Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
Purpose	To maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time. .	The purpose of this reliability standard is to maintain Interconnection steady-state frequency within defined limits by balancing real power demand and supply in real-time.	Minor change to writing style.
Applicability	Balancing Authorities	This reliability standard applies to the entities listed below: *Independent system Operator (ISO)*	Identified the responsible entities in Alberta.
Effective Date	October 23, 2007		Document format change - this section is deleted and the effective date will be displayed at the footer and in the Revision History section at the end of the document. Effective date will be identified when filed with the Commission
Definitions		Italicized terms used in this *reliability standard* have the meanings as set out in Part 1 of the *ISO Rules.*	Document format change - added definitions section to the Alberta reliability standard.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
Requirements	R1 Each Balancing Authority shall operate such that, on a rolling 12-month basis, the average of the clock-minute averages of the Balancing Authority's Area Control Error (ACE) divided by 10B (B is the clock-minute average of the Balancing Authority Area's Frequency Bias) times the corresponding clock-minute averages of the Interconnection's Frequency Error is less than a specific limit. This limit ε_{12} is a constant derived from a targeted frequency bound (separately calculated for each Interconnection) that is reviewed and set as necessary by the NERC Operating Committee. $AVG_{period}\left[\left(\frac{ACE_i}{-10B_i}\right)_1 * \underline{\Delta F_1}\right] \le \epsilon_1^2 \; or \; \frac{AVG_{Period}\left[\left(\frac{ACE_i}{-10B_i}\right)_1 * \underline{\Delta F_1}\right]}{\epsilon_1^2} \le 1$ The equation for ACE is: $ACE = (NI_A - NI_S) - 10B\,(F_A - F_S) - I_{ME}$ where: • NI_A is the algebraic sum of actual flows	R1 The ISO must operate such that, on a rolling 12-month basis, the average of the clock-minute averages of the AIES's Control Error (ACE) divided by 10B (B is the clock-minute average of the AIES's Frequency Bias) times the corresponding clock-minute averages of the Interconnection's Frequency Error is less than a specific limit. This limit ε_{12} is a constant derived from a targeted frequency bound (separately calculated for each Interconnection) that is reviewed and set as necessary by the NERC Operating Committee. $AVG_{period}\left[\left(\frac{ACE_i}{-10B_i}\right)_1 * \underline{\Delta F_1}\right] \le \epsilon_1^2 \; or \; \frac{AVG_{Period}\left[\left(\frac{ACE_i}{-10B_i}\right)_1 * \underline{\Delta F_1}\right]}{\epsilon_1^2} \le 1$ The equation for ACE is: $ACE = (NI_A - NI_S) - 10B\,(F_A - F_S) - I_{ME}$ where: • NI_A is the algebraic sum of actual flows on all tie lines. • NI_S is the algebraic sum of scheduled	Identified the responsible entity in Alberta and identified the system in Alberta. Replaced the passive term "shall" with "must".

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	on all tie lines. • NI_S is the algebraic sum of scheduled flows on all tie lines. • B is the Frequency Bias Setting (MW/0.1 Hz) for the Balancing Authority. The constant factor 10 converts the frequency setting to MW/Hz. • F_A is the actual frequency. • F_S is the scheduled frequency. F_S is normally 60 Hz but may be offset to effect manual time error corrections. • I_{ME} is the meter error correction factor typically estimated from the difference between the integrated hourly average of the net tie line flows (NI_A) and the hourly net interchange demand measurement (megawatt-hour). This term should normally be very small or zero. .	flows on all tie lines. • B is the Frequency Bias Setting (MW/0.1 Hz) for the AIES. The constant factor 10 converts the frequency setting to MW/Hz. • F_A is the actual frequency. • F_S is the scheduled frequency. F_S is normally 60 Hz but may be offset to effect manual time error corrections. • I_{ME} is the meter error correction factor typically estimated from the difference between the integrated hourly average of the net tie line flows (NI_A) and the hourly net interchange demand measurement (megawatt-hour). This term should normally be very small or zero.	
		R 1.1 CPS1must be calculated by converting a compliance ratio to a compliance percentage as follows: CPS1 = (2 - CF) * 100% The frequency-related compliance factor, CF, is a ratio of all one-minute compliance parameters accumulated over 12 months divided by the target frequency bound:	Calculation of CPS1 moved from the Measures section to the Requirement section.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		$CF \frac{CF_{12-month}}{(\in_1)^2}$ where: ε_1 is defined in Requirement R1. The rating index $CF_{12\text{-month}}$ is derived from 12 months of data. The basic unit of data comes from one-minute averages of *ACE*, *Frequency Error* and *Frequency Bias Settings*. A clock-minute average is the average of the *AIES*'s valid measured variable (i.e., for *ACE* and for *Frequency Error*) for each sampling cycle during a given clock-minute. $\left(\frac{ACE}{-10B}\right)_{clock\text{-}minute} = \frac{\left(\frac{\sum ACE_{sampling\ cycles\ in\ clock\text{-}minute}}{n_{sampling\ cycles\ in\ clock\text{-}minute}}\right)}{-10B}$ The AIES's clock-minute CF becomes:	

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		$CF_{clock\text{-}minute} = \left[\left(\frac{ACE}{-10B}\right)_{clock\text{-}minute} * \Delta F_{clock\text{-}minute}\right]$ Normally, sixty (60) clock-minute averages of the *AIES*'s *ACE* and of the respective *Interconnection*'s *frequency error* will be used to calculate the respective hourly average compliance parameter. $CF_{clock\text{-}hour} = \frac{\sum CF_{clock\text{-}minute}}{n_{clock\text{-}minute\ samples\ in\ hour}}$ The ISO must be able to recalculate and store each of the respective clock-hour averages (CF clock-hour average-month) as well as the respective number of samples for each of the twenty-four (24) hours (one for each clock-hour, i.e., hour-ending (HE) 0100, HE 0200, ..., HE 2400).	

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		$$CF_{clock\text{-}hour\ average\ month} = \frac{\sum_{day\ in\ month}\left[CF_{clock\text{-}hour}\left(n_{one\text{-}minute}\right)\right]}{\sum_{day\ in\ month}\left[n_{one\text{-}minute\ samples\ in\ clock\text{-}hour}\right]}$$ $$CF_{month} = \frac{\sum_{day\ in\ month}\left[CF_{clock\text{-}hour\ average\ month}\left(n_{one\text{-}minute\ samples\ in\ clock\text{-}hour\ average}\right)\right]}{\sum_{day\ in\ month}\left[n_{one\text{-}minute\ samples\ in\ clock\text{-}hour\ averages}\right]}$$ The 12-month CF becomes: $$CF_{12\text{-}month} = \frac{\sum_{i=1}^{12}\left[\left(CF_{month-i}\right)\left(n_{(one\text{-}minute\ samples\ in\ month)-i}\right)\right]}{\sum_{i=1}^{12}\left[n_{(one\text{-}minute\ samples\ in\ month)-i}\right]}$$ In order to ensure that the average ACE and frequency deviation calculated for any one minute interval is representative of that one-minute interval, it is necessary that at least 50% of both ACE and frequency deviation samples during that one-minute interval be present. Should a sustained interruption in	

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		the recording of *ACE* or *frequency deviation,* due to loss of telemetering or computer unavailability, result in a one-minute interval not containing at least 50% of samples of both *ACE* and *frequency deviation*, that one-minute interval shall be excluded from the calculation of CPS1.	
	R2 Each Balancing Authority shall operate such that its average ACE for at least 90% of clockten-minute periods (6 non-overlapping periods per hour) during a calendar month is within a specific limit, referred to as L_{10}. . $AVG_{10\ minute}(ACE_i) \le L_{10}$ where: $L_{10}=1.65\varepsilon_{10}\sqrt{(-10Bi)(-10Bs)}$ ε_{10} is a constant derived from the targeted frequency bound. It is the	R2 The ISO must operate such that its average ACE for at least 90% of clockten-minute periods (6 non-overlapping periods per hour) during a calendar month is within a specific limit, referred to as L_{10}. . $AVG_{10\ minute}(ACE_i) \le L_{10}$ where: $L_{10}=1.65\varepsilon_{10}\sqrt{(-10Bi)(-10Bs)}$ ε_{10} is a constant derived from the targeted frequency bound. It is the	Identified the responsible entity in Alberta and identified the system in Alberta. Replaced the passive term “shall” with “must”.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	targeted root-mean-square (RMS) value of ten-minute average Frequency Error based on frequency performance over a given year. The bound, ε_{10}, is the same for every Balancing Authority Area within an Interconnection, and B_s is the sum of the Frequency Bias Settings of the Balancing Authority Areas in the respective Interconnection. For Balancing Authority Areas with variable bias, this is equal to the sum of the minimum Frequency Bias Settings.	targeted root-mean-square (RMS) value of ten-minute average Frequency Error based on frequency performance over a given year. The bound, ε_{10}, is the same for every Balancing Authority Area within yhr WECC, and B_s is the sum of the Frequency Bias Settings of the Balancing Authority Areas in theWECC. For Balancing Authority Areas with variable bias, this is equal to the sum of the minimum Frequency Bias Settings.	
		R2.1 CPS2 relates to a bound on the ten-minute average of ACE. A compliance percentage is calculated as follows: $CPS2 = \left[1 - \frac{Violations_{month}}{(Total\ Periods_{month} - Unavailable\ Periods_{month})}\right] * 100$ The violations per month are a count of the number of periods that ACE clock-ten-minutes exceeded L_{10}. ACE clock-ten-minutes is the sum of valid ACE samples within a clock-tenminute period divided by the number of valid samples. Violation clock-ten-minutes = 0 if	Calculation of CPS2 moved from the Measures section to the Requirement section.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		$\left\| \frac{\sum ACE}{n_{samples\ in\ 10-minutes}} \right\| \le L_{10}$ $= 1\ if$ $\left\| \frac{\sum ACE}{n_{samples\ in\ 10-minutes}} \right\| \le L_{10}$ The *ISO* must report the total number of violations and unavailable periods for the month. L_{10} is defined in Requirement R2. Since CPS2 requires that ACE be averaged over a discrete time period, the same factors that limit total periods per month will limit violations per month. The calculation of total periods per month and violations per month, therefore, must be discussed jointly. A condition may arise which may impact the normal calculation of total periods per month and violations per month. This condition is a sustained interruption in the recording of ACE. In order to ensure that the average ACE calculated for any ten-minute interval is representative of that ten-minute interval, it	

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
		is necessary that at least half the ACE data samples are present for that interval. Should half or more of the ACE data be unavailable due to loss of telemetering or computer unavailability, that ten-minute interval shall be omitted from the calculation of CPS2.	
	R3 Each Balancing Authority providing Overlap Regulation Service shall evaluate RequirementM1 (i.e., Control Performance Standard 1 or CPS1) and Requirement M2 (i.e., Control Performance Standard 2 or CPS2) using the characteristics of the combined ACE and combined Frequency Bias Settings.		R3 is not applicable in Alberta as Overlap Regulation Service is not used.
	R4 Any Balancing Authority receiving Overlap Regulation Service shall not have its control performance evaluated (i.e. from a control performance perspective, the Balancing Authority has shifted all control requirements to the Balancing Authority providing Overlap Regulation Service).		R4 is not applicable in Alberta as Overlap Regulation Service is not used.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
Measures	MR1 Each Balancing Authority shall achieve, as a minimum, Requirement 1 (CPS1) compliance of 100%. CPS1 is calculated by converting a compliance ratio to a compliance percentage as follows: CPS1 = (2 - CF) * 100% The frequency-related compliance factor, CF, is a ratio of all one-minute compliance parameters accumulated over 12 months divided by the target frequency bound: $CF \frac{CF_{12-month}}{(\in_1)^2}$ where: ε_1 is defined in Requirement R1. The rating index $CF_{12\text{-}month}$ is derived from 12 months of data. The basic unit of data comes from one-minute averages of ACE, Frequency Error and Frequency Bias Settings. A clock-minute average is the average of the reporting Balancing Authority's valid measured variable (i.e., for ACE and for Frequency Error) for each sampling cycle during a given clock-minute.	The following *measures* correspond to the requirements identified in Section 4 of this *reliability standard*. For example, MR1 is the measure for R1. MR1 CPS1, as defined and calculated per R1 and R1.1, is at least 100%.	Calculation for CPS1 is moved to R1.1.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	$\left(\frac{ACE}{-10B}\right)_{clock-\min ute} = \frac{\left(\frac{\sum ACE_{sampling\ cycles\ in\ clock-\min ute}}{n_{sampling\ cycles\ in\ clock-\min ute}}\right)}{-10B}$ The Balancing Authority's clock-minute compliance factor (CF) becomes: $CF_{clock-\min ute} = \left[\left(\frac{ACE}{-10B}\right)_{clock-\min ute} * \Delta F_{clock-\min ute}\right]$ Normally, sixty (60) clock-minute averages of the reporting Balancing Authority's ACE and of the respective Interconnection's Frequency Error will be used to compute the respective hourly average compliance parameter. $CF_{clock-hour} = \frac{\sum CF_{clock-\min ute}}{n_{clock-\min ute\ samples\ in\ hour}}$ The reporting Balancing Authority shall be able to recalculate and store each of the respective clock-hour averages (CF clock-hour average-month) as well as the respective number of samples for each of the twenty-four (24) hours (one for each clock-hour, i.e., hour-ending (HE) 0100, HE 0200, ..., HE 2400).		

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	$$CF_{clock-hour\ average-month} = \frac{\sum_{days-in-month}\left[\left(CF_{clock-hour}\right)\left(n_{one-minute}\right)\right]}{\sum_{days-in-month}\left[n_{one-minute\ samples\ in\ clock-hour}\right]}$$ $$CF_{month} = \frac{\sum_{days-in-month}\left[\left(CF_{clock-hour\ average-month}\right)\left(n_{one-minute\ \ samples\ in\ clock-hour\ averages}\right)\right]}{\sum_{days-in-month}\left[n_{one-minute\ samples\ in\ clock-hour\ averages}\right]}$$ The 12-month compliance factor becomes: $$CF_{12-month} = \frac{\sum_{i=1}^{12}\left(CF_{month-i}\right)\left(n_{(one-minute\ samples\ in\ month)-i}\right)\ ]}{\sum_{i=1}^{12}\left[n_{(one-minute\ samples\ in\ month)-i}\right]}$$ In order to ensure that the average ACE and Frequency Deviation calculated for any one minute interval is representative of that one-minute interval, it is necessary that at least 50% of both ACE and Frequency Deviation samples during that one-minute interval be present. Should a sustained interruption in the recording of ACE or Frequency Deviation due to loss of telemetering or computer unavailability result in a one-minute interval not containing at least 50% of samples of both ACE and Frequency		

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	Deviation, that one-minute interval shall be excluded from the calculation of CPS1.		
	MR2 Each Balancing Authority shall achieve, as a minimum, Requirement R2 (CPS2) compliance of 90%. CPS2 relates to a bound on the ten-minute average of ACE. A compliance percentage is calculated as follows: $CPS2 = \left[1 - \frac{Violations_{month}}{(Total\ Periods_{month} - Unavailable\ Periods_{month})}\right] * 100$ The violations per month are a count of the number of periods that ACE clock-ten-minutes exceeded L_{10}. ACE clock-ten-minutes is the sum of valid ACE samples within a clock-tenminute period divided by the number of valid samples. Violation clock-ten-minutes = 0 if $\left\lvert \frac{\sum ACE}{n_{samples\ in\ 10-minutes}} \right\rvert \le L_{10}$ $= 1\ if$ $\left\lvert \frac{\sum ACE}{n_{samples\ in\ 10-minutes}} \right\rvert \le L_{10}$	MR2 CPS2, as defined and calculated per R2and R2,1, is at least 90%.	Calculation for CPS2 is moved to R2.1.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	Each Balancing Authority shall report the total number of violations and unavailable periods for the month. L_{10} is defined in Requirement R2. Since CPS2 requires that ACE be averaged over a discrete time period, the same factors that limit total periods per month will limit violations per month. The calculation of total periods per month and violations per month, therefore, must be discussed jointly. A condition may arise which may impact the normal calculation of total periods per month and violations per month. This condition is a sustained interruption in the recording of ACE. In order to ensure that the average ACE calculated for any ten-minute interval is representative of that ten-minute interval, it is necessary that at least half the ACE data samples are present for that interval. Should half or more of the ACE data be unavailable due to loss of telemetering or computer unavailability, that ten-minute interval shall be omitted from the		

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	calculation of CPS2.		
Compliance	**1. Compliance Monitoring Process** **1.1.** Compliance Monitoring Responsibility Regional Reliability Organization. **1.2. Compliance Monitoring Period and Reset Timeframe** One calendar month. **1.3. Data Retention** The data that supports the calculation of CPS1 and CPS2 (Appendix 1-BAL-001-0) are to be retained in electronic form for at least a one-year period. If the CPS1 and CPS2 data for a Balancing Authority Area are undergoing a review to address a question that has been raised regarding the data, the data are to be saved beyond the normal retention period until the question is formally resolved. Each Balancing Authority shall retain for a rolling 12-month period the values of: one-minute average ACE (ACE_i), one-minute average Frequency Error, and, if using variable bias, one-minute average Frequency Bias. **1.4. Additional Compliance Information** None. **2. Levels of Non-Compliance – CPS1** **2.1. Level 1:** The Balancing Authority Area's value of CPS1 is less than 100% but greater than or equal to 95%.		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 structure in Alberta. This approach is deemed consistent with the existing ISO Rules

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	2.2. Level 2: The Balancing Authority Area's value of CPS1 is less than 95% but greater than or equal to 90%. **2.3. Level 3:** The Balancing Authority Area's value of CPS1 is less than 90% but greater than or equal to 85%. **Standard BAL-001-0a — Real Power Balancing Control Performance** **Approved by Board of Trustees: October 23, 2007** **Page 5 of 7** **2.4. Level 4:** The Balancing Authority Area's value of CPS1 is less than 85%. **3. Levels of Non-Compliance – CPS2** **3.1. Level 1:** The Balancing Authority Area's value of CPS2 is less than 90% but greater than or equal to 85%. **3.2. Level 2:** The Balancing Authority Area's value of CPS2 is less than 85% but greater than or equal to 80%. **3.3. Level 3:** The Balancing Authority Area's value of CPS2 is less than 80% but greater than or equal to 75%. **3.4. Level 4:** The Balancing Authority Area's value of CPS2 is less than 75%.		
Regional Differences	**1.** The ERCOT Control Performance Standard 2 Waiver approved November 21, 2002.		Not applicable to Alberta.

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance

<table>
<tr><th>Section</th><th>NERC BAL-001-0a</th><th>Alberta BAL-001-AB-0a</th><th>Reason for difference</th></tr>
<tr><td>Appendices

Appendix 1 CPS1 and CPS 2 Data</td><td>
<table>
<tr><th>CPS1 DATA</th><th>Description</th><th>Retention Requirements</th></tr>
<tr><td>ε1</td><td>A constant derived from the targeted frequency bound. This number is the same for each Balancing Authority Area in the WECC.</td><td>Retain the value of ε1 used in CPS1 calculation.</td></tr>
<tr><td>ACEi</td><td>The clock-minute average of ACE (raw ACE, unadjusted for WECC Automatic Time Error Control)</td><td>Retain the 1-minute average values of ACE (525,600 values).</td></tr>
<tr><td>Bi</td><td>The Frequency Bias of the AIES.</td><td>Retain the value(s) of Bi used in the CPS1 calculation.</td></tr>
<tr><td>FA</td><td>The actual measured frequency.</td><td>Retain the 1-minute average frequency values (525,600 values).</td></tr>
<tr><td>FS</td><td>Scheduled frequency for the WECC.</td><td>Retain the 1-minute average frequency values (525,600 values).</td></tr>
</table>
<table>
<tr><th>CPS2 DATA</th><th>Description</th><th>Retention Requirements</th></tr>
<tr><td>V</td><td>Number of incidents per hour in which the absolute value of ACE clock-ten-minutes is greater than L10.</td><td>Retain the values of V used in CPS2 calculation.</td></tr>
<tr><td>ε10</td><td>A constant derived from the frequency bound. It is the same for each Balancing Authority Area within the WECC.</td><td>Retain the value of ε10 used in CPS2 calculation.</td></tr>
<tr><td>Bi

Bs</td><td>The Frequency Bias of the AIES.

The sum of Frequency Bias of the Balancing Authority Areas in the WECC.
For systems with variable
bias, this is equal to the sum of the minimum Frequency Bias Setting.</td><td>Retain the value of Bi used in the CPS2 calculation.

Retain the value of Bs used in the CPS2 calculation. Retain the 1-minute minimum bias value (525,600 values).</td></tr>
<tr><td>U</td><td>Number of unavailable ten-minute periods per hour used in calculating CPS2.</td><td>Retain the number of 10-minute unavailable periods used in calculating CPS2 for the reporting period.</td></tr>
</table>
</td><td>
<table>
<tr><th>CPS1 DATA</th><th>Description</th><th>Retention Requirements</th></tr>
<tr><td>ε1</td><td>A constant derived from the targeted frequency bound. This number is the same for each Balancing Authority Area in the WECC.</td><td>Retain the value of ε1 used in CPS1 calculation.</td></tr>
<tr><td>ACEi</td><td>The clock-minute average of ACE (raw ACE, unadjusted for WECC Automatic Time Error Control)</td><td>Retain the 1-minute average values of ACE (525,600 values).</td></tr>
<tr><td>Bi</td><td>The Frequency Bias of the AIES.</td><td>Retain the value(s) of Bi used in the CPS1 calculation.</td></tr>
<tr><td>FA</td><td>The actual measured frequency.</td><td>Retain the 1-minute average frequency values (525,600 values).</td></tr>
<tr><td>FS</td><td>Scheduled frequency for the WECC.</td><td>Retain the 1-minute average frequency values (525,600 values).</td></tr>
</table>
<table>
<tr><th>CPS2 DATA</th><th>Description</th><th>Retention Requirements</th></tr>
<tr><td>V</td><td>Number of incidents per hour in which the absolute value of ACE clock-ten-minutes is greater than L10.</td><td>Retain the values of V used in CPS2 calculation.</td></tr>
<tr><td>ε10</td><td>A constant derived from the frequency bound. It is the same for each Balancing Authority Area within the WECC.</td><td>Retain the value of ε10 used in CPS2 calculation.</td></tr>
<tr><td>Bi

Bs</td><td>The Frequency Bias of the AIES.

The sum of Frequency Bias of the Balancing Authority Areas in the WECC.
For systems with variable
bias, this is equal to the sum of the minimum Frequency Bias Setting.</td><td>Retain the value of Bi used in the CPS2 calculation.

Retain the value of Bs used in the CPS2 calculation. Retain the 1-minute minimum bias value (525,600 values).</td></tr>
<tr><td>U</td><td>Number of unavailable ten-minute periods per hour used in calculating CPS2.</td><td>Retain the number of 10-minute unavailable periods used in calculating CPS2 for the reporting period.</td></tr>
</table>
</td><td>Applied WECC and Alberta terminology.</td></tr>
<tr><td>Appendix 2 Interpretation of Requirement 1</td><td>Request: Does the WECC Automatic Time Error Control Procedure (WATEC) violate Requirement 1 of BAL-001-0?
Interpretation:
Requirement 1 of BAL-001 — Real Power Balancing Control Performance, is the definition of
the area control error (ACE) equation and the limits established for Control Performance Standard 1 (CPS1).
 The WATEC procedural documents ask</td><td></td><td>The clarification provided in this interpretation has been added to R1.1, where the ACE values used in the CPS calculation is based on the raw ACE, unadjusted for WATEC.</td></tr>
</table>

Comparison between NERC BAL-001-0a and Alberta BAL-001-AB-0a Real Power Balancing Control Performance			
Section	NERC BAL-001-0a	Alberta BAL-001-AB-0a	Reason for difference
	Balancing Authorities to maintain raw ACE for CPS reporting and to control via WATEC-adjusted ACE. As long as Balancing Authorities use raw (unadjusted for WATEC) ACE for CPS reporting purposes, the use of WATEC for control is not in violation of BAL-001 Requirement 1.		