

# Information Document

## Disturbance Monitoring and Reporting Requirements

### ID #2018-022



Information documents are not authoritative. Information documents are for information purposes only and are intended to provide guidance. In the event of any discrepancy between an information document and any authoritative document<sup>1</sup> in effect, the authoritative document governs.

## 1 Purpose

This information document relates to the following authoritative documents:

- reliability standard PRC-002-AB-2, *Disturbance Monitoring and Reporting Requirements* (“PRC-002-AB-2”); and
- Section 502.9 of the ISO rules, *Synchrophasor Measurement Unit Technical Requirements* (“Section 502.9”).

The purpose of this information document is to provide clarity regarding fault recording data and dynamic disturbance recorders. It will be of most interest to any legal owner of a transmission facility, legal owner of a generating unit, or legal owner of an aggregated generating facility that owns fault recording data.

## 2 Fault Recording Data

The intent of requirement R4 of PRC-002-AB-2 is to capture the fault recording data of the connected system elements connected to the bulk electric system buses as identified in requirement R1.1 of PRC-002-AB-2 for the duration specified in requirement R11.1 of PRC-002-AB-2. Requirement R4 of PRC-002-AB-2 specifies the fault recording length, sample rate, and trigger point settings for the fault recording data.

### 2.1 Trigger Length and Sample Rate

Requirement R4.1 of PRC-002-AB-2 specifies the length and sample rate of the fault recording data that must be met if fault recording is triggered pursuant to the trigger points, which are also referred to as trigger settings, as indicated in requirement R4.3 of PRC-002-AB-2.

### 2.2 Fault Recording Data Trigger Point Settings

If setting triggers solely pursuant to requirements R4.3.1 and R4.3.2 of PRC-002-AB-2, i.e., neutral (residual) overcurrent and phase under voltage or overcurrent, would result in undesired events being captured and pose the risk of overwriting the data required by requirement R4 of PRC-002-AB-2, the legal owner may add additional triggers with the associated thresholds in accordance with their own practices and standards.

## 3 Dynamic Disturbance Recorders and Data Streaming Synchrophasor Measurement Units

The requirements set out in PRC-002-AB-2 applicable to system elements on the bulk electric system<sup>2</sup> for dynamic disturbance recording data can be satisfied with synchrophasor measurement unit data. The AESO considers synchrophasor measurement units to be a form of dynamic disturbance recording equipment.

Due to the AESO’s growing reliability needs for integrating additional synchrophasor measurement unit data in real-time operation for on-line applications, the AESO anticipates amending PRC-002-AB-2. This amendment would require data streaming for identified system elements the AESO determines which will

<sup>1</sup> “Authoritative documents” is the general name given by the AESO to categories of documents made by the AESO under the authority of the *Electric Utilities Act* and associated regulations, and that contain binding legal requirements for either market participants or the AESO, or both. AESO authoritative documents include: the ISO rules, the reliability standards, and the ISO tariff.

<sup>2</sup> Requirements for system elements on the bulk electric system include requirements R6, R7, R8, R9, R10, and R11 of PRC-002-AB-2.

be primarily based on reliability needs identified in each area.

In general, the technical requirements for data-streaming synchrophasor measurement units are set in subsections 5 and 6 of Section 502.9.

### 3.1 Existing Streaming Synchrophasor Measurement Units

Requirement R8 in PRC-002-AB-2 creates an exemption for any legal owner responsible for dynamic disturbance recording data that is required to have continuous data recording and storage, provided they comply with subsection 7(1) of Section 502.9. If a legal owner complies with Section 502.9, the requirements in that ISO rule related to the subject matter apply. Because subsection 7(2) of Section 502.9 requires data streaming to the AESO, the AESO does not anticipate submitting a written request, pursuant to requirement R11 in PRC-002-AB-2 to a legal owner for the streamed dynamic disturbance recording data that the AESO already receives.

### 3.2 Determination of Real Power and Reactive Power Flows

The real power and reactive power flows in requirements R6.3 and R7.3 in PRC-002-AB-2 may be derived either from phase voltage and current or from positive sequence voltage and current. The intent of requirements R6 and R7 is to ensure adequate electrical quantities are available to calculate or derive other electrical quantities.

### 3.3 Implementation Plan and PRC-018-AB-1 Retirement

The equipment on the *Disturbance Monitoring Equipment List* published in accordance with requirement R1 of PRC-018-AB-1 may not be the same as the equipment identified under requirement R5 of PRC-002-AB-2. The implementation plan in PRC-002-AB-2 provides details of the coordination between the effective date of the requirements of PRC-002-AB-1 and the retirement of PRC-018-AB-1. Any equipment in the *Disturbance Monitoring Equipment List* of PRC-018-AB-1, which are not identified in the assessment in requirement R5 in PRC-002-AB-2, remain only under requirements set out in PRC-018-AB-1 until PRC-018-AB-1 retires. However, such equipment must remain in compliance with other applicable ISO rules, technical requirements, reliability standards, and functional specifications.

## 4 Re-Evaluation of All Bulk Electric System Buses

In accordance with requirement R1.3 of PRC-002-AB-2, each legal owner of a transmission facility is required to re-evaluate all bulk electric system buses at least once every 5 calendar years. The AESO recognizes that there may be a scenario where there are new buses in a re-evaluated list that were not included in the original requirement R1.1 of PRC-002-AB-2 list. Similarly, there may also be a scenario where some identified buses that appear in the original list are not included in the re-evaluated list.

For clarity on the implementation plan in Appendix 2 of PRC-002-AB-2, for the new buses in the re-evaluated list, entities must be 100% compliant within 3 calendar years after the completion of the requirement R1.3 of PRC-002-AB-2 assessment or the notification by the legal owner of a transmission facility, whichever is applicable. For the buses which appear in the original list and are also present in the re-evaluated list, they are still subject to the timelines associated with the original assessment, which is 50% compliant within 4 calendar years and 100% compliant within 6 calendar years of the effective date.

For clarity on the implementation plan in Appendix 2 of PRC-002-AB-2, for buses that appear in the original list but are removed in the re-evaluated list, compliance depends on the timeline of the re-evaluation. If the re-evaluation is performed prior to 4 calendar years from the original assessment, the removed buses are no longer subject to the requirements in PRC-002-AB-2 that are applicable to bulk electric system buses<sup>3</sup>. If the re-evaluation is performed after 4 calendar years, entities are still expected

<sup>3</sup> Requirements applicable to bulk electric system buses include requirements R2, R3, R10, and R11 of PRC-002-AB-2.

to demonstrate 50% compliance for all buses in the original list within 4 calendar years.

#### **5 Re-Evaluation of All System Elements on the Bulk Electric System**

In accordance with requirement R5.4 of PRC-002-AB-2, the AESO is required to re-evaluate all system elements at least once every 5 calendar years and notify each legal owner in accordance with requirement R5.3 of PRC-002-AB-2. The AESO recognizes that there may be a scenario where there are new system elements in a re-evaluated list that were not included in the original requirements R5.1 and R5.2 of PRC-002-AB-2 list. Similarly, there may also be a scenario where some identified system elements that appear in the original list are not included in the re-evaluated list.

For clarity on the implementation plan in Appendix 2 of PRC-002-AB-2, for the new system elements in the re-evaluated list, entities must be 100% compliant within 3 calendar years after the notification by the AESO. For the system elements which appear in the original list and are also present in the re-evaluated list, they are still subject to the timelines associated with the original assessment, which is 50% compliant within 4 calendar years and 100% compliant within 6 calendar years of the effective date.

For clarity on the implementation plan in Appendix 2 of PRC-002-AB-2, for system elements that appear in the original list but are removed in the re-evaluated list, compliance depends on the timeline of the re-evaluation. If the re-evaluation is performed prior to 4 calendar years from the original assessment, the removed system elements are no longer subject to the requirements in PRC-002-AB-2 that are applicable to system elements on the bulk electric system. If the re-evaluation is performed after 4 calendar years, entities are still expected to demonstrate 50% compliance for all system elements in the original list within 4 calendar years.

#### **6 Recording Data Storage**

Pursuant to requirement R11 of PRC-002-AB-2, the legal owner can provide the AESO with data from the original recording device or a secondary storage device provided that the requirements in PRC-002-AB-2 that are applicable to system elements on the bulk electric system are still met. As a result, the legal owner may choose to store fault recording, sequence of event recording, and dynamic disturbance recording data in the original recording device, such as protection relays or transient fault recorders. Alternately, the legal owner may choose to automatically download the data to a central server or data concentrator as a secondary storage device.

#### **7 Recorder Failure Signals**

Requirement R12 of PRC-002-AB-2 sets out legal owner failure event requirements when any failure of recording capability is discovered. The AESO encourages the legal owner to create alarms or warning messages in case of the recorders' failure, to ensure such failures are discovered as soon as practicable.

#### **8 Notification to Other Legal Owners for System Elements Connected to Identified Bulk Electric System Buses**

Once a legal owner of a system element connected to a bulk electric system bus identified in R1.1 is notified, then the legal owner becomes accountable to have either one or both of sequence of events recording data and fault recording data for the system element. Requirements R2 and R3 determine if either or both sequence of events recording data and fault recording data are required for the identified system elements.

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## Revision History

Posting Date	Description of Changes
2021-08-27	Added supplemental information to clarify requirements R11, R6.3 and R7.3 in section 3, and requirement R1.2 in new section 8. Minor updates to sections 2 and 7 for clarity.
2021-07-08	Added supplemental information to clarify requirements R4, R11, R12 in section 2, and new sections 6 and 7, respectively. Updated requirement referencing throughout to align with current AESO drafting principles.
2020-04-07	Added sections 4 and 5 to include information on the re-evaluated list per requirements R1.3 and R5.4
2019-12-09	Updated to include information on-line data streaming.
2019-01-10	Initial release