

Summary Consideration of Comments:

The Balance Resources and Demand drafting team thanks all balloters who participated in the recent ballot of the set of Balance Resources and Demand Standards:

- BAL-007 — Balance of Resources and Demand
- BAL-008 — Frequency and Area Control Error
- BAL-009 — Actions to Return Frequency to within Frequency Trigger Limits
- BAL-010 — Frequency Bias Settings
- BAL-011 — Frequency Limits

While there were many comments submitted with reasons for voting against the standards, the most common reason included a recommendation that Reliability Standard BAL-002 — Disturbance Control Performance, be retained or be retained at least until thoroughly field tested. The drafting team modified its implementation plan to eliminate retirement of BAL-002. When stakeholders are ready, a SAR can be written to propose retirement of BAL-002 and its elimination can be field tested at that time.

The drafting team made conforming changes to the implementation plan so that it no longer includes the elimination of references to DCS in the following standards:

- BAL-005 — Automatic Generation Control
- EOP-002 — Capacity and Energy Emergencies
- IRO-005 — Reliability Coordination — Current Day Operations

There were also stakeholders who questioned whether a standard could identify NERC as the responsible entity. FERC has indicated that enforceability is limited to standards with requirements assigned to owners, operators and users of the bulk power system. Since NERC is not an owner, operator or user of the bulk power system, the drafting team converted BAL-011 back into a reference document. The drafting team will ask the Standards Committee for approval to post this reference with the proposed standards so that it will be accessible to all stakeholders.

The following comments were submitted by a strong minority of commenters, and the drafting team believes, based on the field test results, that these are incorrect perceptions:

DCS and CPS are Working Just Fine to Protect Reliability

The drafting team disagrees with this suggestion. Evidence from the field test shows that the new Balancing Authority ACE Limits and the Frequency Limits require action in response to **all** frequency excursions, whereas the Disturbance Control Standard only requires action in response to certain disturbances while generation losses less than 80% of the most severe single contingency are not bound to any defined recovery time. Under the proposed BAL-007, the Balancing Authority will have to respond appropriately to any generation loss or other condition where its ACE exceeds its Balancing Authority ACE Limit.

For example, on October 4, 2005 frequency on the Eastern Interconnection dropped below the Frequency Trigger Limit (FTL) for 11 minutes and had a one-minute average minimum of 59.924 Hz. If within that one minute another loss of a 500 megawatt unit occurred, the interconnection frequency would have dipped to the Frequency Abnormal Limit but would have still been 3 contingencies away from a

Frequency Relay Limit. It was clear from analysis of this event and others, that **the BAs under the field test were driven by the field trial's BAAL criteria to take corrective action following frequency excursions. The BAs that were operating under CPS2 were not necessarily driven by the requirements of CPS2 to take any corrective actions.** In addition, at the low frequency experienced during the October 4, 2005 event, **BAAL would have been more restrictive than CPS2** for the Balancing Authorities that were not participating in the field test.

Elimination of DCS Will Also Eliminate the Requirement to Retain Sufficient Reserves

The drafting team disagrees with this suggestion. Under the proposed standards, if a Balancing Authority does not maintain sufficient reserves, that Balancing Authority will not be able to meet the Control Performance Measure and will not be able to operate to keep its area control error within its high and low balancing authority ACE limits.

Implementation of the Proposed Standards will Cause Unscheduled Flows

The drafting team was not directed to address unscheduled flows in the proposed standards. Existing standards allow unscheduled flows. The ACE of a Balancing Authority is unbounded for up to 10% of the ten-minute periods per month under the current CPS2 - enabling operation that is at times detrimental to interconnection frequency, and has the potential to significantly impact transmission flows. In addition, a Balancing Authority with a most severe single contingency of 1300 MW is not held to 15-minute DCS recovery for losses less than 1040 MW (80% of 1300 MW), which again can cause large unscheduled flows on neighboring systems. The drafting team suggests reviewing the following NERC standard requirements and their applicability to your transmission concerns: IRO-001-0_R7, IRO-002-0_R5, IRO-003-0_R1, IRO-004-0_R1, IRO-003-0_R1, IRO-004-0_R1, IRO-005-0_R3, IRO-005-0_R13, PER-004-0_R5, VAR-001-0_R1, TOP-002-0_R8, TOP-002-0_R10, TOP-003-0_R12, TOP-004-0_R1, TOP-004-0_R4, TOP-007-0_R1, TOP-007-0_R4, and TOP-008-0_R2. In discussions with the Operating Reliability Subcommittee and the Reliability Coordinator Working Group, members of the drafting team have suggested that if the current standards are not adequate to address unscheduled flows, that a SAR should be developed to address such concerns. Since the start of the field test in July 2005, **no problems related to unscheduled flows** have been attributed to operations under the field test.

The drafting team did not make any technical changes to the standards, and will ask the Standards Committee for authorization to initiate another ballot with the revised implementation plan.

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process! If you feel there has been an error or omission, you can contact the Vice President and Director of Standards, Gerry Cauley at 609-452-8060 or at gerry.cauley@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Reliability Standards Development Procedure: <http://www.nerc.com/standards/newstandardsprocess.html>.

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

Balloter	Comment
CETR David Lapinski Affirmative	We support a careful and comprehensive review before allowing the DCS standard to terminate.
<p>Response: Many commenters indicated a preference to leave the Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
Duke Energy Doug Hils Affirmative Duke Energy Walter L Yeager Affirmative	Duke Energy supports BAL-007 through BAL-011 and the implementation plan which includes DCS being retired 18 months after the effective date of BAL-007. We agree that the NERC Disturbance Control Standard (DCS) is not needed for support of the interconnection frequency once BAAL is fully implemented; however, we are concerned that the field test did not address the potential reliability implications associated with eliminating DCS with regard to transmission. The DCS currently meets our expectations for minimizing the impact of a large generation loss on neighboring systems. Duke Energy fully supports the position of the NERC Operating Committee that more work be done over the next year or so to determine if there are other reliability benefits associated with DCS compliance, such as limiting unscheduled flows or transmission impacts from large generation losses to 15 minutes, that would warrant an urgent action SAR to retain BAL-002 for other reliability reasons. Duke Energy would support a field trial being developed to gather information on the potential impact the elimination of BAL-002 might have on the transmission system, and believes that a joint working group or task team of the Operating Reliability Subcommittee and the Resources Subcommittee should be assigned the task of evaluating the field trial results and developing a SAR if warranted.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
NPCC Edward Schwerdt Negative	The implementation plan proposes the retirement of the Disturbance Control Standard (DCS) 18 months after approval of these standards. System performance has not been studied without a DCS reporting standard in place. NPCC is concerned that the retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss and the ability to adequately protect the interconnection against unscheduled net flows due to energy mismatches in Balancing Areas.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
New York Power Authority NYPA Ralph Rufrano Negative	NYPA is in support of the NPCC recommendation with regard to this standard.
<p>Response: Please see the response to NPCC's comments.</p>	

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CEPD Rebecca Adrienne Craft Edwin Thompson Negative	The proposed BAAL standards were written to focus on grid frequency only and purposely ignored scheduled and actual tie line flows. They will replace the current CPS2 and DCS (Disturbance Control Standard). The net effect of the frequency control design basis change will allow balancing areas to decrease the amount of spinning reserves required to respond to a first contingency event; ultimately allowing a control area to lean on neighboring systems to supply the necessary reserves when schedules are cut. It is unclear how this standard will increase reliability by decreasing generation reserves. The proposed standards appears to be driven by markets and an effort to minimize reserve capability.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
International Transmission Company Brian F. Thumm Affirmative	ITC believes BAL 002 Disturbance Control Standard should remain in place.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
WEC Anthony Jankowski Affirmative	Support a field test eliminating the DCS compliance requirements, using the folks under the current field test, to start in early 2007.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	
California Energy Commission William Mitchell Chamberlain Negative	Based on comments on this standard, I conclude that additional time for testing the new standard should be provided before making the decision to phase out the Disturbance Control Standard which has been an important feature in maintaining reliability for many years. I appreciate that WECC has been granted an additional 18 months for testing the new standard, but if that testing shows that DCS is still required, there is no guarantee that all the work to change this standard's elimination of DCS or to gain approval of a regional difference for that purpose can be successfully completed before DCS is phased out. In general, I believe that the testing phase should be completed before an important feature of past reliability standards is eliminated.
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>	

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SEC Steven Wallace Negative	The planned elimination of DCS (Disturbance Control Standard), with no explicit replacement, is a significant concern within the FRCC given the current management of the Florida-Southern interface. In addition, the standard imposes a major (more rigorous) new compliance challenge for small BA's upon loss of small units which may be very difficult meet.
Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. The standards do require all BAs to contribute to frequency control. Note that the field test did include at least one small BA.	
TAL Alan Gale Negative	I am concerned with the deletion of DCS 18 months after this is adopted.
Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.	
Wisconsin Electric Power Company Linda Horn Affirmative	Support a field test eliminating the DCS compliance requirements, using the folks under the current field test, to start in early 2007.
Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.	
New Brunswick Power Transmission Corporation Wayne Snowdon Negative	A major concern that has been expressed is that this standard set's implementation plan proposes retirement of the Disturbance Control Standard (DCS) 18 months after approval of these standards. System performance has not been studied without a DCS reporting standard in place. This retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss. In summary, the implementation plan does not adequately protect the interconnection against unscheduled net flows due to energy mismatches in Balancing Areas. Also, this standard could result in more frequent IROL/ SOL violations, possibly or greater magnitudes and durations than experienced historically, effectively compromising reliability. Normally when a Balancing Area experiences a significant change in the balancing of its load and generation, both the system frequency and its power interchange with its adjacent Balancing Areas are affected. However, this standard, by design is only concerned with frequency. Concerns have been made that when the root cause of a transmission problem external to the Balancing Area is caused by its energy mismatch, this standard's BAAL limits may be very wide and provide the operator with erroneous feedback that their energy balancing function is 'OK'.
Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. The drafting team was not directed to address unscheduled flows in the proposed standards. Existing standards allow unscheduled flows. The	

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	<p>ACE of a Balancing Authority is unbounded for up to 10% of the ten-minute periods per month under the current CPS2 - enabling operation that is at times detrimental to interconnection frequency, and has the potential to significantly impact transmission flows. In addition, a Balancing Authority with a most severe single contingency of 1300 MW is not held to 15-minute DCS recovery for losses less than 1040 MW (80% of 1300 MW), which again can cause large unscheduled flows on neighboring systems. The drafting team suggests reviewing the following NERC standard requirements and their applicability to your transmission concerns: IRO-001-0_R7, IRO-002-0_R5, IRO-003-0_R1, IRO-004-0_R1, IRO-003-0_R1, IRO-004-0_R1, IRO-005-0_R3, IRO-005-0_R13, PER-004-0_R5, VAR-001-0_R1, TOP-002-0_R8, TOP-002-0_R10, TOP-003-0_R12, TOP-004-0_R1, TOP-004-0_R4, TOP-007-0_R1, TOP-007-0_R4, and TOP-008-0_R2. In discussions with the Operating Reliability Subcommittee and the Reliability Coordinator Working Group, members of the drafting team have suggested that if the current standards are not adequate to address unscheduled flows, that a SAR should be developed to address such concerns. Since the start of the field test in July 2005, no problems related to unscheduled flows have been attributed to operations under the field test.</p>
<p>AVA Scott James Kinney Negative</p>	<p>The existing CPS and DCS standards are working well to ensure system reliability. Why are we changing them? There has not been enough evaluation performed on the eastern trial test. The west has not performed any trial test yet to evaluate the impacts to reliability and path operating transfer capabilities. Why adopt a standard prior to the west conducting a test? If the results show a degradation to reliability then the responsibility is on the west to show why it should keep the existing standards. I am not convinced that this is the right direction to ensure system reliability, especially when there is nothing wrong with the existing standards. These are crucial standards and more time is needed to understand the impacts of changing them.</p>
	<p>Response: The data collected from the field test shows that Control Performance Standard (CPS) and Disturbance Control Standard (DCS) are not better measures than the proposed requirements. Please review the field test results posted on the Balance Resources and Demand web page.</p>
<p>FRCC Linda Campbell Negative</p>	<p>The FRCC continues to be concerned about the elimination of DCS. Even though the implementation plan has an 18month delay, there is still no assurance that removal of DCS will not cause negative impacts to reliability.</p>
	<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>

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New York State Reliability Council Alan Adamson Negative	<p>The New York State Reliability Council (NYSRC) has a concern that the implementation plan for these proposed standards includes retirement of the Disturbance Control Standard (DCS) 18 months after approval of the standards. System performance has not been studied without a DCS reporting standard in place. The retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss. In other words, the implementation plan does not adequately protect the interconnection against unscheduled net flows due to energy mismatches in Balancing Areas. In addition, this standard could result in more frequent IROL/ SOL violations and possibly greater magnitudes and durations than experienced historically, effectively compromising reliability. Normally, when a Balancing Area experiences a significant change in the balancing of its load and generation, both the system frequency and its power interchange with its adjacent Balancing Areas are affected. However, this standard, by design, is only concerned with frequency. We have a concern that when the root cause of a transmission problem external to the Balancing Area is caused by its energy mismatch, this standard's BAAL limits may be very wide and provide the operator with erroneous feedback that their energy balancing function is 'OK' Concerns have been previously expressed by stakeholders relative to the proposed standard's methodology for determining BAAL limits. To date these concerns have not been fully addressed. In consideration of the above issues, the NYSRC has cast a 'NO' vote.</p>
<p>Response: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p> <p>The drafting team was not directed to address unscheduled flows in the proposed standards. Existing standards allow unscheduled flows. The ACE of a Balancing Authority is unbounded for up to 10% of the ten-minute periods per month under the current CPS2 - enabling operation that is at times detrimental to interconnection frequency, and has the potential to significantly impact transmission flows. In addition, a Balancing Authority with a most severe single contingency of 1300 MW is not held to 15-minute DCS recovery for losses less than 1040 MW (80% of 1300 MW), which again can cause large unscheduled flows on neighboring systems. The drafting team suggests reviewing the following NERC standard requirements and their applicability to your transmission concerns: IRO-001-0_R7, IRO-002-0_R5, IRO-003-0_R1, IRO-004-0_R1, IRO-003-0_R1, IRO-004-0_R1, IRO-005-0_R3, IRO-005-0_R13, PER-004-0_R5, VAR-001-0_R1, TOP-002-0_R8, TOP-002-0_R10, TOP-003-0_R12, TOP-004-0_R1, TOP-004-0_R4, TOP-007-0_R1, TOP-007-0_R4, and TOP-008-0_R2. In discussions with the Operating Reliability Subcommittee and the Reliability Coordinator Working Group, members of the drafting team have suggested that if the current standards are not adequate to address unscheduled flows, that a SAR should be developed to address such concerns. Since the start of the field test in July 2005, no problems related to unscheduled flows have been attributed to operations under the field test.</p>	
BPAT Donald Stephen Watkins Negative BPAP Rebecca Berdahl Brenda S. Anderson Negative	<p>Control Performance Standards 1 and 2 as well as DCS have proven to work well and maintained reliability. We believe the new proposed control limits are wide and balancing authorities will have the ability to 'lean' on the Interconnection, while other balancing authorities may struggle to maintain frequency. This may degrade the reliability of the Interconnection.</p>

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	<p>Response: The data collected from the field test shows that Control Performance Standard (CPS) and Disturbance Control Standard (DCS) are not better measures than the proposed requirements. Please review the field test results posted on the Balance Resources and Demand web page.</p>
<p>BPAP Francis J Halpin Negative</p>	<p>Control Performance Standards (CPS) 1 and 2, as well as the Disturbance Control Standard (DCS), have proven to work well and play a major role in maintaining system reliability. BPA believes the new proposed control limits are too wide and that balancing authorities will have greater ability to 'lean' on the Interconnection. Other balancing authorities may struggle to maintain frequency. This may degrade the reliability of the Interconnection. Given the fact that the current control performance standards are not perfect and have allowed major outages to occur, BPA does not believe that there is any room to reduce the requirements as defined in the current standards. To do so would put the system at greater risk.</p>
	<p>Response: The data collected from the field test shows that Control Performance Standard (CPS) and Disturbance Control Standard (DCS) are not better measures than the proposed requirements. Please review the field test results posted on the Balance Resources and Demand web page. Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>
<p>CHPM Hugh Aron Owen Negative</p>	<p>While I support the effort to improve the control performance and disturbance standards and in general support the approach taken by the standards drafting team, my negative vote is due to the lack of clear improvement to reliability within the WECC interconnection that justifies the cost, short time-frame and risk of unintended negative consequences.</p>
	<p>Response: The data collected from the field test shows that Control Performance Standard (CPS) and Disturbance Control Standard (DCS) are not better measures than the proposed requirements. Please review the field test results posted on the Balance Resources and Demand web page.</p>
<p>CPL Verne Ingersoll II Negative</p>	<p>Our object is to BAL 11. As stated in our comments. NERC is not an owner, user or operator of the bulk electric system and therefore a standard cannot apply to NERC. Further, if NERC thinks it should do the calculation on frequency it should contract with the RROs to perform that task.</p>
	<p>Response: The drafting team believes, based on the language in the FERC NOPR issued October 20, 2006, that any standard with NERC as the responsible entity, will not be considered enforceable and will not be accepted by FERC. BAL-011 was converted to a technical reference. The drafting team has no authority to direct NERC to contract with the RROs to perform the calculation of limits.</p>
<p>CPL James Eckelkamp Sam Waters Negative Progress Energy - Carolinas Wayne Lewis Negative</p>	<p>Progress Energy submitted comments on these standards on July 7, 2006. Progress Energy does not believe that NERC has adequately addressed our previously submitted comments and therefore are left in the position to vote "NO" on these standard changes.</p>

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Balloter	Comment
FPC Lee G Schuster Negative	<p>Response: The drafting team appreciates the time taken to provide us comments during the drafting phase. Some of the Progress Energy comments and drafting team responses from the posting referenced are included below, along with some additional comments in response to this ballot:</p> <p>PEC: <i>Over-speed trip limits at 61 Hertz are unsatisfactory as limits to be maintained for frequency regulation. During minimum load periods, utilities constantly find themselves pulsing generating units down and struggling to keep ACE low due to the impacts caused by near and distant neighbors. FTLhigh should be at a minimum $F_{scheduled} + .03$ Hertz. This would require better planning for minimum loads and tighter regulation during those periods, which would save utilities' wear and tear on units and needless inadvertent that comes along with the Interconnection allowing the frequency to float in the ~.04 Hz to .05 Hz High range which has become routine.</i></p> <p>BRDSDT Response: Your comment doesn't explain the reliability issue associated with ~.04 Hz to .05 Hz operations. The field test did not uncover any short-term operational problems associated with ~.04 Hz to .05 Hz operations. CPM will act, however, to correct this over frequency operation in the long term. We anticipate that as BAs become more responsive to CPM as time operating at high frequency increases. This was demonstrated, in part, during the field test as some BAs controlled their system to support frequency.</p> <p>Additional BRDSDT Comments: As you are aware, the ACE of a Balancing Authority is unbounded for up to 10% of the ten-minute periods per month under the current CPS2, enabling operation that is at times detrimental to the Interconnection frequency. Under BAL-007, the Balancing Authority is responsible for taking action whenever its ACE exceeds the Balancing Authority ACE limit, which becomes more restrictive than the current CPS2 L10 as frequency deviation from 60 Hz becomes greater. In summary, BAL-007 supports the desire indicated in your comments to encourage better generation control during times of high frequency.</p> <p>PEC: <i>We believe that the adoption of Draft Standards BAL-007-1 through BAL-011-1 will not improve the reliability of the bulk power system in general or provide substantial relief from the frequency excursions currently being experienced.</i></p> <p>BRDSDT Response: The field test has shown that the standards have motivated BAs and RCs to take actions to support interconnection frequency above and beyond the actions required by CPS and DCS.</p> <p>Additional BRDSDT Comments: Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. All Balancing Authorities operating under the field test have supported adoption of the proposed standards. Please feel free to review some of the materials posted by the drafting team for these standards, including presentations illustrating the effectiveness of the BAL-007 standard during times of frequency excursions.</p> <p>PEC: <i>Furthermore, values referenced throughout BAL-007-1 through BAL-011-1 such as FALs, FTLs, and FRLs should be non-variables that can be voted on in the Standards Development Process by the entities who will be subject to compliance with the Standards, not variable values that can be changed without industry input.</i></p> <p>BRDSDT Response: These are variables that have defined processes. The parameters used in the process vary, but the process is defined by the standard. The limits vary in real-time based on any number of operating factors that cannot be predicted in advance.</p>

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<p>HQT Michel Armstrong Negative</p>	<p>Hydro Quebec has reliability concerns with the implementation of the proposed standard. The application of BAAL limits to single Balancing Area Interconnections as formulated by a design for multi-area Interconnections is inappropriate. (One minute sampling, three tiers of frequency limits, and a thirty minute tolerance to BAAL limit violations might not be the most reliable approach, and the reporting required to support this standard, that does not fit well, could be burdensome, nonproductive, and not address the true reliability needs.) The implementation plan of dropping DCS after 18 months is flawed, because system performance without it has not been studied. And given that most Balancing Areas use the 80% of First Contingency Loss threshold, it will not apply for lesser resource contingencies while it is still in effect, nor will it apply for mismatches that arise without the occurrence of a contingency. Also note that the prospective retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss</p>
<p>Response: The field test for this set of standards did involve ERCOT, operating as a single balancing area interconnection and ERCOT did vote in favor of this set of standards. Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. The drafting team agrees that there are shortcomings with DCS. Under the proposed standards, if a Balancing Authority does not maintain sufficient reserves, that Balancing Authority will not be able to meet the Control Performance Measure and will not be able to operate to keep its area control error within its high and low balancing authority ACE limits.</p>	
<p>Tucson Electric Power Company Ronald P Belval Negative</p>	<p>TEP shares many of the concerns expressed in the WECC Position Paper on the NERC Balance Resource and Demand Ballot. The following, extracted from the paper, are among the reasons for TEP's negative vote:</p> <ol style="list-style-type: none"> 1. Reservations about the validity of the field test conducted in the Eastern Interconnection as well as the calculations for the Frequency Trigger Limits determined by NERC for the Western Interconnection. How valid is an Interconnection-wide test with only 15 % of the Balancing Authorities participating, even though they represent 50% of the total load? 2. A field test in WECC will only be valid if close to 100% of Balancing Authorities participate. What new studies will WECC need to perform regarding the impact to OTC limits? 3. How will the planned elimination of the Disturbance Control Standard affect the frequency characteristic of the Western Interconnection? 4. What are the WECC reliability risks for relaxing Automatic Generation Controls (AGC)? 5. Control Performance Standards 1 and 2 as well as DCS have proven to work well and maintained reliability. PWG believes the new proposed control limits are wide and balancing authorities will have the ability to 'lean' on the Interconnection, while other balancing authorities may struggle to maintain frequency. This may degrade the reliability of the Interconnection.
<p>Response:</p> <ol style="list-style-type: none"> 1. Some of the largest BAs in the Eastern Interconnection did participate in the field test to review the impact of performance on the Interconnection's frequency. One of the BAs was as small as 2500 MW and at least one small BAs (738 MW) in the eastern interconnection provided data even though they did not participate in all aspects of the field test. The participants came from several different regions within the Eastern Interconnection and from ERCOT. 2. The drafting team did not have the authority to require participation in the field test. The drafting team was forced to use the results it could collect from those entities that did volunteer. Unless the standards development process is changed, entities cannot be forced to 	

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	<p>participate in field tests.</p> <ol style="list-style-type: none"> 3. Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. 4. The standards do not propose any relaxation of AGC. 5. When WECC conducts its field test, it may find that the FTL needs to be adjusted to provide a narrower band around frequency to provide the frequency control needed. WECC has the ability to request an Interconnection-wide Regional Difference to require operation to a narrower band of frequency-related limits.
<p>AESO Anita Lee Negative</p>	<p>The AESO recommends that WECC members be given the opportunity for field testing the standards before approval of these standards.</p>
	<p>Response: WECC was given the opportunity to participate in the field test, but declined due to the constraints of the Reliability Management System (RMS). The implementation plan provides a field test for WECC and once it conducts its field test, WECC may find that the FTLs need to be adjusted to provide a narrower band around frequency to provide the frequency control needed. WECC has the ability to request an Interconnection-wide Regional Difference to require operation to a narrower band of frequency-related limits.</p>
<p>California Independent System Operator David L Hawkins Negative</p>	<p>This proposed standard represents a major change in BA/Control Area operations. The CAISO is not convinced that this new standard will maintain the reliability of the Interconnection. First the limits for allowable frequency deviation appear to be very wide with a lower limit below 59.9 Hz for the Western Interconnection. The margin for safe and reliable operation appears to be too thin, and the risk of loss of firm load is too high. Second, we need to see the results of a field test in the Western Interconnection before we are prepared to support this major change. Third, the elimination of DCS is very questionable.</p>
	<p>Response: The implementation plan provides a field test for WECC and once it conducts its field test, WECC may find that the FTL needs to be adjusted to provide a narrower band around frequency to provide the frequency control needed. WECC has the ability to request an Interconnection-wide Regional Difference to require operation to a narrower band of frequency-related limits.</p> <p>Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change.</p>

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Balloter	Comment
NYISO Gregory Campoli Negative	<p>The NYISO would like to note two concerns with the proposed Standard. The first concerns the removal of balancing requirements around 60 Hz operation. The current CPS2 requirements provided a limit of how large a Balancing Authorities (BA) energy imbalance could be prior to a violation. The proposed BAAL, while reducing those bounds for operation outside of +/- .05 Hz, it removes the limits around 60 Hz operation. When BA's are off schedule, the system will have to address unscheduled flows caused by flows that are not tagged and not correctable by the TLR or other standards. In summary, the implementation plan does not adequately protect the interconnection against unscheduled net flows due to energy mismatches in Balancing Areas. This standard could result in more frequent IROL/ SOL violations, possibly or greater magnitudes and durations than experienced historically, effectively compromising reliability. The TLR process will be used more frequently, cutting transactions that are not the cause of the problem. Another concern is that this standard set's implementation plan proposes retirement of the Disturbance Control Standard (DCS) 18 months after approval of these standards. System performance has not been studied without a DCS reporting standard in place. This retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss.</p>
	<p>Response: The drafting team was not directed to address unscheduled flows in the proposed standards. We would like to point out that the conditions noted above also exist today under the current balancing standards. As you are aware, the ACE of a Balancing Authority is unbounded for up to 10% of the ten-minute periods per month under the current CPS2 - enabling operation that is at times detrimental to the Interconnection frequency, and has the potential to significantly impact transmission flows. In addition, a Balancing Authority with a most severe single contingency of 1300 MW is not held to 15-minute DCS recovery for losses less than 1040 MW (80% of 1300 MW), which again can cause large unscheduled flows on neighboring systems. The drafting team suggests reviewing the following NERC standard requirements and their applicability to your transmission concerns: IRO-001-0_R7, IRO-002-0_R5, IRO-003-0_R1, IRO-004-0_R1, IRO-003-0_R1, IRO-004-0_R1, IRO-005-0_R3, IRO-005-0_R13, PER-004-0_R5, VAR-001-0_R1, TOP-002-0_R8, TOP-002-0_R10, TOP-003-0_R12, TOP-004-0_R1, TOP-004-0_R4, TOP-007-0_R1, TOP-007-0_R4, and TOP-008-0_R2. In discussions with the Operating Reliability Subcommittee and the Reliability Coordinator Working Group, members of the drafting team have suggested that if the current standards are not adequate to address unscheduled flows, that a SAR should be developed to address such concerns. Since the start of the field test in July 2005, no problems related to unscheduled flows have been attributed to operations under the field test.</p> <p>Under BAL-007, the Balancing Authority is responsible for taking action whenever its ACE exceeds the Balancing Authority ACE Limit (which becomes more restrictive than the current CPS2 L10 as frequency deviation from 60 Hz becomes greater). It is this characteristic of the proposed BAL-007 standard that will push Balancing Authorities to take corrective action for generation losses less than currently required under DCS today when the operation of the Balancing Authority is outside its BAAL. When one considers the dynamics of the Interconnection, the effect of one or more Balancing Authorities deviating significantly from ACE=0 will be reflected in the corresponding Interconnection frequency - the Balancing Authority ACE Limit in BAL-007 is the only effective standard that provides clear guidance to the Balancing Authority (and its Reliability Coordinator) that its operation is detrimental to the Interconnection frequency and corrective action must be taken (the clock's ticking).</p> <p>Your third sentence indicates that BAAL becomes more restrictive for operation outside of +/- .05 Hz. We would like to clarify that the BAAL is calculated based upon variables including the Frequency Bias of the Balancing Authority, and thus is different for each Balancing Authority as a</p>

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

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	<p>function of the Frequency Bias. When Scheduled Frequency = 60 Hz, the BAAL bound corresponds to a clock-minute CPS1 compliance of approximately -572% for all Balancing Authorities in the Eastern Interconnection. The reference to operation outside of +/- 0.05 Hz should be with respect to the proposed Frequency Trigger Limits where the Reliability Coordinator is required to take certain action under BAL-008. Please note that a BA can have a BAAL violation (exceed BAAL for more than 30 consecutive clock-minutes) without Actual Frequency moving outside the Frequency Trigger Limits. It is when FTL is exceeded that the standard requires the Reliability Coordinator to step in when necessary. Your concern regarding DCS is shared by others in this ballot. The drafting team modified its implementation plan to eliminate retirement of BAL-002. When stakeholders are ready, a SAR can be written to propose retirement of BAL-002.</p>
<p>IMO Don Tench Negative</p>	<p>The IESO commends the Standard Drafting Team for their efforts and time in developing the subject standards. Apart from certain ambiguities, the IESO believes that the Standard BAL-008-1 will put Reliability Coordinators (RC) at a major disadvantage, without legitimate reasons, whenever a FAL is violated. We must therefore submit a NEGATIVE ballot 'No with Comments' in light of our concerns which are noted below. Comments and Discussions: The IESO believes that the main issue here is related to one of the non-compliance levels stated in the standard BAL-008-1.</p> <p>Item 2.1.4 in Section D of BAL-008-1 (Level of Non-Compliance) states that: Level 4: There shall be a level four non-compliance if either of the following conditions exists: 2.1.4.1 There was an FTL Violation, and the Reliability Coordinator did not direct its Balancing Authorities to modify ACE. 2.1.4.2 There was an FAL Violation. This non-compliance level is assessed based on measure M1 developed for Requirement R2, which is assigned a HIGH risk level. The RC may have nothing to do with the occurrence of a FAL violation, yet item 2.1.4.2 would subject an RC to the highest possible sanction whenever a FAL violation event occurs. Suggestions and Clarifications: Additionally, some of the minor points that the IESO would like to touch upon are: Note that Item 2.1.4.2 in Section D, Level of Non-Compliance, has been changed from one of the previous draft versions (Draft 5). Previous wording was 'Frequency Abnormal Limit was exceeded and the Reliability Coordinator did not direct its Balancing Authorities to modify ACE' which would have been a much more reasonable assessment for requirement violation. The latest draft version of the standard still has the original proposed effective dates for all the standards. The IESO would like to remind the Standard Drafting Team to incorporate the revised proposed effective dates into the standard in order to align the effective dates of all the standards with calendar year quarters.</p> <p>In Definition of Terms Used in Standard, for BAL-008, 'Frequency Event' is explained as: Frequency Event: Whenever Interconnection frequency falls below FTL Low or exceeds FTL High for one or more consecutive clock-minutes. The IESO finds this language to be ambiguous. Does this mean that each interconnection frequency sample has to exceed the FTL for a clock-minute, for it to be considered as a 'Frequency Event' or does this mean that the average of all the interconnection frequency samples over a clock-minute should exceed the FTL, in order for it to be considered as a 'Frequency Event' for that particular clock-minute? NERC needs to provide clarity on this. Conclusion: The IESO believes that the non-compliance level (L4) in BAL-008 will put Reliability Coordinators at a major disadvantage and there is need for further work regarding scope, technical details, and clarity. The IESO appreciates the opportunity to table these comments and looks forward to participating further in the standards development process.</p>

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

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	<p>Response: The Reliability Coordinator has authority to direct its Balancing Authorities and Transmission Operators to take whatever actions are needed to preserve reliability. Most commenters, during the development of this set of standards, supported holding the Reliability Coordinator responsible for keeping interconnection frequency within defined boundaries. Regarding a frequency event, the clock-minute is referencing the average of the samples scanned during that minute.</p>
<p>GCPD Greg B. Lange Negative</p>	<p>Opposed to voting for more than one standard on a single ballot. Specifically we are opposed to NERC staff setting any operating limits for individual interconnections. That should be left to the interconnections to determine (BAL-011). The western interconnection already has operating standards for control performance. Although the control performance used in the west is similar to what is described in these standards, the terminology is different and would require the west to reprogram working programs or take deference to the standards. We would prefer to see the deference in the standard. With the start of penalty assessments happen in the near future we find it even more important that each standard, stands on its own merits.</p>
	<p>Response: This set of standards was balloted together because they need to be implemented as a set as they all work together to achieve the intended purpose. The implementation plan provides a field test for WECC and once it conducts its field test, WECC may find that the Frequency Trigger Limits need to be adjusted to provide a narrower band around frequency to provide the frequency control needed. WECC has the ability to request an Interconnection-wide Regional Difference to require operation to a narrower band of frequency-related limits. Note that each Interconnection will have a unique set of values for its frequency-related limits based on the unique characteristics of the interconnection. BAL-011 was converted from a standard to a technical reference because FERC will not accept a standard that assigns NERC as the responsible entity.</p>
<p>GCPD Kevin John Conway Negative</p>	<p>Opposed to voting for more than one standard on a single ballot. It is important to remember that, because of economic sanctions, it is essential that each new or revised standard have the ability to stand on its own merit. We would be doing ourselves a disservice to pass a block of standards because the majority of them seem reasonable. Specifically we are opposed to NERC staff setting any operating limits for individual interconnections. That should be left to the interconnections to determine (BAL-011). The western interconnection already has operating standards for control performance. Although the control performance used in the west is similar to what is described in these standards, the terminology is different and would require the west to reprogram working programs or take deference to the standards. We would prefer to see the deference in the standard.</p>
	<p>Response: This set of standards was balloted together because they need to be implemented as a set as they all work together to achieve the intended purpose. The implementation plan provides a field test for WECC and once it conducts its field test, WECC may find that the Frequency Trigger Limits need to be adjusted to provide a narrower band around frequency to provide the frequency control needed. WECC has the ability to request an Interconnection-wide Regional Difference to require operation to a narrower band of frequency-related limits. Note that each Interconnection will have a unique set of values for its frequency-related limits based on the unique characteristics of the interconnection. BAL-011 was converted from a standard to a technical reference because FERC will not accept a standard that assigns NERC as the responsible entity.</p>
<p>Constellation Energy Control & Dispatch</p>	<p>At this time CECD feels that a No votes is appropriate because of the issues described below:</p>

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<p>Carolyn J. Ingersoll Negative</p>	<p>1. At minimum a delay in the effective date is mandated because:</p> <ul style="list-style-type: none"> a. The lack of uniformity in implementation in both the Eastern and Western Interconnect. <ul style="list-style-type: none"> i. Unless each Interconnect is required to implement these standards simultaneously there is no guarantee that the WECC will have positive field test results, which could lead to long-term variation in performance measurements. ii. There are entities that operate in both Interconnections who without uniform implementation would be required to make unreasonable modifications to accommodate the variation in performance measurements. b. It is evident that there is a lack of confidence in the proposed changes because: <ul style="list-style-type: none"> i. The “overwhelming support” is qualified by a desire to continue to maintain DCS requirements. However, by maintaining DCS the new standards will create an inherent conflict and potentially requiring control center operators, particularly smaller Balancing Authorities, to choose between meeting DCS or the Balance Resource and Demand Standards. ii. It is also clear from the comments of the drafting team in the Implementation Plan that additional time prior to implementation would be valuable by providing: <ul style="list-style-type: none"> 1. “Time to observe full implementation of operation to the new frequency limits over multiple seasons; including the time for the industry to implement any new processes for control and to gain experience with those new processes (some commenter noted that without full participation the field test is not totally conclusive). 2. “Time for appropriate NERC committees to monitor the system interactions and integration with other standards (some commentary noted concern that other standards may not provide the level of support the current Version 0 standard provides) 3. “Time to process a standard to retain DCS if real-time operations indicated DCS is still needed. iii. The Implementation plan indicates that if these standards are approved “[e]ntities must continue to comply with all requirements in approved Version 0 standards until the requirement in the approved Version 0 standard are replaced or retired.” However, there is an indication that if the Reliability Coordinator and Compliance Monitor approved an entity can begin to operate under the Version 1 standard prior to the effective date. CECD views the potential for multiple entities operating under different standards as a

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

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	high risk to reliability in the Eastern Interconnection.
<p>Response:</p> <ol style="list-style-type: none"> 1. Delaying the implementation will not result in a uniform set of limits since each interconnection will have a unique set of values for its frequency-related limits based on the unique characteristics of that interconnection. 2. Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. 3. The Standards Committee has already authorized the entities that are currently participating in the field test to continue to operate under the field test conditions throughout the implementation of the new requirements - note that the incremental implementation was used for the initial implementation of CPS1 and CPS2. With an incremental implementation, the modifications to operations are smaller and any errors will have less impact on reliability and will be easier to detect and correct. 	
<p>Constellation Generation Group Michael Gildea Negative</p>	<p>Our affiliate, CCG Generation and Dispatch has provided some substantive concerns and comments.</p>
	<p>Response: Please see the response to the CCG Generation and Dispatch comments.</p>
<p>New York Power Authority MED Christopher Lawrence de Graffenried Negative</p> <p>ISO-NE Kathleen Goodman Negative</p>	<p>Comments from Mike Potishnak: <u>Introduction</u></p> <p>On behalf of ISO New England and in conjunction with the efforts of the NPCC (CO-1) Control Performance Working Group, the author has been tracking the development of the Balance Resource And Demand Standard from the standard authorization phase, through its theoretical development and comment phase, and through the field trial. After careful review of the proposed Balancing Standard and its implementation plan, ISO New England will be voting against the proposed standard and its implementation plan.</p> <p>Prior documents have extensive technical detail to support this position. This document will summarize the unresolved concerns with the standard and its implementation plan in the next section. The final section describes possible alternatives that could be taken to change ISO New England's position to be supportive.</p> <p><u>Problems With The Balancing Standard And Its Proposed Implementation</u></p> <ol style="list-style-type: none"> 1. Lack Of Coordination With Other Standards <p>When a Balancing Area experiences a significant change in the balancing of its load and generation, both the system frequency and its power interchange with its adjacent Balancing Areas are affected. However, this</p>

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	<p>standard, by design is only concerned with frequency. While other standards address transmission issues to some extent, none of them call for a limit on ACE similar to CPS 2, nor do they specifically call for action to adjust an energy imbalance causing transmission problems in other Balancing Areas. NPCC studies using the Balancing Standard demonstrated that significant unscheduled net flows into or out of the Balancing Area will pass under the radar screen of the BAAL limits. A significant energy mismatch in a Balancing Area that causes undesirable net tie line flows that aggravate transmission constraints in other Balancing Areas will go unchecked by the BAAL limits when the frequency is at typical values. When the root cause of a transmission problem external to the Balancing Area is caused by its energy mismatch, the BAAL limits may be very wide and provide the operator with erroneous feedback that their energy balancing function is "OK". Also, operators of affected external Balancing Areas may be unaware that another Balancing Area's energy mismatch is causing overloads, and may cut schedules under its control which are not the root cause of the problem to try to eliminate the overload, and the problem may still persist.</p> <p>The implementation plan of dropping DCS after 18 months is flawed, because system performance without it has not been studied. And given that most Balancing Areas use the 80% of First Contingency Loss threshold, it will not apply for lesser resource contingencies while it is still in effect, nor will it apply for mismatches that arise without the occurrence of a contingency. Also note that the prospective retirement of the DCS will also remove the current requirement that a Balancing Area maintain sufficient reserve to cover its First Contingency Loss. In summary, the implementation plan does not adequately protect against unscheduled net flows due to energy mismatches in Balancing Areas.</p> <p>Even if the text of transmission related standards would specifically call for a Balancing Area to adjust its ACE when it causes transmission problems outside its Balancing Area, the permissiveness of the BAAL limits could result in more frequent IROL/ SOL violations, possibly or greater magnitudes and durations than experienced historically, effectively compromising reliability.</p> <p>The fledgling Frequency Response Standard (FRS) needs to interact smoothly with the Balancing Standard in areas such as determining how much response will be provided in a timely manner when contingencies occur. Yet this standard is lagging well behind the Balancing Standard in its delivery to the industry, and important parameters have yet to be determined. (Some relevant technical detail is provided in the section addressing the methodology.)</p> <p>2. Concerns With The Methodology For Developing BAAL Limits And Durations For Which Their Violation Is Permissible</p> <p>In reviewing the BAAL methodology, comments offered over time by others (e.g., Jaleeli, Illian, and Blohm), and the Drafting Team's replies to NPCC and other comments, there are several methodological concerns that are unresolved and may affect reliability. They are listed briefly below</p>

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	<p>2.1 The method for determining the frequency abnormal low limit and frequency trigger limit uses a once in ten year criterion for placing them above the low frequency relay setting. This is an intermediate variable, and an estimate of what the actual expected failure rate would be for realistic operating scenarios has not been provided to the industry. The method should allow for that ultimate quantified target of reliability to be known and reviewed, and the method should allow for an entity such as the NERC Operating Committee to review and adjust the target, and subsequent limits over time.</p> <p>2.2 The method only addresses independent generation losses in the development of BAAL limits. Experience has shown that extreme weather events that happen far more frequently than once in ten years can be a significant source of dependency. Also, Jaleeli notes that most frequency events are the result of coincidental generation control practices that are not the result of a large contingency, which substantially challenges the validity of the assumption of independent generation losses as the basis for BAAL limit development. Resultant limits are very sensitive to the assumption of independence, and this issue has not been addressed satisfactorily. The ability of BAAL limits to deliver the intended level of reliability is challenged by this shortcoming.</p> <p>2.3 The method basically uses the average value of an interconnection’s primary frequency response (load response, inertial effects, and generator governor response but not AGC response) in determining frequency limits above the low frequency relay limit. However, this response often does not appear until 10 seconds has elapsed. However, point “C”, which is a post-contingency valley frequency, occurs 3 to 6 seconds after the contingency. Also, under-frequency relays operate in less than 1 second. It is not known what fraction of the primary response will be available in a timely manner. This would introduce a bias of setting frequency limits to be too low for the targeted level of reliability, and jeopardize reliable operations. Also relevant but of lesser importance is that the frequency response of an Interconnection is known to have a statistical distribution of values. Use of the average value may also jeopardize reliability during periods when a lesser value applies. The ability of BAAL limits to deliver the intended level of reliability is seriously challenged by this shortcoming.</p> <p>2.4 The 30 minute period for compliance with BAAL limits was chosen to be consistent with other standards and is not based on a specific calculation of risk. The ability of BAAL limits to deliver the intended level of reliability is challenged by this shortcoming.</p> <p>2.5 Jaleeli notes that BAAL limits are based on the deviation of frequency from 60 Hz, as opposed to the deviation of frequency from the low frequency relay limit, which is to be avoided. The resultant BAAL limits from the two methods are different. The Drafting Team has not provided an explanation for the difference nor the overall impact on reliability (e.g., are the resultant limits more or less conservative) in their reply to this author’s inquiry during the comment phase on this topic, making it difficult to evaluate</p>

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	<p>the reliability impact of this choice.</p> <p>2.6 The reliance on CPS 1, with its yearly view and its absence of time of day monitoring, is insufficient to assure inadequate control performance without CPS 2.</p> <p>2.7 The application of BAAL limits to single Balancing Area Interconnections has been called into question by Hydro Quebec and the NPCC, and a more flexible and reliable alternative has been provided to the Drafting Team. The imposition of BAAL limits as formulated by a design for multi-area Interconnections is inappropriate. (One minute sampling, three tiers of frequency limits, and a thirty minute tolerance to BAAL limit violations might not be the most reliable approach, and the reporting required to support this standard, that does not fit well, could be burdensome, nonproductive, and not address the true reliability needs.)</p> <p>3. Reliability Coordinator Issues The LEVEL 2 compliance criterion in BAL-008-1 assesses a level 2 compliance violation on a Reliability Coordinator whenever a FTL violation occurs, <i>even if it took all the right actions and all of its Balancing Areas are out of phase with frequency</i>. Also, a level 4 compliance violation is unconditionally assessed to a Reliability Coordinator for an frequency abnormal limit violation, <i>even if its Balancing Areas' ACE values were out of phase with the frequency deviation for the duration of the event!</i> This is an arbitrary and inappropriate punishment of the innocent!</p> <p>There is also a concern for the additional workload imposed on Reliability Coordinators to primarily allow Balancing Areas to relax their control.</p> <p><u>Changes That May Gain ISO New England's Support</u></p> <p>Progress would need to be made in each of the following areas.</p> <ol style="list-style-type: none"> 1. As part of the standard, give single Balancing Area Interconnections the flexibility to specify their own frequency-related requirements within a reasonable framework. 2. Resolve the methodological concerns stated above in the development of BAAL limits, and others noted by Jaleeli that were omitted here for brevity. 3. Address the compliance issues noted above for Reliability Coordinators. 4. Take one or more of the following actions to assure that unscheduled net flows are bounded sufficiently, given the limitations noted in the proposed Balancing Standard: keep CPS 2; ratchet CPS 2 up by some value such as 25% per year, and back off the ratcheting process if problems arise; perform a simulation to determine what is the practical limit that should be established for a CPS 2 like criterion; retain the DCS with a 50% reporting threshold.

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

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	<p>Response:</p> <ol style="list-style-type: none"> 1. The scope of this standard was limited to frequency control with the approval of the SAR. The standards were never intended to address transmission limits – transmission limits are addressed in other standards. Many commenters indicated a preference to leave Disturbance Control Performance Standard (BAL-002) in place – and the drafting team modified the implementation plan to reflect this change. 2.1 The proposed standard, BAL-011, does assign NERC the responsibility for developing FTL and for reviewing the limits at least once each year, and updating the limits if needed. Note that the same requirement includes the following: <ul style="list-style-type: none"> NERC may review these limits at any time and may revise the limits based on changes to an Interconnection’s lowest frequency relay settings, actual contingencies or Frequency Response. 2.2 The standard’s methodology does use independent generation losses in the development of FAL. This approach was used because it can effectively fit all interconnections, including single BA interconnections, but does not include all possible risk factors, only those associated with generation. There are, of course, other risk factors as you note, but the SDT did not specifically research dependencies or sensitivity factors which, in the opinion of the SDT, present lower risk to interconnection frequency. This is a subject that should be followed up by the appropriate NERC committee and is an excellent topic for future research. The field test has been effectively utilized in both the eastern interconnection and ERCOT. This is similar to the methodology used in the Frequency Response Reserve standard being developed in WECC. Coincident behavior does need to be studied 2.3 There is a need for a ‘frequency response’ standard to address the immediate response of the interconnection to sudden loss of generation. The need for such a standard was identified with the development of the initial SAR for this set of Balance Resources and Demand standards. At that time, stakeholders indicated they’d support a ‘frequency response’ standard, but only if the drafting team could provide an effective method for measuring frequency response. No method for effectively measuring frequency response was identified, and the SAR was modified to omit development of frequency response requirements, and the Resources Subcommittee was asked to investigate whether a measure could be developed, and if a measure could be developed, then to submit a separate SAR. Thus, developing requirements for frequency response is outside the scope of the SAR assigned to this drafting team. 2.4 The initial methodology proposed by the SDT was to use the 50% probability of the next generation contingency as T_v. This turned out to be much greater than 30 minutes. In addition, it was shown that the time-based risk of violating FTL was directly proportional to the rate of frequency change and not a fixed value. The SDT decided that a variable time limit would not be acceptable and presented the 30 minute T_v to the industry in the first draft of the standards. The question was asked of industry if they preferred a variable T_v or a fixed T_v and the reply was overwhelmingly for a fixed value. The SDT chose 30 minutes to keep it the same as that used in the IROL standard in order to minimize the learning curve for operators as the implemented the BRD standards. 2.5 The methodology for developing BAALs is included in BAL-007. BAALs are set so that each Balancing Authority has real time information on its performance relative to interconnection frequency. BAALs are set based on real-time deviations from 60 Hz. The interconnection-wide limits (FTL, FAL, FRL) monitored by the Reliability Coordinator are set to ensure that underfrequency relays do not operate. The frequency

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	<p>limits monitored by the Reliability Coordinator are set such that they can only be exceeded when BAALs are exceeded.</p> <p>2.6 In the set of proposed standards, CPS1 is retained as CPM, and CPS2 is replaced with the Balancing Authority ACE Limits (BAALs). The field test showed that CPS2 is not as effective as BAALs because under CPS2 entities have a 10 % ‘grace’ period per month during which they can operate outside bounds without regard to interconnection frequency – and CPS2 does not limit corrective actions to those that will actually support frequency. In addition, evidence from the field test shows that the new BAALs, coupled with the Frequency Limits, require action in response to all frequency excursions, whereas the Disturbance Control Standard only requires action in response to disturbances.</p> <p>Note that CPM is not a twelve month standard - it is “rolling” 12 month average that is examined each month and compliance actions taken as required. In addition the Resources Subcommittee examines the CPM performance for each Balancing Authority and the frequency performance of each of the interconnections on a quarterly schedule and takes action if performance trends indicate that problems are developing. CPM can actually be utilized as a short term (minute, hourly or daily) measure, but there are other standards that are specifically designed to cover short term performance (BAAL, FTL, etc.)</p> <p>2.7 ERCOT has been participating in the field test as a single BA interconnection without problems attributed to the proposed standards. Because ERCOT is also an asynchronous interconnection, its CPM1 and BAAL measure boil down to a measure of Interconnection frequency deviation – ERCOT’s net interchange deviation from schedule is effectively 0 at all times.</p> <p>ERCOT has a waiver from CPS2 already and has indicated problems with DCS - until ERCOT clamped down on schedule errors this year, almost all of its major deviations had no unit trip associated with them, so they completely escaped DCS measurement. ERCOT has indicated that it does not anticipate requesting an interconnection-wide regional difference from compliance with this set of standards.</p> <p>It is unfortunate that HQTE elected to refrain from voluntary participation in the field test. One of the purposes of the field test was to test the impacts of operating under the proposed standards under very controlled conditions – when the reliability coordinators had the option of curtailing the field test at any time there was a concern that operating under the proposed measures was having an adverse impact on reliability. Note that during the field test, no reliability coordinator – including ERCOT’s reliability coordinator - curtailed the field test for any reason.</p> <p>2. The Reliability Coordinator has authority to direct its Balancing Authorities and Transmission Operators to take whatever actions are needed to preserve reliability. Most commenters, during the development of this set of standards, supported holding the RC responsible for keeping interconnection frequency within defined boundaries.</p> <p>3. During the field test for this set of standards, reliability coordinators did not note an increase in workload as a result of participation in the field test. They did note improvements in operations with clearer guidelines on when to take action to preserve interconnection frequency.</p> <p>-----</p> <p>1. Each Interconnection-only Balancing Authority can request an Interconnection-wide Regional Difference to set its BAALs on a methodology</p>

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

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	<p>that differs from the methodology provided in the proposed standards.</p> <ol style="list-style-type: none"> 2. Please see the responses to the above comments for feedback on suggested changes to the methodologies for setting the limits. The drafting team agrees that improvements can be made, but also believes that the proposed measures are an improvement over existing measures and this has been supported by field test results. As the proposed standards are implemented, and additional data becomes available, additional improvements may be made. 3. Most stakeholders support holding the reliability coordinator accountable for ensuring that interconnection frequency does not move into areas where the reliability of the interconnection is jeopardized. 4. Most stakeholders support elimination of CPS2. The drafting team has revised its implementation plan and it no longer includes elimination of DCS.
<p>NMPC Michael Schiavone Negative</p>	<p>NMPC supports the comments of ISO-NE regarding the issues it outlines with respect to the standard.</p>
<p>Response: Please see the response to ISO-NE comments.</p>	
<p>Northeast Utilities NU David Boguslawski Negative</p>	<p>While these Standards are not directly applicable to Northeast Utilities both our Reliability Coordinator and Balancing Authority (ISO-NE) and our Regional Reliability Coordinator (NPCC) have significant concerns regarding the proposed changes</p>
<p>Response: Please see the response to ISO-NE comments.</p>	
<p>Robert Blohm Affirmatve</p>	<p>Except for Standard BAL-011 which specifies the method of setting the frequency limits for BAAL, this omnibus standard is technically excellent and represents the state of the art in codifying frequency-control reliability. [This despite the drafting team's own commissioned DOE-funded directed research report which was allowed to raise the report authors' own conceptual objections to (what I consider to be) the good and valid parts of the balancing standard outside of the balancing standard comment process governed by ANSI-rules requiring the drafting team to respond.]</p> <p>However, the Standard BAL-011 part of the omnibus standard is mathematically illiterate in my professional opinion. This fact is demonstrated in the latest detailed comments filed and posted with the drafting team and evidenced in the directed research report ftp://www.nerc.com/pub/sys/all_updl/standards/sar/PCEreportBRD-SDT_CERTS_draft4.pdf which outright states that the proposed method of setting the frequency trigger limit "does not have a sound theoretical basis" (pages 12 and 24), despite the drafting-team's declared commission to establish a</p>

Balloter	Comment
	<p>"technically defensible mathematical method" (page 9).</p> <p>This fact can further be attested to by any school teacher of basic probability and statistics, and it points to a mathematical illiteracy crisis in the US power industry that portends a strategic vulnerability analogous to America's during the education crisis signaled by the USSR's 1957 launch of the Sputnik satellite. Somehow the drafting team was allowed to invent Standard BAL-011, "direct" the research "report" to "validate" that standard by making ad hoc logically, scientifically, and verbally contradictory patch-ups to the Standard when the research results contradicted it, all while repeatedly applying a policy of "just say no" to any sustained technical discussion or the holding of an explicit technical conference to improve that standard. Furthermore, the drafting team has defaulted on the ANSI-process requirement to address all comments by simply dismissing or ignoring most of the detailed comments made by me and Energy Mark in the latest comment period. The ANSI-process requires technically sound answers, not just mentions followed by no. If NERC is to succeed in its announced mission of technical excellence, then it needs a change in this corporate culture that disconnects the academic from the practical in a working environment that is management heavy and technology light, and that favors the "best 'practices'" consensus of owners and operators over technical correctness, let alone technical excellence.</p> <p>The banking industry faced and began getting over such a crisis more than 30 years ago, helped by the advent of the personal computer, and the culture wars with college education were eventually won by the college trained, and now graduate-school trained.</p> <p>In particular, Standard BAL-011 is based on ignorance of the definition and operation of "conditional probability", or conditions on probability, which it applies. CPM-1 already is designed to assure "no-more than one-event in ten years" reliability. Any real-time interventions like the BAAL that you superpose onto CPM-1 will increase that reliability by orders of magnitude, no matter how wide you set the BAAL frequency trigger limit or the frequency abnormal limit. Those limits can never be set to make reliability worse (as long as CPM1 is in effect), only to make reliability exceedingly better and at a corresponding cost. Accordingly, the only criterion for setting those limits is "least interference in normal operation" (and "least cost") and that criterion was not applied. The resulting limits proposed in this standard are consequently too tight and prompt too much operator intervention, to the detriment of US consumers and to the benefit of equipment and software vendors and of profit-recovering utilities. Furthermore, the drafting-team from the outset threw the frequency-limit methodology out of kilter by arbitrarily redefining the "no-more than one-event in ten years" definition of reliability as applying to generation-only events! Accordingly, the drafting team elected to use only generation data, which is exclusively under-frequency data, instead of the full spectrum of over- and under-frequency data to properly depict a full probability distribution of "events" and therewith conduct an analysis not guaranteed to lead to blind alleys, patch-ups and "psychological denial" from the outset.</p> <p>Even with the mathematically impossible methodology BAL-011 establishes, the limits BAL-011 establishes are still technically much superior than current CPS-2. Accordingly, I am now inclined to agree with Energy Mark</p>

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

Balloter	Comment
	(Howard Illian) and vote in favor of the omnibus standard, and reverse my commitment expressed in the latest posted comments to the standard to vote against the standard. By the same token and as Energy Mark recommends, a SAR needs to be filed for a mathematically literate BAL-011 that is a credit to NERC.
	<p>Response: The BRD SDT determined early in the BRD development process that the methodology to be utilized in the development of FAL_{LOW} should be based on under frequency relay settings and generating unit contingencies only. This concept has been reviewed and approved by the industry in the initial two postings of the standards. FAL_{LOW} established a limit beyond which the risk to the interconnection was greater than acceptable. As per standard industry practice, in order to avoid violating FAL_{LOW} an operational limit of one contingency above FAL_{LOW} was established as FTL_{LOW}. Thus FAL_{LOW} will not be violated even under the most severe single contingency on the interconnection, as required by the standard N-1 industry operational criteria.</p> <p>Both the Directed Research and a full year of field testing have indicated that the methodology used in the development of FAL_{LOW} is valid. It is not the only valid methodology that could be developed and does not pretend to protect the interconnection against every possible frequency contingency however it does provide a reasonable first step toward risk based reliability limits while maintaining a conservative operational approach, a requirement for getting approval from the industry.</p>
<p>Maryland Public Service Commission James Richard Schafer Negative</p> <p>Massachusetts Dept. of Telecommunications and Energy Donald Nelson Negative</p> <p>National Association of Regulatory Utility Commissioners Diane Jean Barney Negative</p> <p>New York State Public Service Commission James T Gallagher Negative</p>	<p>Insufficient studies have been performed to ensure that the revised standard would improve system reliability.</p>
	<p>Response: Please be more specific in identifying what studies you feel are needed. The drafting team offered all entities the opportunity to participate in field studies, but cannot force entities to participate in the field studies. The results of the field test have been posted for public review. The entities that operated under the field test indicated that they improved their operations and made more informed operating decisions</p>

Consideration of Comments on 1st Ballot of Balance Resources and Demand Standards

Balloter	Comment
<p>when operating under the field test. Analyses of the disturbances that occurred on the Eastern Interconnection while the field test was underway show that the Eastern Interconnection's frequency response following system disturbances is still robust. Following the May 20, 2006 incident which occurred at 1301 EST, the system's frequency recovered in less than 10 minutes following the loss of 2,258 MW. The drafting team was aware of the concerns of NPCC and FRCC about the elimination of DCS, and sent letters to the Regional Managers of both NPCC and FRCC asking if they'd participate in a field test to study the impacts of elimination of DCS and neither volunteered to participate.</p>	
<p>National Grid USA Herbert Schrayshuen Negative</p>	<p>National Grid supports the comments of ISO-NE regarding regarding the issues it outlines with respect to the standard.</p>
<p>Response: Please see the response to ISO-NE comments.</p>	
<p>New Brunswick System Operator Alden Briggs Negative</p>	<p>The NBSO has concerns on the lack of coordination with other standards, the implementation plan of dropping DCS after 18 months, the methodology for developing the BAAL limits and the possibility of the RC being in non compliance for a FTL violation even if it took all the right actions. See the NE-ISO concerns for details as the NBSO has the same concerns. If the NE-ISO concerns are adequately addressed then the NBSO concerns will be addressed.</p>
<p>Response: Please see the response to ISO-NE comments.</p>	
<p>CMP David Mark Conroy Negative</p>	<p>CMP concurs with the ISO New England comments. These standards as written have the following problems: 1. Lack of coordination with other standards 2. Problems with BAAL limit methodology 3. Compliance violations may be assessed even if all actions were in compliance with reliability standards</p>
<p>Response: Please see the response to ISO-NE comments.</p>	
<p>MISO Terry Bilke Affirmative</p>	<p>This standard provides a valuable short-term reliability-based metric that is missed in the current CPS and DCS. Even if the ballot should fail due to the industry's uneasiness to change, the field trial should continue to provide additional validation of the standard and allow the transition to be revised to alleviate concerns.</p>
<p>Response: Thank you for your support.</p>	
<p>APPA; E. Nick Henery Affirmative</p>	<p>In Bal-011-1 the SDT must specify who the Third-party monitor will be. Just saying "Third-party without vested interest in the outcome" could be an unqualified person and still fulfill the Compliance.</p>
<p>Response: Since FERC will not accept a standard that assigns NERC as the responsible entity, the drafting team converted BAL-011 back into a technical reference.</p>	