

1. Purpose

The purpose of this **reliability standard** is to establish voice communication capabilities necessary to maintain the reliable operation of the **interconnected electric system**.

2. Applicability

This **reliability standard** applies to:

- (a) the **operator** of a **transmission facility**;
- (b) the **operator** of an **electric distribution system** that is directly connected to the **transmission system** or to **transmission facilities** within the City of Medicine Hat;
- (c) the **operator** of a **generating unit** that is part of the **bulk electric system**;
- (d) the **operator** of an **aggregated generating facility** that is part of the **bulk electric system**; and
- (e) the **ISO**.

For the purpose of the requirements contained herein, the above list of entities will be collectively referred to as “Responsible Entities”. For requirements in this **reliability standard** where a specific entity or subset of entities are the applicable entity or entities, the entity or entities are specified explicitly.

3. Requirements

R1 The **ISO** shall have primary voice communication capability with the following entities, unless the **ISO** detects a failure of its primary voice communication capability, in which case requirement R10 shall apply:

- (a) each **operator** of a **transmission facility**;
- (b) each **operator** of an **electric distribution system** that is directly connected to the **transmission system** or to **transmission facilities** within the City of Medicine Hat;
- (c) each **operator** of a **generating unit** that is part of the **bulk electric system**;
- (d) each **operator** of an **aggregated generating facility** that is part of the **bulk electric system**;
- (e) each adjacent **reliability coordinator**;
- (f) each adjacent **interconnected transmission operator** directly connected to Alberta; and
- (g) each **adjacent balancing authority**.

R2 The **ISO** shall designate a backup voice communication capability in each control room with the following entities:

- (a) each **operator** of a **transmission facility**;
- (b) each **operator** of an **electric distribution system** that is directly connected to the **transmission system** or to **transmission facilities** within the City of Medicine Hat;
- (c) each **operator** of a **generating unit** that is part of **the bulk electric system**, with each **operator** control room that is capable of operating more than 50 MW of generation based on the total **maximum authorized real power**;
- (d) each **operator** of an **aggregated generating facility** that is part of the **bulk electric system**;
- (e) each adjacent **reliability coordinator**;
- (f) each adjacent **interconnected transmission operator** directly connected to Alberta; and
- (g) each **adjacent balancing authority**.

- R3** Each **operator** of a **transmission facility** shall have primary voice communication capability with the following entities, unless the **operator** of a **transmission facility** detects a failure of its primary voice communication capability in which case requirement R10 shall apply:
- (a) the **ISO**;
 - (b) each adjacent **operator** of a **transmission facility** that is directly connected to its **transmission facility**;
 - (c) each **operator** of an **electric distribution system** that is directly connected to its **transmission facility**;
 - (d) each **operator** of a **generating unit** that is part of the **bulk electric system** and is directly connected to its **transmission facility** and ;
 - (e) each operator of an **aggregated generating facility** that is part of the **bulk electric system** and is directly connected to its **transmission facility** ; and
 - (f) each adjacent **interconnected transmission operator** that is directly connected to its **transmission facility**.
- R3.A1**¹ Each **operator** of a **transmission facility** shall have a primary voice communication capability that is:
- (a) a direct access telephone on the public telephone network;
 - (b) not degraded by any other communication functionality or any other data transfer activities if there is any shared equipment; and
 - (c) located in each control room.
- R4** Each **operator** of a **transmission facility** shall designate a backup voice communication capability with the following entities:
- (a) the **ISO**;
 - (b) each adjacent **operator** of a **transmission facility** that is directly connected to its **transmission facility**;
 - (c) each **operator** of an **electric distribution system** that is directly connected to its **transmission facility**;
 - (d) each **operator** of a **generating unit** that is part of the **bulk electric system** and is directly connected to its **transmission facility**;
 - (e) each **operator** of an **aggregated generating facility** that is part of the **bulk electric system** and is directly connected to its **transmission facility**; and
 - (f) each adjacent **interconnected transmission operator** that is directly connected to its **transmission facility**.
- R4.A1** Each **operator** of a **transmission facility** shall have the type of backup voice communication capability, in each control room, as identified in:
- (a) Appendix 1 for communicating with the **ISO**; and

¹ Any requirement that contains an A in the designation, such as R3.A1, is an additional **ISO** requirement that was established by the **ISO** for use in its **balancing authority area** and was not derived from a NERC COM-001-3 requirement.

(b) Appendix 2 for communicating with each entity specified in requirement R4.

R5 Intentionally left blank.

R6 Intentionally left blank.

R7 Each **operator** of an **electric distribution system** shall have primary voice communication capability with the following entities, unless the **operator** of an **electric distribution system** detects a failure of its primary voice communication capability in which case requirement R11 shall apply:

(a) the **ISO**; and

(b) its **operator** of a **transmission facility**

R7.A1 Each **operator** of an **electric distribution system** shall have a primary voice communication capability that is:

(a) a direct access telephone on the public telephone network;

(b) not degraded by any other communication functionality or any other data transfer activities if there is any shared equipment; and

(c) located in each control room.

R7.A2 Each **operator** of an **electric distribution system** shall have the type of backup voice communication capability, in each control room, as identified in:

(a) Appendix 1 for communicating with the **ISO**; and

(b) Appendix 3 for communicating with each entity specified in requirement R7.

R8 Each **operator** of a **generating unit** and **operator** of an **aggregated generating facility** shall have primary voice communication capability with the following entities, unless the **operator** of a **generating unit** or **operator** of an **aggregated generating facility** detects a failure of its primary voice communication capability in which case requirement R11 applies:

(a) the **ISO**; and

(b) its **operator** of a **transmission facility**.

R8.A1 Each **operator** of a **generating unit** and **operator** of an **aggregated generating facility** shall have a primary voice communication capability that is:

(a) a direct access telephone on the public telephone network;

(b) not degraded by any other communication functionality or any other data transfer activities if there is any shared equipment; and

(c) located in each control room.

R8.A2 Each **operator** of a **generating unit** and **operator** of an **aggregated generating facility** shall have the type of backup voice communication capability, in each control room, as identified in:

(a) Appendix 1 for communicating with the **ISO**; and

(b) Appendix 3 for communicating with each entity specified in requirement R8.

R9 Each Responsible Entity shall test its backup voice communication capability, as specified in Appendix 1, Appendix 2, and Appendix 3, at least once each **month**. If the test is unsuccessful, the Responsible Entity shall initiate action to repair or designate a temporary replacement backup voice communication capability within 2 hours of the unsuccessful test.

- R10** The **ISO** and each **operator** of a **transmission facility** shall notify entities as identified in requirements R1 and R3, respectively within 60 minutes of the detection of a failure of its primary voice communication capability that lasts 30 minutes or longer.
- R11** Each **operator** of an **electric distribution system**, **operator** of a **generating unit**, and **operator** of an **aggregated generating facility** that detects a failure of its primary voice communication capability shall consult each entity affected by the failure, as identified in requirement R7 for an **operator** of an **electric distribution system** or requirement R8 for an **operator** of a **generating unit** or **operator** of an **aggregated generating facility**, to determine a mutually agreeable action for the restoration of its primary voice communication capability.
- R12** The **ISO** and each **operator** of a **transmission facility**, **operator** of a **generating unit**, and **operator** of an **aggregated generating facility** shall have internal voice communication capabilities for the exchange of information necessary for the reliable operation of the **interconnected electric system**. This includes voice communication capabilities between control rooms within the same functional entity, and/or between a control room and field personnel.
- R13** Each **operator** of an **electric distribution system** shall have internal voice communication capabilities for the exchange of information necessary for the reliable operation of the **interconnected electric system**. This includes communication capabilities between control rooms within the same functional entity, and/or between a control room and field personnel.
- R14.A1** Each Responsible Entity shall, where its backup voice communication capability is a satellite telephone service, use a satellite network system, that is approved by the **ISO**.
- R15.A1** Each Responsible Entity shall, where its backup voice communication capability is a satellite telephone service or utility orderwire service,² have sufficient backup power supply to ensure that its backup voice communication capability, in its control room site, is capable of remaining operational for a minimum of 8 hours in the event of an extended power outage of its main power supply for its backup voice communication capability.

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 having primary voice communication capability as required in requirement R1 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR2** Evidence of designating a backup voice communication capability as required in requirement R2 exists. Evidence may include physical assets, or dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR3** Evidence of having primary voice communication capability as required in requirement R3 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

² “utility orderwire service” means a private voice communications system that is operated and controlled by one or more **market participant** and the **ISO**. The utility orderwire service: leverages utility telecommunication network infrastructure owned by a **market participant** and the **ISO**; and may also leverage passive telecommunication infrastructure owned by a third-party.

- MR3.A1** Evidence of having a primary voice communication capability as required in requirement R3.A1 exists. Evidence may include voice communication system design or configuration documentation, physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR4** Evidence of designating a backup voice communication capability as required in requirement R4 exists. Evidence may include physical assets, or dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR4.A1** Evidence of having a backup voice communication capability as required in requirement R4.A1 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR5** Intentionally left blank.
- MR6** Intentionally left blank.
- MR7** Evidence of having primary voice communication capability as required in requirement R7 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR7.A1** Evidence of having a primary voice communication capability as required in requirement R7.A1 exists. Evidence may include voice communication system design or configuration documentation, physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR7.A2** Evidence of having a backup voice communication capability as required in requirement R7.A2 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR8** Evidence of having primary voice communication capability as required in requirement R8 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR8.A1** Evidence of having a primary voice communication capability as required in requirement R8.A1 exists. Evidence may include voice communication system design or configuration documentation, physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR8.A2** Evidence of having a backup voice communication capability as required in requirement R8.A2 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.
- MR9** Evidence of testing backup voice communication capability as required in requirement R9 exists. Evidence may include dated and time-stamped test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

Evidence of initiating action to repair or designate a replacement of backup voice communication capability, which does not utilize the same infrastructure as voice communication used for day-to-day operation, as required in requirement R9 exists. Evidence may include dated and time-stamped test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR10 Evidence of notifying entities, within the minimum timeframe, after a detection of a failure of its primary voice communication capability as required in requirement R10 exists. Evidence may include dated and time-stamped test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR11 Evidence of consulting with each entity affected by the failure of its primary voice communication capability as required in requirement R11 exists. Evidence may include dated **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR12 Evidence of having internal voice communication capability as required in requirement R12 exists. Evidence may include physical assets, or dated evidence, such as, equipment specifications and installation documentation, operating procedures, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR13 Evidence of having internal voice communication capability as required in requirement R13 exists. Evidence may include physical assets, or dated evidence, such as, equipment specifications and installation documentation, operating procedures, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR14.A1 Evidence of using a satellite network system as a backup voice communication capability as required in requirement R14.A1 exists. Evidence may include physical assets, dated evidence, such as, equipment specifications and installation documentation, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

MR15.A1 Evidence of having sufficient backup power supply that ensures its backup voice communication capability in its control room site is capable of remaining operational in the event of an extended power outage of its main power supply for its backup voice communication capability as required in requirement R15.A1 exists. Evidence may include backup power supply size and load calculations, and, if an extended power outage occurred, dated and time-stamped records of operations during the extended power outage, such as, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.

Appendices

- Appendix 1 – *Responsible Entity Requirements for Each Backup Voice Communication Capability with the ISO*
- Appendix 2 – *Operator of a Transmission Facility Requirements for Each Backup Voice Communication Capability with Adjacent Entities and Entities that are Directly Connected to its Transmission Facility*
- Appendix 3 – *Operator of an Electric Distribution System, Operator of a Generating Unit, and Operator of an Aggregated Generating Facility Requirements for Each Backup Voice Communication Capability with Its Operators of Transmission Facility*

Revision History

Date	Description
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xxxx-xx-xx	Initial release.
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Appendix 1
Responsible Entity Requirements for Each Backup Voice Communication Capability with the ISO

Responsible Entity Category	Responsible Entity subcategory	Responsible Entity Backup Voice Communication Capability Options for Communicating with the ISO
1. Each operator of a transmission facility	(a) that operates any transmission facility unless it meets the criteria specified in subcategory 1(b).	(1) Utility orderwire service
	(b) that only operates a radial circuit at the control room or only operates a transmission facility identified in a list the ISO publishes on the AESO website.	None required
2. Each operator of an electric distribution system		(1) Utility orderwire service; (2) Satellite telephone service; or (3) Direct access telephone service.
3. Each operator of a generating unit and operator of an aggregated generating facility connected to the transmission system or to transmission facilities within the City of Medicine Hat where the maximum authorized real power is:	(a) less than 50 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource .	None required
	(b) equal to or greater than 50 MW and less than 300 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource .	(1) Utility orderwire service; or (2) Satellite telephone service.
	(c) equal to or greater than 300 MW based on the total amount of generation operated at the control room, where the total synchronous generation is less than 300 MW, unless the generating unit or aggregated generating facility is a blackstart resource .	(1) Utility orderwire service; or (2) Satellite telephone service.
	(d) equal to or greater than 300 MW based on the total amount of synchronous generation operated at the control room or a blackstart resource .	(1) Utility orderwire service

Appendix 2
Operator of a Transmission Facility Requirements for Each Backup Voice Communication Capability with Adjacent Entities and Entities that are Directly Connected to its Transmission Facility

Responsible Entity	Adjacent and Directly Connected Entity Category	Adjacent and Directly Connected Entity Subcategory	Operator of a Transmission Facility Backup Voice Communication Capability Options for Communicating with Each Adjacent and Directly Connected Entity
<p>Operator of a transmission facility unless the only transmission facility operated at the control room is a radial circuit or is a transmission facility identified in a list the ISO publishes on the AESO website</p>	<p>1. Each adjacent operator of a transmission facility that is directly connected to its transmission facility</p>	(a) that operates any transmission facility unless it meets the criteria specified in subcategory 1(b)	(1) Utility orderwire service
		(b) that only operates a radial circuit or operates a transmission facility identified in a list the ISO publishes on the AESO website.	(1) Utility orderwire service; (2) Satellite telephone service; or (3) Direct access telephone service.
	<p>2. Each operator of an electric distribution system that is directly connected to its transmission facility</p>		(1) Utility orderwire service; or (2) Satellite telephone service.
	<p>3. Each operator of a generating unit or aggregated generating facility that is directly connected to its transmission facility and the maximum authorized real power is:</p>	(a) less than 50 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource ;	None required.
		(b) equal to or greater than 50 MW and less than 300 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource ;	(1) Utility orderwire service; or (2) Satellite telephone service.
		(c) equal to or greater than 300 MW based on the total amount of generation operated at the control room, where the total synchronous generation is less than 300 MW, unless the generating unit or aggregated generating facility is a blackstart resource ; and	(1) Utility orderwire service; or (2) Satellite telephone service.
		(d) equal to or greater than 300 MW based on the total amount of synchronous generation operated at the control room or a blackstart	(1) Utility orderwire service

		resource.	
	4. Each adjacent interconnected transmission operator that is directly connected to its transmission facility		(1) Utility orderwire service; or (2) Satellite telephone service.
<p>Operator of a transmission facility the transmission facility operated at the control room is a radial circuit or is a transmission facility identified in a list the ISO publishes on the AESO website.</p>	1. Each adjacent operator of a transmission facility that is directly connected to its transmission facility	(a) that operates any transmission facility unless it meets the criteria specified in subcategory 1(b)	(1) Utility orderwire service (2) satellite telephone service; or (3) direct access telephone service
		(b) that only operates a radial circuit or only operates a transmission facility identified in a list the ISO publishes on the AESO website.	(1) Utility orderwire service; (2) Satellite telephone service; or (3) Direct access telephone service.
	2. Each operator of an electric distribution system that is directly connected to its transmission facility		(1) Utility orderwire service; (2) Satellite telephone service; or (3) direct access telephone service.
	3. Each operator of a generating unit or aggregated generating facility that is directly connected to its transmission facility and the maximum authorized real power is:	(a) less than 50 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource ;	None required
		(b) equal to or greater than 50 MW and less than 300 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource ;	(1) Utility orderwire service; or (2) Satellite telephone service.
		(c) equal to or greater than 300 MW based on the total amount of generation operated by the control room, where the total synchronous generation is less than 300 MW, unless the generating unit or aggregated generating facility is a blackstart resource ; and	(1) Utility orderwire service; or (2) Satellite telephone service.
(d) equal to or greater than 300 MW based on the total amount of synchronous generation operated at the control room or a blackstart resource .		(1) Utility orderwire service	



	<p>4. Each adjacent interconnected transmission operator that is directly connected to its transmission facility</p>		<p>(1) Utility orderwire service; or (2) Satellite telephone service.</p>
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Appendix 3
Operator of an Electric Distribution System, Operator of a Generating Unit, and Operator of an Aggregated Generating Facility Requirements for Each Backup Voice Communication Capability with Its Operator of Transmission Facility*

Responsible Entity Category	Responsible Entity Subcategory	Responsible Entity Backup Voice Communication Capability Options for Communicating with its
1. Each operator of an electric distribution system		(1) Utility orderwire service; (2) Satellite telephone service; or (3) An operator of electric distribution system may use direct access telephone service provided it is connected to a radial circuit or it is connected to a transmission facility identified in a list the ISO publishes on the AESO website.
2. Each operator of a generating unit and each operator of an aggregated generating facility where the maximum authorized real power is:	(a) less than 50 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource .	None required.
	(b) equal to or greater than 50 MW and less than 300 MW based on the total amount of generation operated at the control room, unless the generating unit or aggregated generating facility is a blackstart resource .	(1) Utility orderwire service; or (2) Satellite telephone service.
	(c) equal to or greater than 300 MW based on the total amount of generation operated at the control room, where the total synchronous generation is less than 300 MW, unless the generating unit or aggregated generating facility is a blackstart resource .	(1) Utility orderwire service; or (2) Satellite telephone service.
	(d) equal to or greater than 300 MW based on the total amount of synchronous generation operated at the control room or is a blackstart resource .	(1) Utility orderwire service

*Appendix 3 does not include requirements for each **operator** of a **transmission facility**