

**Comparison between NERC EOP-003-1 and Alberta EOP-003-AB-1  
Load Shedding Plans**

Section	NERC EOP-003-1	Alberta EOP-003-AB-1	Reason for Difference
<b>Purpose</b>	A Balancing Authority and Transmission Operator operating with insufficient generation or transmission capacity must have the capability and authority to shed load rather than risk an uncontrolled failure of the Interconnection.	<u>The purpose of this reliability standard is to ensure plans are in place and plans are implemented to shed load when there is insufficient generation or transmission capacity, to mitigate the risk of an uncontrolled failure of the Interconnection.</u>	Identify the responsible entities in Alberta.
<b>Applicability</b>	4.1. Transmission Operators. 4.2. Balancing Authorities.	<u>This reliability standard applies to the entities listed below:</u> <ul style="list-style-type: none"> <li>• <u>ISO</u></li> <li>• <u>TFOs</u></li> <li>• <u>demand customers</u></li> <li>• <u>WSPs who are counterparties to an agreement with the demand customer for the provision of load shedding services.</u></li> </ul>	Identify the entities in Alberta that this standard applies to.
<b>Effective Date</b>	January 1, 2007	<u>Ten calendar days following approval by the AUC.</u>	To be made effective in Alberta upon approval by the AUC.
<b>Definitions</b>		<u>Italicized terms used in this reliability standard have the meanings as set out in the Alberta Reliability Standards Glossary of Terms and Part 1 of the ISO rules.</u>	Reference to the definitions section in the ISO rules.

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<b>Requirement</b>	<b>R1.</b> After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	<b>R1</b> <u>When the AIES is operating with insufficient generation or transmission capacity and after considering all remedial steps, the ISO must issue directives to shed load.</u>	Identify the responsible entity in Alberta.  Change the passive term "shall" to "must".
<b>Measure</b>		<b>MR1</b> <u>Voice recordings and logs exist to confirm the ISO issued directives to shed load.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R1.</b> After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	<b>R1.1</b> <u>Demand customers and WSPs must shed load or reduce MW inflow as directed by the ISO.</u>	The fulfillment of the requirement in Alberta requires the market participants to take the appropriate action following a directive from the SC.
<b>Measure</b>		<b>MR1.1</b> <u>Electronic logs, metering or electronic data exists to confirm the market participant shed load.</u>	Identify the appropriate measure for the requirement.

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<b>Requirement</b>	<b>R1.</b> After taking all other remedial steps, a Transmission Operator or Balancing Authority operating with insufficient generation or transmission capacity shall shed customer load rather than risk an uncontrolled failure of components or cascading outages of the Interconnection.	<b>R1.2</b> <u>When coordination with the ISO is not possible or practicable, and after considering all remedial steps, the TFO, when operating with insufficient generation or transmission capacity, must</u> shed load rather than risk an uncontrolled failure of components or cascading of the Interconnection.	During abnormal circumstances, TFOs are required to take appropriate action independent of the SC.
<b>Measure</b>		<b>MR1.2</b> <u>Electronic logs and/or electronic data exist to confirm the TFO shed load.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R2.</b> Each Transmission Operator and Balancing Authority shall establish plans for automatic load shedding for underfrequency or undervoltage conditions.	<b>R2</b> <u>The ISO must</u> establish plans for automatic load shedding for under frequency or under voltage conditions.	Identify the responsible entity in Alberta.  Change the passive term "shall" to "must".
<b>Measure</b>	<b>M1.</b> Each Transmission Operator and Balancing Authority that has or directs the deployment of undervoltage and/or underfrequency load shedding facilities, shall have and provide upon request, its automatic load shedding plans.(Requirement 2)	<b>MR2</b> <u>Automatic load shedding plans exist. Plans meet the defined need of load shedding situations.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R3.</b> Each Transmission Operator and Balancing Authority shall coordinate load shedding plans among other interconnected Transmission	<b>R3</b> <u>The ISO must submit UFLS plans to WECC for coordination of UFLS plans</u> among other interconnected transmission	Coordination of UFLS plans are done by WECC or its delegate. The ISO is required

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	Operators and Balancing Authorities.	operators and balancing authorities.	to submit these plans for this purpose.
<b>Measure</b>		<b>MR3</b> <u>Written confirmation from WECC that the ISO submitted UFLS plans.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>		<b>R4</b> <u>The ISO must coordinate UVLS plans among other interconnected transmission operators and balancing authorities external to Alberta.</u>	Identifies the responsibility of the ISO to coordinate UVLS plans.
<b>Measure</b>		<b>MR4</b> <u>Written confirmation from interconnected transmission operators and balancing authorities external to Alberta indicating that the ISO coordinated UVLS plans.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R4.</b> A Transmission Operator or Balancing Authority shall consider one or more of these factors in designing an automatic load shedding scheme: frequency, rate of frequency decay, voltage level, rate of voltage decay, or power flow levels.	<b>R5</b> <u>The ISO must</u> consider one or more of these factors in designing an automatic load shedding scheme: frequency, rate of frequency decay, voltage level, rate of voltage decay, or power flow levels.	Identify the responsible entity in Alberta.
<b>Measure</b>		<b>MR5</b> <u>One or more of these factors were considered in the design of the load shed scheme.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R5.</b> A Transmission Operator or Balancing Authority shall implement load shedding in steps established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.	<b>R6</b> <u>The ISO must implement automatic load shedding in MW blocks</u> established to minimize the risk of further uncontrolled separation, loss of generation, or system shutdown.	Add clarity that this requirement applies to automatic load shedding and is implemented in the shedding of MW blocks.

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Measure		<u>MR6 One or more MW blocks exist in load shed plans or schemes.</u>	Identify the appropriate measure for the requirement.
Requirement	<b>R6.</b> After a Transmission Operator or Balancing Authority Area separates from the Interconnection, if there is insufficient generating capacity to restore system frequency following automatic underfrequency load shedding, the Transmission Operator or Balancing Authority shall shed additional load.	<u>R7 After the AIES</u> separates from the Interconnection, if there is insufficient generating capacity to restore frequency following automatic under frequency load shedding, <u>the ISO must issue directives to shed additional load.</u>	Identify the responsible entity in Alberta. Change the passive term "shall" to "must".  Identify the issuing of directives as the method the ISO uses to shed load.
Measure		<u>MR7 Voice recordings and logs exist to confirm the ISO issued directives to shed additional load.</u>	Identify the appropriate measure for the requirement.
Requirement	<b>R7.</b> The Transmission Operator and Balancing Authority shall coordinate automatic load shedding throughout their areas with underfrequency isolation of generating units, tripping of shunt capacitors, and other automatic actions that will occur under abnormal frequency, voltage, or power flow conditions.	<u>R8 The ISO must</u> coordinate automatic load shedding throughout <u>Alberta</u> with under frequency isolation of generating units, tripping of shunt capacitors, and other automatic actions that will occur under abnormal frequency, voltage, or power flow conditions.	Identified the responsible entity in Alberta.  Changed passive term "shall" to "must".
Measure		<u>MR8 ISO rules, interconnection standards or studies exist to show coordination with automatic actions.</u>	Identify the appropriate measure for the requirement.
Requirement	<b>R8.</b> Each Transmission Operator or Balancing Authority shall have plans for operator controlled	<u>R9 The ISO must have procedures for directing</u> operator controlled manual load	Identified the responsible entity in Alberta.

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	manual load shedding to respond to real-time emergencies. The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	shedding to respond to real-time emergencies.	NERC requirement R8 split into 3 parts to reflect the responsibilities for achieving this action in Alberta.  Specific reference to procedures replaced plans.  Changed passive term "shall" to "must".
<b>Measure</b>	<b>M2.</b> Each Transmission Operator and Balancing Authority shall have and provide upon request its manual load shedding plans that will be used to confirm that it meets Requirement 8. (Part 1)	<u>MR9 Procedures exist for directing operator controlled manual load shedding.</u>	Identify the appropriate measure for the requirement.
<b>Requirement</b>	<b>R8.</b> The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	<u>R10 The ISO must be capable of directing manual load shedding in a time frame adequate for responding to the emergency.</u>	Identified the responsible entity in Alberta.  NERC requirement R8 split into 3 parts to reflect the responsibilities for achieving this action in Alberta.  Changed passive term "shall" to "must".
<b>Measure</b>		<u>MR10 Electronic logs, and/or voice recordings exist to confirm the ISO directed manual load shedding. Manual load</u>	Identify the appropriate measure for the requirement.

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		<u>shedding is performed in a time frame adequate to respond to the emergency as defined in operating procedures or equipment ratings.</u>	
<b>Requirement</b>	<b>R8.</b> The Transmission Operator or Balancing Authority shall be capable of implementing the load shedding in a timeframe adequate for responding to the emergency.	<b>R11 Demand customers and WSPs must</b> be capable of implementing <u>manual</u> load shedding in a time frame adequate for responding to the emergency.	Identified the responsible entity in Alberta.  NERC requirement R8 split into 3 parts to reflect the responsibilities for achieving this action in Alberta.  Changed passive term “shall” to “must”.
<b>Measure</b>		<b>MR11 Electronic logs, metering or electronic data exists to confirm the manual load shedding. Manual load shedding is performed in a time frame adequate to respond to the emergency as defined in operating procedures or equipment ratings.</b>	Identify the appropriate measure for the requirement.
<b>Procedures</b>			
<b>Compliance</b>	<b>1. Compliance Monitoring Process</b> <b>1.1. Compliance Monitoring Responsibility</b> Regional Reliability Organizations shall be responsible for compliance monitoring. <b>1.2. Compliance Monitoring and Reset Time Frame</b> One or more of the following methods will be used		There is no compliance section currently proposed in the Alberta Reliability Standards.  A compliance program will be developed at a later date for

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	<p>to assess compliance:</p> <ul style="list-style-type: none"> <li>- Self-certification (Conducted annually with submission according to schedule.)</li> <li>- Spot Check Audits (Conducted anytime with up to 30 days notice given to prepare.)</li> <li>- Periodic Audit (Conducted once every three years according to schedule.)</li> <li>- Triggered Investigations (Notification of an investigation must be made within 60 days of an event or complaint of noncompliance. The entity will have up to 30 days to prepare for the investigation. An entity may request an extension of the preparation period and the extension will be considered by the Compliance Monitor on a case-by-case basis.) The Performance-Reset Period shall be 12 months from the last finding of noncompliance.</li> </ul> <p><b>1.3. Additional Reporting Requirement</b> No additional reporting required.</p> <p><b>1.4. Data Retention</b> Each Balancing Authority and Transmission Operator shall have its current, inforce load shedding plans. If an entity is found non-compliant the entity shall keep information related to the noncompliance until found compliant or for two years plus the current year, whichever is longer. Evidence used as part of a triggered investigation shall be retained by the entity being investigated</p>		<p>Alberta Reliability Standards that recognizes the compliance monitoring and enforcement structure in Alberta.</p> <p>This approach is deemed consistent with the existing ISO Rules.</p>

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	for one year from the date that the investigation is closed, as determined by the Compliance Monitor, The Compliance Monitor shall keep the last periodic audit report and all requested and submitted subsequent compliance records. <b>1.5. Additional Compliance Information</b> None. <b>2. Levels of Non-Compliance:</b> <b>2.1. Level 1:</b> Not applicable. <b>2.2. Level 2:</b> Not applicable. <b>2.3. Level 3:</b> Not Applicable. <b>2.4. Level 4:</b> There shall be a separate Level 4 non-compliance, for every one of the following requirements that is in violation: <b>2.4.1</b> Does not have an automatic load shedding plan as specified in R2. <b>2.4.2</b> Does not have manual load shedding plans as specified in R8.		
Regional Differences	None identified.	None identified.	Not applicable in Alberta

**Proposed Terms for the ARS Glossary:**

- “*interconnected transmission operator*” means the entity outside of Alberta responsible for the reliability of its “local” transmission system, and that operates or directs the operations of the transmission facilities.
- “*system*” means a combination of generation, transmission, and distribution components.

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**Existing Defined Terms Used in this Standard:**

(As included in the ISO Rules Definitions or Alberta Reliability Standards Glossary)

- *Alberta Interconnected Electric System or AIES*
- *balancing authority*
- *cascading*
- *demand customers*
- *Independent System Operator or ISO*
- *Interconnection*
- *load*
- *market participant*
- *reliability standard*
- *transmission facility owner or TFO*
- *transmission operator*
- *underfrequency*
- *underfrequency load shedding or UFLS*
- *under voltage load shed or UVLS*
- *Western Electricity Coordinating Council or WECC*
- *wire services provider or WSP*

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