

| ARC Operations Work Group Assessment and Conversion of NERC PRC-022-1 to Alberta PRC-022-AB-1 Under-Voltage Load Shedding Program Performance | | | |
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| Section | NERC PRC-022-1 | Alberta PRC-022-AB-1 | Reason for Difference |
| Purpose | Ensure that Under Voltage Load Shedding (UVLS) programs perform as intended to mitigate the risk of voltage collapse or voltage instability in the Bulk Electric System (BES). | <u>The purpose of this reliability standard is to ensure that UVLS programs perform as intended to mitigate the risk of voltage collapse or voltage instability in the AIES.</u> | |
| Applicability | 4.1. Transmission Operator that operates a UVLS program. 4.2. Distribution Provider that operates a UVLS program. 4.3. Load-Serving Entity that operates a UVLS program. | <u>ISO</u> | |
| Effective Date | May 1, 2006 | <u>Ten calendar days after the date of approval by the Commission.</u> | |
| Definitions | | Italicized terms used in this reliability standard have the same meanings as set out in the Alberta Reliability Standards Glossary of Terms and Part 1 of the ISO Rules. ¹ | Added definitions section to the Alberta reliability standard. |
| Requirement | R1. Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program to mitigate the risk of voltage collapse or voltage instability in the BES shall analyze and document all UVLS operations and Misoperations. The analysis shall include: | R1. <u>The ISO must</u> analyze and document UVLS operations and <u>misoperations in accordance with OPP 1304.</u> | Identified the applicable entity in Alberta. Changed passive term “shall” to “must”. Added that reporting is to be done in accordance with existing |

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¹ Defined terms are not italicized in this document, but will appear in the Alberta Reliability Standards document.

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| Measure | | <u>MR1. Event reports exist for UVLS events that require a report in accordance with OPP 1304.</u> | operating policy and procedures. |
| Requirement | <p>R1.1. A description of the event including initiating conditions.</p> <p>R1.2. A review of the UVLS set points and tripping times.</p> <p>R1.3. A simulation of the event, if deemed appropriate by the Regional Reliability Organization. For most events, analysis of sequence of events may be sufficient and dynamic simulations may not be needed.</p> <p>R1.4. A summary of the findings.</p> <p>R1.5. For any Misoperation, a Corrective Action Plan to avoid future Misoperations of a similar nature.</p> | <p><u>R2. The ISO's analysis must include, but is not limited to:</u></p> <ul style="list-style-type: none"> A description of the event including initiating conditions. A review of the UVLS set points and tripping times. An analysis of the sequence of events. A summary of the findings. For any misoperation, a corrective action plan to avoid future misoperations of a similar nature. <p><u>R3. The ISO must simulate the UVLS event, within the timeframe specified and agreed to by the ISO, if WECC makes a written request for a simulation.</u></p> | <p>Omitted “dynamic simulations may not be needed” as stated in NERC R1.3 as it is not a requirement.</p> <p>Included the analysis of the sequence of events as a requirement.</p> <p>Identified the applicable entity in Alberta.</p> |

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| Measure | M1. Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall have documentation of its analysis of UVLS operations and Misoperations in accordance with Requirement 1.1 through 1.5. | MR2. Documentation of the analysis includes the items listed in R2. MR3. Results of the simulation exists. | |
| Requirement | R2. Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall provide documentation of its analysis of UVLS program performance to its Regional Reliability Organization within 90 calendar days of a request. | R4. The ISO must provide documentation of its analysis of a UVLS program performance to the WECC within 90 calendar days of a request from WECC. | Identified the applicable entity in Alberta. Changed passive term “shall” to “must”. |
| Measure | M2. Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS program shall have evidence that it provided documentation of its analysis of UVLS program performance within 90 calendar days of a request by the Regional Reliability Organization. | MR4. Written confirmation from the WECC that documentation was received within 90 calendar days. | |
| Procedures | | | |
| Compliance | 1. Compliance Monitoring Process 1.1. Compliance Monitoring Responsibility Regional Reliability Organization. 1.2. Compliance Monitoring Period and Reset Time Frame One calendar year. 1.3. Data Retention Each Transmission Operator, Load-Serving Entity, and Distribution Provider that operates a UVLS | | There is no compliance section currently proposed in the Alberta Reliability Standards. A compliance program will be developed at a later date for Alberta Reliability Standards that recognizes the compliance monitoring and enforcement |

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| | <p>program shall retain documentation of its analyses of UVLS operations and Misoperations for two years. The Compliance Monitor shall retain any audit data for three years.</p> <p>1.4. Additional Compliance Information Transmission Operator, Load-Serving Entity, and Distribution Provider shall demonstrate compliance through self-certification or audit (periodic, as part of targeted monitoring or initiated by complaint or event), as determined by the Compliance Monitor.</p> <p>Levels of Non-Compliance</p> <p>2.1. Level 1: Not applicable.</p> <p>2.2. Level 2: Documentation of the analysis of UVLS performance was provided but did not include one of the five requirements in R1.</p> <p>2.3. Level 3: Documentation of the analysis of UVLS performance was provided but did not include two or more of the five requirements in R1.</p> <p>2.4. Level 4: Documentation of the analysis of UVLS performance was not provided.</p> | | <p>structure in Alberta.</p> <p>This approach is deemed consistent with the existing ISO Rules.</p> |



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| Regional Differences | None identified. | None identified. | Not applicable in Alberta |

Proposed Terms for the Alberta Reliability Standard Glossary:

- "misoperation" means any one or more of the following:
 - failure of a protection system element to operate within the specified time when a fault or abnormal condition occurs within a zone of protection;
 - operation for a fault not within a zone of protection (other than operation as backup protection for a fault in an adjacent zone that is not cleared within a specified time for the protection for that zone).
 - unintentional protection system operation when no fault or other abnormal condition has occurred unrelated to on-site maintenance and testing activity.

- "protection system" means protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuitry

Existing Defined Terms Used in this Standard:

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

- Commission
- ISO
- under voltage load shed (UVLS)
- WECC
- AIES
- reliability standard
- day