

Alberta Reliability Standard Telecommunications COM-001-AB1-1.1

Alberta Reliability Standard Communications COM-001-AB-3



1. ~~1.~~ Purpose

The purpose of this **reliability standard** is to ~~ensure the ISO and each operator of a transmission facility have adequate and reliable~~ establish voice and message telecommunication facilities internally and with others for the exchange of **interconnection** and operating information necessary ~~communication capabilities necessary to maintain reliability~~ the reliable operation of the **interconnected electric system**.

2. ~~2.~~ Applicability

This **reliability standard** applies to ~~the following~~:

(a) ~~(a)~~ — the **operator of a transmission facility**;

the **operator** of ~~a~~ an **electric distribution system** that is directly connected to the **transmission facility** that is:

(i) ~~part of the bulk electric system~~; or

(ii) ~~not part of the bulk electric system but which the ISO~~:

(a)(b) ~~_____ determines is necessary for the reliable operation of either the interconnected electric systems~~ **system** or **to transmission facilities** within the City of Medicine Hat ~~electric system~~; and;

(A) ~~publishes on the AESO website and may amend from time to time in accordance with the process set out in Appendix 1~~; and

(c) ~~(b)~~ — 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

(b)(e) ~~_____ the ISO~~.

3. ~~_____ 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 must, as necessary to maintain reliability, provide adequate, reliable, and, where applicable, diverse and redundant voice and message telecommunication facilities for the exchange of interconnection and internal Alberta operating information with the following:~~

(a) ~~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) ~~(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**;

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~~(d) each operator of an aggregated generating facility that is part of the bulk electric system;~~

~~(e) each adjacent reliability coordinator;~~

~~(b)(f) _____ each adjacent interconnected transmission operator directly connected to Alberta;
and~~

~~(e)(g) _____ (e) — each adjacent balancing authority directly connected to Alberta; and.~~

~~(d) the adjacent reliability coordinators.~~

~~R2 — Each operator of a transmission facility must, as necessary to maintain reliability, provide adequate, reliable, and, where applicable, diversely routed and redundant voice and message telecommunication facilities for the exchange of interconnection and Alberta operating information with the following:~~

~~(a) each adjacent operator of a transmission facility;~~

~~(b) each adjacent interconnected transmission operator that is directly connected to Alberta;
and~~

~~(c) the ISO.~~

~~R3 R2 The ISO and shall designate a backup voice communication capability in each control room with the following entities:~~

~~(a) each operator of a transmission facility must manage and test its alternate voice and message telecommunication facilities;~~

~~(b) R4 — The ISO must provide a means each operator of an electric distribution system that is directly connected to coordinate voice and message telecommunications 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 of a transmission facility, 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 and adjacent reliability coordinators.~~

~~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 coordination must include case requirement R10 shall apply:~~

~~(a) the ability ISO;~~

~~(b) each adjacent operator of a transmission facility that is directly connected to investigate its transmission facility;~~

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- (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 recommend solutions to voice-;
- (~~a~~)(e) each operator of an aggregated generating facility that is part of the bulk electric system and message telecommunications problems within Alberta is directly connected to its transmission facility ; and
- (f) R5—each adjacent interconnected transmission operator that is directly connected to its transmission facility.

R3.A1¹ Each operator of a transmission facility must provide a means to coordinate 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 message telecommunications
- (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 operators, 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
- (b) Appendix 2 for communicating with each entity specified in requirement R4.

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.

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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 coordination must include the ability to investigate and recommend solutions to voice and message telecommunications problems within Alberta. case requirement R11 shall apply:

- (a) ~~R6~~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

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(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** ~~must use the English language,~~ **operator** of a **generating unit**, and **operator** of an **aggregated generating facility** shall have internal voice communication capabilities ~~for all communications between their respective operating personnel responsible~~ the exchange of information necessary for the ~~real-time generation control and 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.~~
- ~~R7~~ ~~The ISO and each~~ **R13** Each **operator** of a **transmission facility** ~~must~~ an **electric distribution system** shall have written operating instructions and procedures to enable continued internal voice communication capabilities for the exchange of information necessary for the reliable operation of the **interconnected electric system** ~~during the loss of voice and message telecommunications facilities.~~ This includes communication capabilities between control rooms within the same functional entity, and/or between a control room and field personnel.
4. ~~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**.

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.

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For example, MR1 is the measure for requirement R1.

MR1 Evidence of ~~providing~~having primary voice and message telecommunication facilities~~communication capability~~ as required in requirement R1 exists. Evidence may include:

- ~~(a) a list identifying each telecommunication facility for the exchange of **interconnection** and Alberta operating information; and~~

~~physical assets, dated evidence, such as, equipment specifications and installation documentation demonstrating the implementation of diverse routing and redundancy capability, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.~~

MR2 Evidence of ~~providing~~voice and message telecommunication facilities designating a backup voice communication capability as required in requirement R2 exists. Evidence may include:

- ~~(a) a list identifying each telecommunication facility for the exchange of **interconnection** and Alberta operating information; and~~

~~physical assets, or dated evidence, such as, equipment specifications and installation documentation demonstrating the implementation of diverse routing and redundancy capability, if applicable, test records, **operator** logs, voice recordings, transcripts of voice recordings, or electronic communications or other equivalent evidence.~~

MR3 Evidence of ~~managing and testing its alternate voice and message telecommunication facilities~~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.~~

- ~~(a) a list identifying each telecommunication facility as determined to be alternate;~~
- ~~(b) documented procedures describing how to manage and test its alternate telecommunication facilities; and~~
- ~~(c) records of testing.~~

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 ~~providing~~designating a means to coordinate backup voice and message telecommunications~~communication capability~~ as required in requirement R4 exists. Evidence may include ~~a documented procedure in place which identifies a process~~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

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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

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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 coordinating telecommunications and a process* Each Backup Voice Communication Capability with the ISO

Appendix 2 – *Operator of a Transmission Facility Requirements for investigating and recommending solutions to telecommunications problems.* Each Backup Voice Communication Capability with Adjacent Entities and Entities that are Directly Connected to its Transmission Facility

~~**MR5** Evidence of providing a means to coordinate voice and message telecommunications as required in requirement R5 exists. Evidence may include a documented procedure in place which identifies a process for coordinating telecommunications and a process for investigating and recommending solutions to telecommunications problems.~~

~~**MR6** Evidence of using the English language as required in requirement R6 exists. Evidence may include **operator** logs, voice recordings, electronic communications or **e-tag** records.~~

~~**MR7** Evidence of having written operating instructions and procedures as required in requirement R7 exists. Evidence may include electronic or hard copy of the operating instructions and procedures.~~

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5. — Appendices

~~Appendix 1 — Amending Process for List of Facilities~~

~~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

<u>EffectiveDate</u>	Description
2013-10-01xxxx-xx-xx	Initial Release
2015-05-01	Revised for ISO assumption of RC functionality for the Alberta footprint

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Appendix 1 Amending Process Responsible Entity Requirements for List of Facilities

In order to amend the list referenced in subsections (a)(ii)(B) of section 2, *Applicability*, **Each Backup Voice Communication Capability with the ISO** must:

- (a) upon determining that a **transmission facility** is to be added, notify the **operator** in writing and determine an effective date, which must be no less than thirty (30) **days** after the date of notice, for the **operator** to meet the applicable requirements;
- (b) upon determining that a **transmission facility** is to be deleted, notify the **operator** in writing and determine an effective date for the **operator** to no longer be required to meet the applicable requirements; and
- (c) publish the amended list with effective dates on the AESO website.

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	(1) Utility orderwire service; or (2) Satellite telephone service.

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	<u>blackstart resource.</u>	
	(d) equal to or greater than 300 MW based on the total amount of synchronous generation operated at the control room or a <u>blackstart resource.</u>	(1) Utility orderwire service

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**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**

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

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		unless the generating unit or aggregated generating facility is a blackstart resource ; and	
		(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
	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	(1) Utility orderwire service; or

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		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	(2) <u>Satellite telephone service.</u>
		(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) <u>Utility orderwire service</u>
	4. Each adjacent <u>interconnected transmission operator</u> that is directly connected to its <u>transmission facility</u>		(1) <u>Utility orderwire service</u> ; or (2) <u>Satellite telephone service.</u>

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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***

<u>Responsible Entity Category</u>	<u>Responsible Entity Subcategory</u>	<u>Responsible Entity Backup Voice Communication Capability Options for Communicating with its</u>
<u>1. Each operator of an electric distribution system</u>		<u>(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.</u>
<u>2. Each operator of a generating unit and each operator of an aggregated generating facility where the maximum authorized real power is:</u>	<u>(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.</u>	<u>None required.</u>
	<u>(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.</u>	<u>(1) Utility orderwire service; or (2) Satellite telephone service.</u>
	<u>(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.</u>	<u>(1) Utility orderwire service; or (2) Satellite telephone service.</u>
	<u>(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.</u>	<u>(1) Utility orderwire service</u>

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