

Alberta reliability standard	Stakeholder Comments and/or Alternative Proposal	AESO Replies
<p><b>New/Amended</b></p> <p>1. Are there any requirements contained in the proposed new VAR-002-AB-4.1 that are not clearly articulated? If yes, please indicate the specific section of the proposed new VAR-002-AB-4.1, describe the concern and suggest alternative language.</p>	<p><b><u>Cancarb Limited (“Cancarb”)</u></b></p> <p>1. With respect to R3, a power system stabilizer automatically shuts off when the generating unit output falls below a safe level for the PSS operation, and likewise would be considered normal operation for the PSS. This may happen frequently on generating units operating at part-load operation, even when they’re not in testing, start-up, shut-down or offline mode. The PSS then turns back on automatically when the generating unit output rises above the PSS minimum load setting.</p> <p>Recommend adding R3.3 to include a reporting exemption specifically for PSS switching off at normal low-load operation.</p>	<p>1. The AESO is of the view that the power system stabilizer switching (cut in and cut out from the service depending upon the power generated from the generator) is not required to be reported. This is an automatic action designed for the power system stabilizer operations. The AESO has reviewed the wording in requirement R3 and agrees with Cancarb that clarity is needed and has included an exception to requirement R3.3 that focuses on when the generating unit output falls below a safe level for the power system stabilizer operation.</p>
	<p><b><u>[Capital Power Corporation] (“Capital Power”)</u></b></p> <p>2. Capital Power is generally supportive of the adoption of the proposed revisions to the VAR-002-AB standard for the reasons below.</p> <p>a. The removal of “intention to operate” without an AVR in service in R1 is consistent with the VAR-002-WECC-AB-1 R1 which establishes a 98% threshold, including unintended AVR outages as one of the exemption criteria.</p>	<p>2. The AESO acknowledges Capital Power’s comment.</p>

	<p>b. The removal of “voice notification” and reference of R3 in R1 offer flexibility to a generator operator to remediate or notify the ISO within 30 minutes of an AVR status or control mode change by a phone call or by SCADA data per the AESO Information Document ID# 2019-046.</p> <p>c. With some minor exceptions, the proposed new VAR-002-AB-4.1 standard is consistent with the NERC VAR-002-4.1.</p> <p>3. Capital Power requests clarity on VAR-002-AB-4.1 R1 (a) and (b) and the use of the terms ‘start-up’ and ‘shutdown’. With reference to aggregated generating units, is there a minimum generation under which the AESO defines the unit as being in the ‘start-up’ or ‘shutdown’ mode?</p>	<p>3. The AESO is of the view that the minimum generation level during start-up or shutdown mode for aggregated generating units as referred to in requirement R1 depends on a number of factors including; the type of generating resource, automatic voltage regulator, and voltage regulating system. The operator of an aggregated generating facility is responsible for determining the minimum stable load level of an aggregated generating facility for start-up and shutdown.</p> <p>As it relates to the terms start-up and shutdown, the AESO aligns with the NERC’s guidance as provided in VAR-002-4.1 — <i>Generator Operation for Maintaining Network Voltage Schedules</i>. The NERC interprets start-up and shutdown as follows:</p> <p>“Start-up is deemed to have ended when the generator is ramped up to its minimum continuously sustainable load and the generator is prepared for continuous operation.”</p>
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		<p>“Shutdown is deemed to begin when the generator is ramped down to its minimum continuously sustainable load and the generator is prepared to go offline.”</p>
	<p><b><u>ENMAX Energy Corporation (“EEC”)</u></b></p> <p>4. R1 (b). ENMAX supports this change, as it allows for unplanned or forced outages to occur, based on the notifications required under R3</p> <p>R1 states: The operator of a generating unit and the operator of an aggregated generating facility must, while a generating unit or aggregated generating facility is electrically connected to the transmission system, operate the generating unit or aggregated generating facility with its automatic voltage regulator or voltage regulating system in service and in automatic voltage control mode, or in a different control mode as instructed by the ISO unless;</p> <ul style="list-style-type: none"> <li>• Why is electrically connected to the transmission system required? If a unit is not operating (no MW’s being generated) but still electrically connected, is there a need to validate whether the Automatic Voltage Regulator (AVR) or Voltage Regulating System (VRS) remains in-service and in voltage control mode?</li> </ul> <p>EEC proposes the following wording:</p> <ul style="list-style-type: none"> <li>• The operator of a generating unit and the operator of an aggregated generating facility must operate the generating unit or aggregated generating facility with its automatic voltage regulator or voltage</li> </ul>	<p>4. Electrically connected to the transmission system is required because a generating unit or aggregated generating facility that is electrically connected to the transmission system can have an impact on voltage regardless of the output level of the generating resource. Automatic control of voltage is necessary in order to maintain the reliable operation of the interconnected electric system.</p>

	<p>regulating system in service and in automatic voltage control mode, or in a different control mode as instructed by the ISO unless;</p> <p>5. R1 states that the facilities must operate the generating unit or aggregated generating facility with its automatic voltage control regulator or voltage regulating system in service and in automatic voltage control mode, unless:</p> <p>R1(b) states that unless the operator has notified the ISO in accordance with R3 that the generating unit or aggregated generating facility is not being operated in automatic voltage control mode...".</p> <p>EEC would like to confirm that R1(b) includes situations where the automatic voltage regulator or voltage regulating system is not "in-service".</p> <p>R1 includes in-service and in automatic voltage control mode, but R1(b) only includes automatic voltage control mode (it does not include in-service).</p> <p>For example, if the AVR or VRS encounters an unplanned outage, where it is not in-service, is this included in R1(b) (assuming the notification to the ISO was completed as per R3)?</p> <p>6. R1(b) states "Such reasons may include a forced or unplanned change in control mode."</p> <p>Does change in control mode, include change from in-service to out of service?</p>	<p>5. If an automatic voltage regulator or voltage regulating system is operating in the control mode as required in requirement R1 and the automatic voltage regulator or voltage regulating system encounters an unplanned outage where it is no longer in service, then requirement R1(b) would include this scenario. Because a change from in-service to out of service results in a change of control mode and a notification is then required in accordance with requirement R3.</p> <p>6. Yes. Please see the AESO's response #5 and #7.</p>
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	<p>7. Requirement 3: ENMAX supports this change, as it allows for 30-minute notifications that include a status or control mode change.</p> <ul style="list-style-type: none"> <li>• Can the AESO provide clarity on what change in “control mode” means and what a “status change” means.</li> </ul>	<p>7. A change in control mode between any of the following control modes would constitute a change in control mode:</p> <ul style="list-style-type: none"> <li>• automatic voltage control mode;</li> <li>• automatic MVAR control mode; and</li> <li>• automatic power factor control mode.</li> </ul> <p>A status change in an automatic voltage regulator or voltage regulating system is:</p> <ul style="list-style-type: none"> <li>• when an automatic voltage regulator or voltage regulating system changes from one of the automatic control modes listed above to manual operation and vice versa; or</li> <li>• a change from in service to out of service.</li> </ul>
	<p><b><u>Heartland Generation Ltd</u></b></p> <p>8. R1 and R3 For version 3 of this standard (VAR-002-AB-3), the AESO’s interpretation of R1 and R3 is that, despite not requiring notification of an AVR status change under R3.1 if the AVR status is restored within 30 minutes, the less than 30-minute change in status is still considered to be a violation of R1. This means that any forced or unplanned change in AVR status automatically results in a contravention of R1.</p> <p>The only possible exception to R1 in version 3 that could apply for a forced or unplanned change in AVR status is R1b) which states: “the operator ...provides</p>	<p>8. For clarity, please note that requirement R1(b) requires notification to be made to the AESO whenever an automatic voltage regulator or voltage regulating system is not operating in the control mode required by requirement R1, other than for the exceptions identified. A change in status of an automatic voltage regulator or voltage regulating system will most likely result in the automatic voltage regulator or voltage regulating system to not operate in the control mode required by requirement R1, consequently a notification to the AESO would need to be made in accordance with requirements R1(b) and R3.</p>

	<p>voice notification to the ISO of its intention to operate the generating unit or aggregated generating facility otherwise.”. The AESO however interprets “intention” to mean “planned” and therefore notification of a forced or unplanned AVR status change is not considered as an exception to R1.</p> <p>In this new version 4.1 (VAR-002-AB-4.1), R1 states, that the AVR must be in the proper mode while connected to the grid unless:</p> <p><i>“R1(b) - the operator of a generating unit or operator of an aggregated generating facility has notified the ISO in accordance with requirement R3 that the generating unit or aggregated generating facility is not being operated in automatic voltage control mode or in the control mode that was instructed by the ISO for a reason other than start-up, shutdown, or testing. Such reasons may include a forced or unplanned change in control mode;</i></p> <p>Requirement 3.1 states: <i>If the status or control mode has been restored within 30 minutes of such change, then the operator of a generating unit or operator of an aggregated generating facility is not required to notify the ISO of the status or control mode change.</i></p> <p>Heartland Generation Ltd. requests that the ISO confirms that the changes to R1b) is interpreted as follows:</p> <ol style="list-style-type: none"> <li>1) There is no violation of R1 if the ISO is notified of a change in</li> </ol>	<p>In such a case, the following statements made in the comment from Heartland Generation Ltd would be correct:</p> <ol style="list-style-type: none"> <li>a) There is no violation of R1 if the ISO is notified of a change in automatic voltage regulator status within 30 minutes of a change that lasts longer than 30 minutes.</li> <li>b) Notification to the ISO is not required for a change in automatic voltage regulator status of less than 30 minutes AND there would be no violation of requirement R1.</li> </ol> <p>However, please note that if there is a change in control mode of an automatic voltage regulator/voltage regulating system when there is no change in status of the automatic voltage regulator/voltage regulating system, other than for the exceptions stated in requirement R1, then there would be a violation of requirement R1 if no notification was made to the ISO in accordance with requirement R3.</p> <p>Additionally, requirement R3 specifically addresses notification requirements for a change in status of an automatic voltage regulator and voltage regulating system.</p>
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	<p>automatic voltage regulator status within 30 minutes of a change that lasts longer than 30 minutes.</p> <p>2) Notification to the ISO is not required for a change in automatic voltage regulator status of less than 30 minutes AND there would be no violation of R1.</p> <p>If the above interpretation is correct, Heartland Generation Ltd. has no further comment – please confirm.</p> <p>9. If the ISO’s interpretation differs from the above, Heartland Generation Ltd., requests that the ISO provides clear statements as to the intent of the changes to exception R1b) and whether or not there is a violation of R1 if:</p> <p>1) The ISO is notified within 30 minutes of change of AVR status that lasts longer than 30 minutes.</p> <p>2) AVR status is restored within 30 minutes with no notification.</p>	<p>9. Please see the AESO’s reply #8.</p>
<p>2. Please provide any additional comments regarding the proposed new VAR-002-AB-4.1. If yes, please specify.</p>	<p><b><u>Cancarb Limited (“Cancarb”)</u></b> N/A</p>	<p>N/A</p>
	<p><b><u>Capital Power Corporation (“CPC”)</u></b></p> <p>10. The proposed new VAR-002-AB-4.1 R3 states:</p>	<p>10. The AESO has reviewed the wording in requirement R3 and agrees with CPC’s recommendation to delete “and” and replace it with an “or”. This revision provides clarity</p>

	<p>“Each operator of a generating unit and operator of an aggregated generating facility must notify the ISO within 30 minutes after a status or control mode change of the automatic voltage regulator, voltage regulating system or alternative voltage controlling device and power system stabilizer, as applicable, on any generating unit or aggregated generating facility.”</p> <p>The use of the term “and” in R3 suggests that a notification to the ISO is only required when both alternative voltage controlling device and power system stabilizer change their status or control mode. In contrast, the NERC VAR-002-4.1 R3 requires notification of “a status change on the automatic voltage regulator, power system stabilizer, or alternative voltage controlling device”. Capital Power suggests revising the current language in R3 unless this interpretation aligns with AESO’s intention.</p> <p>11. According to the NERC, generating units connected to the transmission system below 100kV are not part of the Bulk Electric System (BES) and are, therefore, not applicable to NERC Reliability Standards. Based on NERC’s <a href="#">Rules of Procedure<sup>1</sup></a>, including entities that are not part of BES within the scope of the NERC Reliability Standards is disproportionate to their impact and risk to the reliable operation of the interconnected BES.</p>	<p>that what is required is notification of “a status or control mode change on the automatic voltage regulator, voltage regulating system, alternative voltage controlling device or power system stabilizer.</p> <p>11. The AESO does not agree with CPC’s proposed recommendation to align with bulk electric system as it pertains to the applicability of VAR-002-AB-4.1. The AESO’s mandate is to maintain the reliability of the interconnected electric system and not just the bulk electric system. The combined effect of generating units and aggregated generating facilities that are below the bulk electric system level also help to support voltage levels during</p>
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	<p>The AESO defines the BES using the same 100kV threshold as NERC, yet unlike NERC the AESO does not use its own BES definition as the applicability criteria for Alberta Reliability Standards (ARS). The AESO continues to apply many ARS<sup>2</sup>, including VAR-002, based on criteria inconsistent with their definition of the Bulk Electric System (i.e. a much lower transmission system connection (&gt;25 kV) and / or lower generating capability (i.e. VAR-002 = 5MW). This approach to applicability is inconsistent with NERC and may not correlate to the risk posed by these non-BES assets.</p> <p>Capital Power recommends that the applicability of ARSs should be unified and based on risk, as defined by their connection to the BES. In line with this, Capital Power recommends that VAR-002-AB-4.1 should not apply to those generating units that do not fit into the definition of the BES.</p>	<p>disturbances and, therefore, there is a need for their inclusion.</p>
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<sup>1</sup> See Appendix 5B of the [NERC Rules of Procedure](#)

<sup>2</sup> ARSs that apply to generating entities connected to the Transmission System include PRC-004, PRC-005, PRC-019, VAR-002 and VAR-002-WECC