AUC
Alberta Utilities Commission

Alberta Electric System Operator

Approval of Proposed Amended Section 502.9 of the ISO Rules

February 17, 2022

Alberta Utilities Commission
Decision 27145-D01-2022
Alberta Electric System Operator
Approval of Proposed Amended
Section 502.9 of the ISO Rules
Application 27145-A001
Proceeding 27145

February 17, 2022

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The Commission may, no later than 60 days of the date of this decision and without notice, correct typographical, spelling and calculation errors and other similar types of errors and post the corrected decision on its website.

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Calgary, Alberta

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1 Introduction

1. On February 1, 2022, the Alberta Electric System Operator (AESO)[1] applied[2] to the Alberta Utilities Commission requesting approval of proposed amendments to Section 502.9 of the Independent System Operator (ISO) Rules, *Synchrophasor Measurement Unit Technical Requirements*, to be effective as of March 1, 2022. For the reasons that follow, the Commission approves the proposed amended Section 502.9 as submitted by the AESO.

2. Section 502.9 requires the legal owners of generating units, aggregated generating facilities and transmission facilities to implement a synchrophasor measurement unit that meets Institute of Electrical and Electronics Engineers (IEEE) standards. Synchrophasor measurement units, also known as phasor measurement units, are devices capable of measuring voltage and current phasors with high resolution. Such capability provides several online and offline applications in power system operation and planning which can significantly enhance the reliable operation of a bulk electric system.

3. The AESO submitted that the current version of Section 502.9 contains an outdated reference to IEEE Standard 2005 *C37.118 Synchrophasors for Power Systems*. The proposed amendments ensure that legal owners of generating units, aggregated generating facilities and transmission facilities implementing synchrophasor measurement units in Alberta are aligned with the more recent technical requirements in the IEEE standards documents (IEEE Standard 2011 and IEEE Standard 2014). The changes can be seen in the blackline version of the proposed amended Section 502.9, attached to this decision as Appendix A.

4. The 2011 and 2014 IEEE standards adequately capture and reflect the dynamic behavior of resources through synchrophasor measurements, and adherence to them aligns with industry guidelines and North American Electric Reliability Corporation guidelines. However, older measurement devices may not be compatible with the newer standards, and as the AESO has not identified any deficiencies in IEEE Standard 2005, it has included a legacy treatment: existing facilities, for which the AESO issued a functional specification and which were energized and commissioned between February 28, 2013 and February 28, 2022 inclusive, will be permitted to continue complying with IEEE Standard 2005, in order to mitigate upgrade cost impacts. Regardless of the legacy treatment provision, Section 502.9 permits the AESO, based on its determination of safety or reliability needs, to require facilities that otherwise qualify for legacy treatment comply instead with the 2011 and 2014 IEEE standards.

[1] The ISO is established under subsection 7(1) of the *Electric Utilities Act*, and operates under the trade name AESO. For the purposes of this decision, AESO and ISO are used interchangeably.

[2] Application 27145-A001.

5. On February 2, 2022, the Commission issued a notice of application and requested the submission of statements of intent to participate (SIP) by February 9, 2022. No SIPs were received. The Commission considers that the record of this proceeding closed on February 9, 2022.

6. In reaching the determinations set out within this decision, the Commission has considered all relevant materials comprising the record of this proceeding. Accordingly, references in this decision to specific parts of the record are intended to assist the reader in understanding the Commission's reasoning relating to a particular matter and should not be taken as an indication that the Commission did not consider all relevant portions of the record with respect to that matter.

2 Legislative and regulatory framework

7. Under subsection 20.2(1) of the *Electric Utilities Act*, the AESO must apply to the Commission for approval of a proposed ISO rule.

8. After considering an ISO rule, in accordance with subsection 20.21(1) of the *Electric Utilities Act*, the Commission may, by order, approve the ISO rule, direct the AESO to revise the ISO rule or refuse to approve the ISO rule.

9. In accordance with subsection 20.21(2) of the *Electric Utilities Act*, the Commission may approve an ISO rule filed under Section 20.2 only if the Commission is satisfied:

> […]
>
> (a) that the ISO rule
>
> (i) is not technically deficient,
> (ii) supports the fair, efficient and openly competitive operation of the market to which it relates, and
> (iii) is in the public interest,
>
> […]
>
> and
>
> (c) that the Independent System Operator, in developing the rule, complied with the Commission rules made under section 20.9.

10. Section 20.9 of the *Electric Utilities Act* requires the Commission to make rules requiring the AESO to consult with parties in the development of ISO rules and permits the Commission to develop rules governing the AESO's process in the development of those rules. Rule 017: *Procedures and Process for Development of ISO Rules and Filing of ISO Rules with the Alberta Utilities Commission*, is the Commission rule which was created in response to Section 20.9 of the *Electric Utilities Act*.

3 Issues

3.1 Do the rule amendments meet the criteria set out in the Electric Utilities Act

11. The AESO requested that the Commission approve the proposed amendments to Section 502.9, pursuant to Section 20.21 of the *Electric Utilities Act*, having regard to each of the following factors:

(a) The ISO rule is not technically deficient (subsection 20.21(2)(a)(i) of the *Electric Utilities Act*).

(b) The ISO rule supports the fair, efficient and openly competitive operation of the market to which it relates (subsection 20.21(2)(a)(ii) of the *Electric Utilities Act*).

(c) The ISO rule is in the public interest (subsection 20.21(2)(a)(iii) of the *Electric Utilities Act*).

3.1.1 The ISO rule is not technically deficient

12. The AESO submitted that the proposed amendments to Section 502.9 are consistent with the statutory scheme and authorized by sections 20(1)(a), 20(1)(c) and 20(1)(l) of the *Electric Utilities Act*;[3] complete and reasonably self-contained; and drafted to be clear, concise and cohesive to facilitate stakeholder understanding.

3.1.2 The ISO rule supports the fair, efficient and openly competitive operation of the market to which it relates

13. The AESO indicated that the costs of requiring existing facilities to comply with the 2011 and 2014 IEEE standards currently outweigh the benefits to system reliability, as the majority of synchrophasor units still comply with IEEE Standard 2005; complying with the older standard does not materially impact system reliability at this time; and the AESO still receives the data it needs under the older standard. Thus, the amendments regarding the legacy treatment provision do not impose exorbitant costs for no reason, while ensuring that new units are compliant with the more recent standards. The AESO has assessed that there are no material cost differences between devices compliant with the older or newer standards, meaning that new units are not disadvantaged by the imposition of higher costs while increasing their reliability.

14. Additionally, subsection 3(2) of the amended Section 502.9 permits the AESO to require existing facilities to upgrade to 2011 and 2014 compliant devices if it determines there are safety or reliability concerns.

[3] Subsection 20(1)(a), (c) and (l) of the *Electric Utilities Act* state: The Independent System Operator may make rules respecting
(a) the practices and procedures of the Independent System Operator;[…]
(c) the operation of the interconnected electric system;[…]
(l) any other matter the Independent System Operator considers necessary or advisable to carry out its duties, responsibilities, and functions under this Act and the regulations.

3.1.3 The ISO rule is in the public interest

15. The AESO asserted that, as the generation mix in Alberta continues to change, the reliability needs of the grid also evolve. Requiring new devices to adhere to the 2011 and 2014 IEEE standards will support the continued safe and reliable operation of the interconnected electric system. The amendments have also been made in anticipation of the IEEE Standard 2005 gradually becoming obsolete, as the manufacturing of 2005-compliant synchrophasor measurement units will decline. Taken together with the provisions supporting the fair, efficient and openly competitive operation of the Alberta electricity market, the amendments support the public interest by balancing reliability with the avoidance of unnecessarily exorbitant costs.

3.1.4 Conclusion

16. The Commission is satisfied that the proposed amendments to Section 502.9 meet all requirements for approval as set out in subsection 20.21(2) of the *Electric Utilities Act*.

17. More specifically, noting the absence of opposition to the application and in the absence of evidence to the contrary, the Commission is satisfied, based on the AESO's explanations, that the proposed amendments to Section 502.9: are not technically deficient; support the fair, efficient and openly competitive operation of the market to which they relate and are in the public interest.

3.2 Did the AESO fulfill its obligation to adequately consult with stakeholders

18. Sections 4 and 5 of Rule 017 require the AESO to post notice of proposed rules, receive comments from stakeholders and provide written responses to stakeholder comments, all of which must be posted on its website. Beginning in July 2020, the AESO issued letters of notice to stakeholders, received comments from stakeholders and proposed revisions to Section 502.9 where appropriate. All comments, along with the AESO's replies explaining the rationale for why certain positions were accepted or rejected, were then posted to the AESO's website.

19. The AESO submitted that its consultation process included any party that was interested in, or may be directly affected by, the proposed amendments to Section 502.9; and that all members of the consultation group had sufficient opportunity to make submissions on the proposed amendments.

20. The AESO stated that, following stakeholder consultations and subsequent further revisions to Section 502.9, there are no substantive issues outstanding in relation to the section. Stakeholder feedback was generally supportive of the amendments.

21. During consultation, AltaLink Management Ltd. raised concerns regarding cost implications for market participants and ratepayers regarding compliance with the 2011 and 2014 IEEE standards. The AESO explained that the legacy treatment provision in the proposed amendments to Section 502.9 was included to ensure that upgrades to measurement devices are not required when not necessary.

22. The AESO is of the opinion that this process provided sufficient opportunity for stakeholder submissions, and that its consultation process satisfies the requirements of Rule 017.

23. Having reviewed the details provided in the application, of the consultation conducted by the AESO, the Commission is satisfied that the informational and consultation requirements established by Rule 017 have been met.

4 Order

24. The Commission finds that, in proposing amendments to Section 502.9, the AESO has complied with Section 20.21 of the *Electric Utilities Act* and Rule 017.

25. Accordingly, pursuant to subsection 20.21(1)(a) of the *Electric Utilities Act*, the Commission, by order, approves the proposed amended Section 502.9 of the ISO Rules, *Synchrophasor Measurement Unit Technical Requirements*, to be effective as of March 1, 2022.

Dated on February 17, 2022.

Alberta Utilities Commission

(original signed by)

Vincent Kostesky
Acting Commission Member

Attachment

Appendix A – Amended Section 502.9 of the ISO Rules

Amended Section
502.9 of ISO Rules

Appendix A – ISO Rule for Proposed Amended Section 502.9 of the ISO Rules, *Synchrophasor Measurement Unit Technical Requirements*

1. ISO rule

Attachment	ISO rule
A.1	Blackline copy of proposed amended Section 502.9 of the ISO Rules, *Synchrophasor Measurement Unit Technical Requirements*
A.2	Clean copy of proposed amended Section 502.9 of the ISO Rules, *Synchrophasor Measurement Unit Technical Requirements*

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Attachment A.1

ISO Rules
Part 500 Facilities
Division 502 Technical Requirements
Section 502.9 Synchrophasor Measurement Unit Technical Requirements

Applicability

1 Section 502.9 applies to:

(a) a **legal owner** of a **generating unit** implementing a synchrophasor measurement unit;

(b) a **legal owner** of an **aggregated generating facility** implementing a synchrophasor measurement unit;

(c) a **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit; and

(d) the **ISO**.

Requirements

Facility with Functional Specifications Issued On or After ~~February 28, 2013~~ March 1, 2022

2 A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** who is a **legal owner** of a **generating unit**, an **aggregated generating facility** or **transmission facility** for which the **ISO** issues a functional specification on or after ~~February 28, 2013~~March 1, 2022, must design and construct its facility in accordance with the minimum synchrophasor measurement unit requirements of this Section 502.9, and verify to the **ISO** that the facility meets the requirements during **commissioning** and energization of the new facility.

~~**Functional Specifications, Technical Requirements and Standards Issued Prior to February 28, 2013**~~

Facilities Built Prior to March 1, 2022

3(1) Subject to subsection 3(~~2~~3), the provisions of this Section 502.9 do not apply to a facility~~:~~

~~(a)~~ that was built in accordance with~~:~~

(a) a technical requirement ~~or~~, technical standard~~;~~, or

~~(b) with~~ a functional specification~~;~~

the **ISO** issued prior to February 28, 2013~~, but such~~; or

(b) the version of Section 502.9 in effect between February 28, 2013 and March 1, 2022 and for which the **ISO** issued a functional specification.

(2) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility**, or **legal owner** of a **transmission facility** must~~,~~ notwithstanding subsection 3(1), remain in compliance with ~~that~~the applicable technical requirement, technical standard ~~or functional specification including all of the standards and requirements set out in that technical requirement, technical standard or~~ , functional specification~~.~~, or version of Section 502.9, in effect at the time when:

(a) ~~**(2)** Notwithstanding subsection 3(1), the~~the **ISO** issued the functional specification for the facility; or

(b) the facility was **commissioned** and energized, if the **ISO** did not issue a functional specification.

(3) The **ISO** may require a **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility**, or **legal owner** of a **transmission facility** ~~that is the **legal owner** of an existing facility~~ to comply with any specific provision or all of the provisions of this Section 502.9, if the **ISO** determines that such compliance is necessary for the safe and reliable operation of the **interconnected electric system.**

Functional Specification

4 The **ISO** must, in accordance and generally consistent with this Section 502.9, approve a written functional specification containing details, work requirements and specifications for the implementation of a synchrophasor measurement unit for a facility.

Synchrophasor Measurement Unit Functionality

5 Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit, must meet the functionality requirements, data requirements, data format requirements and communication requirements set out in the Institute of Electrical and Electronics Engineers ~~document~~*C37.118.1a–2014 – IEEE Standard ~~C37.118 – 2005~~for Synchrophasor Measurements for Power Systems* and *IEEE Standard* C37.118.2-2011 *– IEEE Standard for Synchrophasors Data Transfer for Power Systems* specific to a synchrophasor measurement unit.

Synchrophasor Measurement Unit Signal Names

6 The **ISO** must provide each **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** with the Institute of Electrical and Electronics Engineers *C37.118.2-2011 – IEEE Standard ~~C37.118 – 2005~~ for Synchrophasors Data Transfer for Power Systems* compliant synchrophasor measurement unit signal names and the appropriate data format, including the company identifier, device identifier and the necessary formatting.

Data Storage and Streaming

7(1) ~~Subject to subsection 7(2), each~~Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** must collect and continuously store the synchrophasor measurement unit data for 1 year from the date the synchrophasor measurement unit data was collected~~.~~, unless the data is being streamed to the AESO pursuant to subsection 7(2).

(2) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility**~~,~~ required to implement a synchrophasor measurement unit, as determined by the **ISO**, must stream the data to the **ISO**.

(3) The **legal owner** of a **generating unit, legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** may, within 1 year of streaming the data to the **ISO**, obtain the data from the **ISO** upon written request.

(4) The **ISO** must, if it receives a request as set out in subsection 7(3), provide the data to the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** within 10 **business days**.

(5) The **ISO** must store any data streamed pursuant to subsection 7(2) for 1 year.

Suspected Failure or Malfunction of a Synchrophasor Measurement Unit

8(1) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if it identifies or suspects a failure or malfunction of a synchrophasor measurement unit or any of its components, notify the **ISO** as soon as practicable but not later ~~than1~~than 1 **business day** after identifying the suspected malfunction or failure.

(2) The **ISO** must, if it identifies or suspects a failure or malfunction of a synchrophasor measurement unit or any of its components, notify the applicable **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** as soon as practicable, but not later than 1 **business day**, after identifying the suspected failure.

(3) Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** must provide the **ISO** with the date it expects to investigate the suspected failure or malfunction of the synchrophasor measurement unit or any of its components which, in the case of an investigation in response to a notification under subsection 8(2), must be within 2 **business days** of receiving the **ISO**'s notification.

(4) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if it is unable to test the synchrophasor measurement unit or any of its components on the expected date provided under subsection 8(3), provide the **ISO** with the revised date.

(5) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, after testing the synchrophasor measurement unit or any of its components, confirm if there is a failure or malfunction with the synchrophasor measurement unit or not and notify the **ISO** with the results of the test.

(6) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if the results of the test indicated that the synchrophasor measurement unit or any of its components have failed, provide the **ISO** with the date that the **market participant** expects to repair or replace the synchrophasor measurement unit.

(7) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if the synchrophasor measurement unit or any of its components are not repaired or replaced by the date provided under subsection 8(6), provide the **ISO** with a revised date.

(8) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must notify the **ISO** when the synchrophasor measurement unit or any of its components have been repaired or replaced.

As-Built Drawing

9 A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit, or required by the **ISO** to implement a synchrophasor measurement unit, must provide the **ISO** with an as-built engineering stamped 3 line drawing or a record representing the as-built installation, indicating:

(a) the voltage transformer and current transformer connections through to the synchrophasor measurement unit; and

(b) the voltage transformer and current transformer accuracy class.

Revision History

Date	Description
202x-xx-xx	Updated references to IEEE Standards in subsections 5 and 6. Amended subsection 2 to clarify the applicability of Section 502.9 to facilities with functional specifications issued after March 1, 2022. Amended subsection 3 to exempt facilities built prior to March 1, 2022 from compliance with updated IEEE Standards.
2020-09-16	Administrative revisions.
2019-12-11	Removed duplication with new Section 103.14, *Waivers and Variances*; standardized functional specifications language; capitalized references to “Section”.
2015-03-27	Replaced “effective date” with the initial release date in sections 2 and 3(1); and replaced the word “Effective” in the Revision History to “Date”.
2013-02-28	Initial release

Attachment A.2

ISO Rules
Part 500 Facilities
Division 502 Technical Requirements
Section 502.9 Synchrophasor Measurement Unit Technical Requirements

Applicability

1 Section 502.9 applies to:

(a) a **legal owner** of a **generating unit** implementing a synchrophasor measurement unit;

(b) a **legal owner** of an **aggregated generating facility** implementing a synchrophasor measurement unit;

(c) a **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit; and

(d) the **ISO**.

Requirements

Facility with Functional Specifications Issued On or After March 1, 2022

2 A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** who is a **legal owner** of a **generating unit**, an **aggregated generating facility** or **transmission facility** for which the **ISO** issues a functional specification on or after March 1, 2022, must design and construct its facility in accordance with the minimum synchrophasor measurement unit requirements of this Section 502.9, and verify to the **ISO** that the facility meets the requirements during **commissioning** and energization of the new facility.

Facilities Built Prior to March 1, 2022

3(1) Subject to subsection 3(3), the provisions of this Section 502.9 do not apply to a facility that was built in accordance with:

(a) a technical requirement, technical standard, or a functional specification the **ISO** issued prior to February 28, 2013; or

(b) the version of Section 502.9 in effect between February 28, 2013 and March 1, 2022 and for which the **ISO** issued a functional specification.

(2) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility**, or **legal owner** of a **transmission facility** must, notwithstanding subsection 3(1), remain in compliance with the applicable technical requirement, technical standard, functional specification, or version of Section 502.9, in effect at the time when:

(a) the **ISO** issued the functional specification for the facility; or

(b) the facility was **commissioned** and energized, if the **ISO** did not issue a functional specification.

(3) The **ISO** may require a **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility**, or **legal owner** of a **transmission facility** to comply with any specific provision or all of the provisions of this Section 502.9, if the **ISO** determines that such compliance is necessary for the safe and reliable operation of the **interconnected electric system.**

ISO Rules
Part 500 Facilities
Division 502 Technical Requirements
Section 502.9 Synchrophasor Measurement Unit Technical Requirements

Functional Specification

4 The **ISO** must, in accordance and generally consistent with this Section 502.9, approve a written functional specification containing details, work requirements and specifications for the implementation of a synchrophasor measurement unit for a facility.

Synchrophasor Measurement Unit Functionality

5 Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit, must meet the functionality requirements, data requirements, data format requirements and communication requirements set out in the Institute of Electrical and Electronics Engineers *C37.118.1a–2014 – IEEE Standard for Synchrophasor Measurements for Power Systems* and *IEEE Standard* C37.118.2-2011 – *IEEE Standard for Synchrophasors Data Transfer for Power Systems* specific to a synchrophasor measurement unit.

Synchrophasor Measurement Unit Signal Names

6 The **ISO** must provide each **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** with the Institute of Electrical and Electronics Engineers *C37.118.2-2011 – IEEE Standard for Synchrophasors Data Transfer for Power Systems* compliant synchrophasor measurement unit signal names and the appropriate data format, including the company identifier, device identifier and the necessary formatting.

Data Storage and Streaming

7(1) Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** must collect and continuously store the synchrophasor measurement unit data for 1 year from the date the synchrophasor measurement unit data was collected, unless the data is being streamed to the AESO pursuant to subsection 7(2).

(2) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** required to implement a synchrophasor measurement unit, as determined by the **ISO**, must stream the data to the **ISO**.

(3) The **legal owner** of a **generating unit, legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** may, within 1 year of streaming the data to the **ISO**, obtain the data from the **ISO** upon written request.

(4) The **ISO** must, if it receives a request as set out in subsection 7(3), provide the data to the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** within 10 **business days**.

(5) The **ISO** must store any data streamed pursuant to subsection 7(2) for 1 year.

Suspected Failure or Malfunction of a Synchrophasor Measurement Unit

8(1) A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if it identifies or suspects a failure or malfunction of a synchrophasor measurement unit or any of its components, notify the **ISO** as soon as practicable but not later than 1 **business day** after identifying the suspected malfunction or failure.

(2) The **ISO** must, if it identifies or suspects a failure or malfunction of a synchrophasor measurement unit or any of its components, notify the applicable **legal owner** of a **generating unit**, **legal owner** of an

aggregated generating facility or **legal owner** of a **transmission facility** as soon as practicable, but not later than 1 **business day**, after identifying the suspected failure.

(3) Each of the **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** and **legal owner** of a **transmission facility** must provide the **ISO** with the date it expects to investigate the suspected failure or malfunction of the synchrophasor measurement unit or any of its components which, in the case of an investigation in response to a notification under subsection 8(2), must be within 2 **business days** of receiving the **ISO**'s notification.

(4) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if it is unable to test the synchrophasor measurement unit or any of its components on the expected date provided under subsection 8(3), provide the **ISO** with the revised date.

(5) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, after testing the synchrophasor measurement unit or any of its components, confirm if there is a failure or malfunction with the synchrophasor measurement unit or not and notify the **ISO** with the results of the test.

(6) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if the results of the test indicated that the synchrophasor measurement unit or any of its components have failed, provide the **ISO** with the date that the **market participant** expects to repair or replace the synchrophasor measurement unit.

(7) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must, if the synchrophasor measurement unit or any of its components are not repaired or replaced by the date provided under subsection 8(6), provide the **ISO** with a revised date.

(8) The **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** must notify the **ISO** when the synchrophasor measurement unit or any of its components have been repaired or replaced.

As-Built Drawing

9 A **legal owner** of a **generating unit**, **legal owner** of an **aggregated generating facility** or **legal owner** of a **transmission facility** implementing a synchrophasor measurement unit, or required by the **ISO** to implement a synchrophasor measurement unit, must provide the **ISO** with an as-built engineering stamped 3 line drawing or a record representing the as-built installation, indicating:

(a) the voltage transformer and current transformer connections through to the synchrophasor measurement unit; and

(b) the voltage transformer and current transformer accuracy class.

Revision History

Date	Description
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ISO Rules
Part 500 Facilities
Division 502 Technical Requirements
Section 502.9 Synchrophasor Measurement Unit Technical Requirements

Date	Description
	Amended subsection 3 to exempt facilities built prior to March 1, 2022 from compliance with updated IEEE Standards.
2020-09-16	Administrative revisions.
2019-12-11	Removed duplication with new Section 103.14, *Waivers and Variances*; standardized functional specifications language; capitalized references to “Section”.
2015-03-27	Replaced “effective date” with the initial release date in sections 2 and 3(1); and replaced the word “Effective” in the Revision History to “Date”.
2013-02-28	Initial release