability standard PRC-025-AB-2.

Administrative amendments:

- the NERC PRC-023-4 "Applicability" section has been redrafted, in order to correctly identify the applicable entities in Alberta.

### Summary of AESO Consultation

On January 10, 2019 the AESO posted a Consultation Letter on its website requesting written comments from Stakeholders with respect to the proposed new PRC-025-AB-2 and amended PRC-023-AB-4 and notified Stakeholders in the AESO Stakeholder Newsletter.<sup>1</sup>

On February 4, 2019 the AESO posted written comments received from Stakeholders and other interested parties, in response to the Consultation Letter, on its website and notified market participants in the AESO Stakeholder Newsletter. Please see the Stakeholder Comments on Consultation Letter for a summary of written comments received.

On April 25, 2019 the AESO posted its replies to Stakeholder comments, including the final proposed new PRC-025-AB-2 and amended PRC-023-AB-4, on its website and notified Stakeholders in the AESO Stakeholder Newsletter. Please see the AESO Reply to Stakeholder Comments Letter for a summary of replies to written comments received, as well as the rationale or basis for the position of the AESO that explains why certain positions were rejected or accepted.

On April 25, 2019, the AESO posted a Consultation Letter on its website requesting written comments from Stakeholders with respect to the proposed retirement of existing PRC-023-AB-2, and notified Stakeholders in the AESO Stakeholder Newsletter.

### Proposed Effective Date

The AESO recommends that the Commission approve the new PRC-025-AB-2 and new PRC-023-AB-4 and removal of existing PRC-023-AB-2 to become effective as follows;

1. Final proposed new PRC-025-AB-2 become effective the first day of the calendar quarter that follows 20 full calendar quarters after approval by the Commission;
2. Final proposed new PRC-023-AB-4 is proposed to become effective the first day of the calendar quarter that follows 3 full calendar quarters after approval by the Commission;
3. Retirement of existing PRC-023-AB-2 is proposed to become effective midnight the day before proposed new PRC-023-AB-4 becomes effective.

The AESO submits that new PRC-025-AB-2 and new PRC-023-AB-4 and removal of existing PRC-023-AB-2 complies with the requirements of the *Transmission Regulation*, are not technically deficient and are in the public interest.

### Attachments to Forwarding Notice

The following documents are attached to this Forwarding Notice:

1. [January 10, 2019 Consultation Letter](#);

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<sup>1</sup> Section 19(4) of the *Transmission Regulation* states that, before adopting or making a reliability standard, "the ISO must consult with those market participants that it considers are likely to be directly affected".

2. [February 4, 2019 Stakeholders Comments on Consultation Letter.](#)
3. [April 25, 2019 AESO Reply to Stakeholders Comments Letter.](#)
4. [April 25, 2019 Consultation Letter for retirement of existing PRC-023-AB-2;](#)
5. [Clean copy](#) of proposed new PRC-025-AB-2;
6. [Clean copy](#) of proposed new PRC-023-AB-4; and
7. [Copy](#) of existing PRC-023-AB-2.

If you have any questions, please contact the undersigned.

Sincerely,

*"Melissa Mitchell-Moisson"*

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Attachments