

Consideration of Comments on Non-binding Poll of VRFs and VSLs associated with PRC-005-2 – Protection System Maintenance

The PRC-005 Standard Drafting Team thanks all those who participated in non-binding poll for the VRFs and VSLs associated with PRC-005-2. The initial non-binding poll was conducted from July 8 through July 17, 2010 and achieved a quorum with 85.96 % of the ballot pool members returning an opinion, and with 32.29 % of those indicating support for the proposed VRFs and VSLs.

Many commenters proposed that the VSLs allow for some amount of non-compliance with the Standard before incurring a violation. NERC's guidelines for VSLs do not allow some level of non-performance without being in violation. The SDT did, however, modify the VSLs for Requirements R1 and R4 to provide gradated VSLs.

Some commenters suggested the SDT re-evaluate the VRF assignments. The SDT reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and modified the Standard to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High. Some commenters made comments that appeared to be related to the technical content of the Standard, not to the VRFs or VSLs and these comments were addressed in the report containing responses to comments on the standard. All comments submitted have been publicly posted on the following web page:

[http://www.nerc.com/filez/standards/Protection System Maintenance Project 2007-17.html](http://www.nerc.com/filez/standards/Protection%20System%20Maintenance%20Project%202007-17.html)

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, Herbert Schrayshuen, at 609-452-8060 or at herb.schrayshuen@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

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

Segment:	3, 4, 5
Organization:	Cowlitz County PUD
Member:	Russell A Noble, Rick Syring, Bob Essex
Comment:	Cowlitz does not understand a High VRF designation for requirement R1; this should be a Low or Medium designation. R1 is merely covering a maintenance program, not the actual maintenance. Actual missed maintenance of components (requirement R4) should have the Medium or High VRF. This Standard is very descriptive of minimum maintenance intervals on each “component;” thus, it is possible to have maintenance documentation that is in full compliance once the Program is built around it. It should never be a case where an entity can receive a higher VRF over missing documentation of a process, and then a lower VRF over missing documentation of the implementation of the process.
Response:	The SDT has reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and the Standard has been modified to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High.
Segment:	1
Organization:	United Illuminating Co.
Member:	Jonathan Appelbaum
Comment:	The VRF for R1 should be Low. It is administrative to create an inventory list. If R1 failed to be executed but the other requirements were executed fully then the BES would be properly secured. Compare this against the scenario of performing R1 but failing to perform the other tasks; in which case the BES is at risk. UI recognizes that the SDT considers the inventory as the foundation of the PSMP but it is not the element of the PSMP that provides for the level of reliability sought. R1 should be VRF Low and R2 thru R4 VRF is Medium. UI agrees with the Time Horizon.
Response:	The SDT has reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and the Standard has been modified to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High.

Segment:	1, 3, 4, 5, 6
Organization:	FirstEnergy Energy Delivery, FirstEnergy Solutions, Ohio Edison Company, FirstEnergy Solutions, FirstEnergy Solutions
Member:	Robert Martinko, Kevin Querry, Douglas Hohlbaugh, Kenneth Dresner, Mark S Travaglianti
Comment:	FirstEnergy appreciates the hard work of the drafting team, but unfortunately we must cast a Negative vote for the VRF for Requirement R1. Although we agree that Requirement 1 is important because it establishes a sound PSMP, a HIGH VRF assignment is not appropriate and it should be changed to LOWER. By definition, a requirement with a LOWER VRF is administrative in nature, and documentation of a program is administrative. Assigning a LOWER VRF to R1 is more logical since R4, which is the requirement to implement the PSMP, is assigned a MEDIUM VRF because, if violated, it could directly affect the electrical state or the capability of the bulk electric system.
Response:	The SDT has reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and the Standard has been modified to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High.
Segment:	1
Organization:	Ameren Services
Member:	Kirit S. Shah
Comment:	The Lower VSL for all Requirements should begin above 1% of the components.
Response:	The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation.
Segment:	5
Organization:	Constellation Power Source Generation, Inc.
Member:	Amir Y Hammad
Comment:	In general, the VSLs are completely biased against small generating facilities that may have only 20 or 30 components to their protective system. If a facility with only 30 components were to fail to identify 2 components, then that would automatically fall under a moderate VSL. This is true for R1 and R4. A suggestion would be to eliminate the percentage of components and instead focus on what the violation is. For example, for R1, a lower VSL could state “the entity’s PSMP includes all of the ‘types’ of components included in the definition of ‘Protection System’, but failed to specify whether a component is being addressed

	by time-based, condition-based, or performance-based maintenance.
Response:	The SDT believes the stepped VSLs are not biased against small entities.
Segment:	5
Organization:	Liberty Electric Power LLC
Member:	Daniel Duff
Comment:	Voting no due to a no vote on the standard, as well as a disagreement with the percentage concept. Smaller entities will have a higher violation level for the same offense due to fewer chances for a violation.
Response:	The SDT believes the stepped VSLs are not biased against small entities.
Segment:	5, 6
Organization:	Tennessee Valley Authority
Member:	George T. Ballew, Marjorie S. Parsons
Comment:	<p>The reason for the no vote on the Non-Binding Poll for VRFs and VSLs is the Violation Severity Level Table listing for Requirement R4 lists the following under “Severe VSL”. “Entity has failed to initiate resolution of maintenance-correctable issues”</p> <p>The threshold for a Severe Violation in this case is too broad and too subjective. The threshold needs to be clearly defined with low, medium, and high criteria. This feedback has been added to the NERC Standards Under Development Comment webpage.</p>
Response:	The VSL for Requirement R4 has been modified to provide a stepped VSL for initiation of resolution of maintenance correctable issues.
Segment:	1
Organization:	Duke Energy Carolina
Member:	Douglas E. Hils
Comment:	<p>We appreciate the work of the team however we do not agree with some of the text proposed. The VSLs for PRC-005-2 requirements R1, R2 and R4 have significantly tighter percentages than the corresponding requirements in PRC-005-1.</p> <p>We believe that the Lower VSL should be up to 10%, the Moderate VSL should be 10%-15%, the High VSL should be 15% to 20%, and the Severe VSL should be greater than 20%, which is still a lower percentage than</p>

	the 25% Lower VSL currently in PRC-005-1.
Response:	The percentages for the stepped VSLs were established in accordance with the NERC VSL Guidelines which were in turn established pursuant to the FERC VSL Order. The current approved PRC-005-1 preceded these guidelines, and therefore is not in accordance with them.
Segment:	5
Organization:	U.S. Bureau of Reclamation
Member:	Martin Bauer
Comment:	<p>The intervals in the standard are based on the weighted average practice of entities surveyed. The weighted average practice was the result of a requirement to have a documented program. The intervals did not have demonstrated relationship to reliability of the BES. This nullifies the requirements and subsequent VSL's.</p> <ol style="list-style-type: none"> 1. The VSL's use terms that are not tied back to a requirement and appear to be based on the concept that every component will cause an impact on the BES. The VSL's use the term "countable event" to score the VSL; however, there is no requirement associated with the number of "countable events". 2. The VSL's should allow for minor gaps in maintenance documentation where there is no impact to the BES if the component failed.
Response:	<ol style="list-style-type: none"> 1. The SDT disagrees that the VSLs are not tied back to a requirement. R3 refers to Attachment A for the criteria for a performance based program, which establishes criteria for the percentage of countable events allowed for the components in any specific designated segment. 2. "Minor gaps in maintenance documentation" would seem to be within the description of a Lower VSL; the NERC criteria for VSLs do not currently permit them to allow some "gaps" without being in violation. The VSL for Requirement R4 has been modified to provide a stepped VSL for initiation of resolution of maintenance correctable issues.
Segment:	1
Organization:	Georgia Transmission Corporation
Member:	Harold Taylor, II
Comment:	<ol style="list-style-type: none"> 1. As the current requirements are written in R1 of PRC-005-2 Draft, we disagree with the terms identify all Protection System components. We recommend a less prescriptive requirement as listed below. R1.1 Identify BES substations or facilities containing Protection Systems.

	<p>R1.2 Identify whether Protection Systems per substation or facilities are addressed through time-based, condition-based, performance based or a combination based etc.</p> <p>R1.3 For each substation/facility with Protection Systems, include all maintenance activities etc.</p> <p>2. The VRF for R1 ranking should be lower or no greater than R2, R3, and R4. The task of identifying Protection System components has very little to do with increasing reliability of the BES. The implementation of the PSMP most likely will cover all the specific functions of Protection System components although the entity failed to identify all PS components.</p> <p>3. We recommend the above language changes and agree the requirement adds some value but not a high-risk value to the BES. After correcting the language we feel that a requirement of 100% maintenance on 100% of all components as listed on page 6 of the standard for the VSLs leaves no room for error for systems designed with contingences. The violations should start for more than a level of 5% not identified, not maintained, etc.</p>
Response:	<p>1. This appears to be a comment related to the standard content, not the VRFs and VSLs.</p> <p>2. The SDT has reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and the Standard has been modified to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High.</p> <p>3. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation.</p>
Segment:	1, 3
Organization:	National Grid, Niagara Mohawk (National Grid Company)
Member:	Saurabh Saksena, Michael Schiavone
Comment:	National Grid does not support the VSL criteria based on "total number of components". Calculating total number of components will be hugely costly and does not enhance any reliability. It will also take away the much needed resources required for maintenance.
Response:	The SDT believes establishing multiple levels within the VSL is preferable to assigning only a Severe VSL; consequently, a method of measuring relative performance must exist, and determining the quantity of components is a necessity.
Segment:	1, 3, 3, 3, 3, 5
Organization:	Southern Company Services, Inc., Georgia Power Company, Gulf Power Company, Mississippi Power,

	Alabama Power Company, Southern Company Generation
Member:	Horace Stephen Williamson, Anthony L Wilson, Gwen S Frazier, Don Horsley, Richard J. Mandes, William D Shultz
Comment:	If an entity is not able to reasonably quantify which components are in scope, demonstrating compliance on a percent-basis may prove difficult or impossible. Further review may indicate the need to reformat the VSL.
Response:	The SDT believes establishing multiple levels within the VSL is preferable to assigning only a Severe VSL; consequently, a method of measuring relative performance must exist, and determining the quantity of components is a necessity.
Segment:	3
Organization:	Allegheny Power
Member:	Bob Reeping
Comment:	The draft standard expects 100% compliance for millions of protection system components at all times. The standard should consider a statistically based performance metric instead of a performance target that expects 100% compliance.
Response:	The SDT shares your concerns regarding the Lower VSL portion of the stepped VSLs not providing any tolerance for non-conformance without being non-compliant. However, the VSL Guidelines, which conform to the FERC VSL order, specify that Lower shall be “5% or less.”
Segment:	5
Organization:	AEP Service Corp.
Member:	Brock Ondayko
Comment:	AEP has stated in other projects, setting a VSL at “Severe” for a binary outcome could be challenged as being arbitrary and another level should be used as the starting point.
Response:	The NERC VSL Guidelines, which were established pursuant to the FERC VSL Order, specify that Severe VSLs be assigned for binary outcomes.
Segment:	3, 4
Organization:	Georgia System Operations Corporation
Member:	R Scott S. Barfield-McGinnis, Guy Andrews

<p>Comment:</p>	<ol style="list-style-type: none"> 1. Do not agree with the 3 calendar months interval and suggest using quarterly. Both terms require a minimum of four inspections per year have proven to be successful, but the term “quarterly” provides a bit more flexibility than the term “3 calendar months”. Given a 3 month maximum interval an entity would need to schedule these tasks every 2 months. As the current requirements are written in R1 of PRC-005-2 Draft, we disagree with the terms identify all Protection System components. We recommend a less prescriptive requirement as listed below. -R1.1 Identify BES substations or facilities containing Protection Systems. -R1.2 Identify whether Protection Systems per substation or facilities are addressed through time-based, condition-based, performance based or a combination based etc. -R1.3 For each substation/facility with Protection Systems include all maintenance activities etc. 2. The VRF for R1 ranking should be lower or no greater than R2, R3, and R4. The task of identifying Protection System components has very little to do with increasing reliability of the BES. The implementation of the PSMP most likely will cover all the specific functions of Protection System components although the entity failed to identify all PS components. We recommend the above language changes and agree the requirement adds some value but not a high-risk value to the BES. 2. After correcting the language we feel that a requirement of 100% maintenance on 100% of all components as listed on page 6 of the standard for the VSLs leaves no room for error for systems designed with contingences. 3. The violations should start for more than a level of 5% not identified, not maintained, etc. Listing each individual Protection System component as current draft is onerous and impedes any interpretation of application with very little value. 4. The standard as written will require a great deal of effort by the utilities to maintain 100% compliance as listed. The concern is the power system design allows for some contingencies but the standard allows for no errors. Failing to complete 1% of the maintenance by 1 day infers an entity is out of compliance or in violation. 5. The violations should start for more than a level of 5% not identified, or not maintained. We feel the minor changes of wording as described in R1.1 – R1.3 as listed above will go a long way in removing the concerns of the standard. We feel the intent of the standard is sound and request minor changes to facilitate an interpretable standard that sensibly mitigates problems with the BES. As the standard written, the
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	<p>interpretation seems to create a stringent environment with undue compliance requirements.</p> <p>6. Lastly, the SDT should attempt to embrace Gerry Cauley’s vision of “results-based standards” and clearly identify the “risk mitigation objectives, reliability result or outcome” of the revised requirements and allow each entity to meet the outcome and mitigate the risk without writing in such a prescriptive manner which is not preferred. The prescriptive details currently proposed in the standard could then be captured in a reference document.</p>
Response:	<p>1. This comment appears be related to the technical content of the standard and not on the VRFs or VSLs.</p> <p>2. The SDT has reconsidered the VRFs in accordance with the guidance provided by NERC and FERC, and the Standard has been modified to assign the VRFs as R1 – Medium, R2 – Medium, R3 – Medium, and R4 – High.</p> <p>3. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation.</p> <p>4. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation.</p> <p>5. The SDT believes establishing multiple levels within the VSL is preferable to assigning only a Severe VSL; consequently, a method of measuring relative performance must exist, and determining the quantity of components is a necessity.</p> <p>6. This comment appears to be related to the standard itself, not to the VRFs or VSLs.</p>
Segment:	1
Organization:	Tennessee Valley Authority
Member:	Larry Akens
Comment:	The VSL Table listing for Requirement R4 list the following under Severe VSL: "Entity has failed to initiate resolution of maintenance-correctable issues" The threshold for a Severe Violation in this case is too broad and too subjective. The threshold needs to be clearly defined with low, medium, and high criteria.
Response:	The VSL for Requirement R4 has been modified to provide a stepped VSL for initiation of resolution of maintenance correctable issues.
Segment:	3, 5, 6
Organization:	Entergy, Entergy Corporation, Entergy Services, Inc.
Member:	Joel T Plessinger, Stanley M Jaskot, Terri F Benoit

Comment:	<p>Entergy provides the following reasons for our Negative Ballot. Entergy reserves the right, after review of all the submitted ballots, to join with other balloters, whether positive or negative ballots, where any reasons included in their ballot that may be applicable to or otherwise impact Entergy as related to this ballot.</p> <ol style="list-style-type: none"> 1. The VSLs for R1 is “Failure to specify whether a component is being addressed by time-based, condition-based, or performance-based maintenance” by itself is a documentation issue and not an equipment maintenance issue. We recommend this warrants only a Lower VSL, especially when one of the required components can only be time based. 2. We also recommend the VSLs for R4 be revised to be stepped from Lower to Severe for “Entity has failed to initiate resolution of maintenance-correctable issues”. While we understand the importance of addressing a correctable issue, it seems like there should be some allowance for an isolated unintentional failure to address a correctable issue. If possible, consider the potential impact to the system. For example, a failure to address a pilot scheme correctable issue for an entity that only employs pilot schemes for system stability applications should not necessarily have the same VSL consequence as an entity which employs pilot schemes everywhere on their system as a standard practice.
Response:	<ol style="list-style-type: none"> 1. This portion of the VSL for Requirement R1 has been modified to provide a stepped VSL relating to the number of Component Types that are not addressed by time-based, condition-based, or performance-based maintenance. 2. The VSL for Requirement R4 has been modified to provide a stepped VSL for initiation of resolution of maintenance correctable issues.
Segment:	1
Organization:	Pacific Gas and Electric Company
Member:	Chifong L. Thomas
Comment:	We cannot vote affirmative on the VRFs and VSLs until concerns on the proposed standard have been addressed.
Response:	Thank you.
Segment:	1, 3
Organization:	Platte River Power Authority
Member:	John C. Collins, Terry L Baker

Comment:	Because of the recommended NO vote on the standard, it would not make sense to approve the proposed VRFs and VSLs until such time the requirements of the standard are clarified.
Response:	Thank you.
Segment:	1
Organization:	Public Service Company of New Mexico
Member:	Laurie Williams
Comment:	Because of the NO vote on the standard, it would not make sense to approve the proposed VRFs and VSLs until such time that the requirements of the standard are clarified.
Response:	Thank you.
Segment:	1
Organization:	Xcel Energy, Inc.
Member:	Gregory L Pieper
Comment:	Xcel Energy believes the standard still contains many aspects that are not clearly understood by entities, including what is needed to demonstrate a compliant PSMP. Comments have been submitted concurrently to NERC via the draft comment response form.
Response:	Thank you.
Segment:	2
Organization:	Midwest ISO, Inc.
Member:	Jason L Marshall
Comment:	We are abstaining because a number of our stakeholders have concerns regarding the definition of Protection System and inclusion of UVLS and UFLS in a standard dealing with maintenance of protection systems.
Response:	Thank you.
Segment:	5
Organization:	Pacific Gas and Electric Company
Member:	Richard J. Padilla
Comment:	We cast a negative ballot due to a negative vote on the standard and recommend that the VRFs and VSLs be

	addressed after the standard comments are resolved
Response:	Thank you.
Segment:	10
Organization:	Western Electricity Coordinating Council
Member:	Louise McCarren
Comment:	Do not agree with all of the requirements of the current proposed standard, so will not vote to approve associated VRFs and VSLs
Response:	Thank you.
Segment:	3
Organization:	Central Lincoln PUD
Member:	Steve Alexanderson
Comment:	Too early to approve the VRFs and VSLs since the requirements need to be fixed first.
Response:	Thank you.
Segment:	1
Organization:	American Electric Power
Member:	Paul B. Johnson
Comment:	AEP has comments regarding the current requirements and measures that need to be addressed, so comments on VSLs are irrelevant at this time.
Response:	Thank you.
Segment:	6
Organization:	AEP Marketing
Member:	Edward P. Cox
Comment:	AEP has comments regarding the current requirements and measures that need to be addressed.
Response:	Thank you.
Segment:	1

Organization:	BC Transmission Corporation
Member:	Gordon Rawlings
Comment:	Not prepared to vote affirmative until such time as BC Hydro can support Project 2007-17 PRC-005-2
Response:	Thank you.
Segment:	3
Organization:	City of Bartow, Florida
Member:	Matt Culverhouse
Comment:	The proposed draft opens the standard up to regulate DC circuit testing on distribution elements with no significant improvement to BES reliability.
Response:	This appears to be a comment on the technical content of the standard, not on the VRFs or VSLs.
Segment:	3
Organization:	Tri-State G & T Association Inc.
Member:	Janelle Marriott
Comment:	Clarification is needed to address the potentially onerous implementation, administration, audit of the proposed revisions.
Response:	Without details of your concern, the SDT is unable to respond.
Segment:	3
Organization:	Consolidated Edison Co. of New York
Member:	Peter T Yost
Comment:	There is not enough clarity on whether a Distribution Provider (DP) will be able to clearly identify which protection system components it does own and needs to maintain. Many DPs own and/or operate equipment identified in the existing or proposed definition. However, not all such equipment translates into a transmission Protection System. The definition needs clarification on when such equipment is a part of the transmission protection system. Also, the time provided for the first phase "at least six months" is too open ended and does not provide entities with a clear timeline. It is suggested that one year is appropriate for the first phase phasing out the second year in stages.
Response:	This appears to be a comment on the technical content of the standard, definition, and Implementation Plan,

	not on the VRFs or VSLs.
Segment:	2
Organization:	New York Independent System Operator
Member:	Gregory Campoli
Comment:	<p>There is not enough clarity on whether a Distribution Provider (DP) will be able to clearly identify which protection system components it does own and needs to maintain. Many DPs own and/or operate equipment identified in the existing or proposed definition. However, not all such equipment translates into a transmission Protection System. The definition needs clarification on when such equipment is a part of the transmission protection system. Also, the time provided for the first phase "at least six months" is too open ended and does not provide entities with a clear timeline. It is suggested that one year is appropriate for the first phase phasing out the second year in stages. Regarding battery visuals, the suggestion for consideration is it should be changed from 3 months to 6 months. Electrolyte levels of today's lead-calcium batteries are relatively stable for a 6 month period compared to lead-antimony batteries used in the past. The Implementation plan is too short - In many instances it will be impossible to meet, especially if entities have to create, purchase and adopt new databases to track maintenance activities. Often new procedures will have to be written and additional resources justified and hired. It would be more acceptable if a staged approach was taken similar to the DME Standard. Accounting for every component of a protection system will be an enormous overhead and will take away resources from actually doing maintenance. Emphasis should be on systems and not individual components. The Standard does not provide a grace period if an entity is unable to meet the maintenance requirement for extenuating circumstances. For example if an entity has to divert maintenance resources to storm restoration following a major event, slack built into a maintenance program can be eaten up and put the maintenance over the prescribed period. Provision should be made for a mitigation plan to get back on track. We do not believe the reliability of the Bulk Electric System will be compromised if an entities' maintenance program slips by a few months due to extreme contingencies, especially if it is brought back on track within a short time frame.</p>
Response:	These comments appear to be related to the technical content of the standard, definition, and Implementation Plan, not on the VRFs or VSLs.
Segment:	4, 5
Organization:	Florida Municipal Power Agency
Member:	Frank Gaffney, David Schumann

Comment: FMPA recommends a negative vote on PRC-005-2, Project 2007-17, for three significant reasons

1. As written, it opens up the PRC-005 standard to Technical Feasibility Exceptions because some batteries are not able to accommodate all of the tests proscribed in the draft standard as explained by Steve Alexanderson in a prior e-mail to the ballot pool. The draft standard would cause NERC to regulate through the standards battery testing, DC circuit testing, etc. on distribution elements with no significant improvement to BES reliability, which is beyond the statutory scope of the standards
2. The standard unreasonably retains the "100% compliance" paradigm for thousands, if not millions of protection system components. Will the Standard Introduce Technical Feasibility Exceptions to PRC Standards? As described by Steve Alexanderson in a prior e-mail to the ballot pool, a large proportion of the batteries (as high as 50% as reported by some SMEs) are not able to accommodate all of the tests proscribed in the draft standard. Will this necessitate the introduction of TFEs into the process unnecessarily? The Standard Reaches Beyond the Statutory Scope of the Reliability Standards As written, the standard requires testing of batteries, DC control circuits, etc., of distribution level protection components associated with UFLS and UVLS. UFLS and UVLS are different than protection systems used to clear a fault from the BES. An uncleared fault on the BES can have an Adverse Reliability Impact and hence; the focus on making sure the fault is cleared is important and appropriate. However, a UFLS or UVLS event happens after the fault is cleared and is an inexact science of trying to automatically restore supply and demand balance (UFLS) or restore voltages (UVLS) to acceptable levels. If a few UFLS or UVLS relays fail to operate out of potentially thousands of relays with the same function, there is no significant impact to the function of UFLS or UVLS. Hence, there is no corresponding need to focus on every little aspect of the UFLS or UVLS systems. Therefore, the only component of UFLS or UVLS that ought to be focused on in the new PRF-005 standard is the UFLS or UVLS relay itself and not distribution class equipment such as batteries, DC control circuitry, etc., and these latter ought to be removed from the standard. In addition, most distribution circuit are radial without substation arrangements that would allow functional testing without putting customers out of service while the testing was underway, or at least without momentary outages while customers were switched from one circuit to another. Therefore, as written, we would be sacrificing customer service for a negligible impact on BES reliability. Perfection is Not A Realistic Goal The standard allows no mistakes. Even the famous six sigma quality management program allows for defects and failures (i.e., six sigma is six standard deviations, which means that statistically, there are events that fall outside of six standard deviations). PRC-005 has been drafted such that any failure is a violation, e.g., 1 day late on a single relay test of tens of thousands of relays is a violation. That is not in alignment with worldwide accepted quality management practices (and also makes audits very painful because statistical, random sampling should be the mode of audit, not 100% review as is currently being done in many instances). FMPA suggests

	<p>considering statistically based performance metrics as opposed to an unrealistic performance target that does not allow for any failure ever. Due to the sheer volume of relays, with 100% performance required, if the standards remain this way, PRC-005 will likely be in the top ten most violated standards for the forever. There is a fundamental flaw in thinking about reliability of the BES. We are really not trying to eliminate the risk of a widespread blackout, we are trying to reduce the risk of a widespread blackout. We plan and operate the system to single and credible double contingencies and to finite operating and planning reserves. To eliminate the risk, we would need to plan and operate to an infinite number of contingencies, and have an infinite reserve margin, which is infeasible. Therefore, by definition, there is a finite risk of a widespread blackout that we are trying to reduce, not eliminate, and, by definition, by planning and operating to single and credible double contingencies and finite operating and planning reserves, we are actually defining the level of risk from a statistical basis we are willing to take. With that in mind, it does not make sense to require 100% compliance to avoid a smaller risk (relays) when we are planning to a specified level of risk with more major risk factors (single and credible double contingencies and finite planning and operating reserves).</p>
Response:	<ol style="list-style-type: none"> 1. This comment appears to be related to the technical content of the Standard, not on the VRFs or VSLs. 2. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation. Much of this comment appears to be related to the technical content of the standard, not on the VRFs or VSLs.
Segment:	1
Organization:	Lake Worth Utilities
Member:	Walt Gill
Comment:	<ol style="list-style-type: none"> 1. As written, it opens up the PRC-005 standard to Technical Feasibility Exceptions because some batteries are not able to accommodate all of the tests proscribed in the draft standard 2. The draft standard would cause NERC to regulate through the standards battery testing, DC circuit testing, etc. on distribution elements with no significant improvement to BES reliability, which is beyond the statutory scope of the standards 3. The standard unreasonably retains the "100% compliance" paradigm for thousands, if not millions of protection system components. Will the Standard Introduce Technical Feasibility Exceptions to PRC Standards? a large proportion of the batteries (as high as 50% as reported by some SMEs) are not able to accommodate all of the tests proscribed in the draft standard. Will this necessitate the introduction of TFEs into the process unnecessarily? The Standard Reaches Beyond the Statutory Scope of the Reliability

Standards As written, the standard requires testing of batteries, DC control circuits, etc., of distribution level protection components associated with UFLS and UVLS. UFLS and UVLS are different than protection systems used to clear a fault from the BES. An uncleared fault on the BES can have an Adverse Reliability Impact and hence; the focus on making sure the fault is cleared is important and appropriate. However, a UFLS or UVLS event happens after the fault is cleared and is an inexact science of trying to automatically restore supply and demand balance (UFLS) or restore voltages (UVLS) to acceptable levels. If a few UFLS or UVLS relays fail to operate out of potentially thousands of relays with the same function, there is no significant impact to the function of UFLS or UVLS. Hence, there is no corresponding need to focus on every little aspect of the UFLS or UVLS systems. Therefore, the only component of UFLS or UVLS that ought to be focused on in the new PRF-005 standard is the UFLS or UVLS relay itself and not distribution class equipment such as batteries, DC control circuitry, etc., and these latter ought to be removed from the standard. In addition, most distribution circuit are radial without substation arrangements that would allow functional testing without putting customers out of service while the testing was underway, or at least without momentary outages while customers were switched from one circuit to another. Therefore, as written, we would be sacrificing customer service for a negligible impact on BES reliability. Perfection is Not A Realistic Goal The standard allows no mistakes. Even the famous six sigma quality management program allows for defects and failures (i.e., six sigma is six standard deviations, which means that statistically, there are events that fall outside of six standard deviations). PRC-005 has been drafted such that any failure is a violation, e.g., 1 day late on a single relay test of tens of thousands of relays is a violation. That is not in alignment with worldwide accepted quality management practices (and also makes audits very painful because statistical, random sampling should be the mode of audit, not 100% review as is currently being done in many instances). FMPA suggests considering statistically based performance metrics as opposed to an unrealistic performance target that does not allow for any failure ever. Due to the sheer volume of relays, with 100% performance required, if the standards remain this way, PRC-005 will likely be in the top ten most violated standards for the forever. There is a fundamental flaw in thinking about reliability of the BES. We are really not trying to eliminate the risk of a widespread blackout, we are trying to reduce the risk of a widespread blackout. We plan and operate the system to single and credible double contingencies and to finite operating and planning reserves. To eliminate the risk, we would need to plan and operate to an infinite number of contingencies, and have an infinite reserve margin, which is infeasible. Therefore, by definition, there is a finite risk of a widespread blackout that we are trying to reduce, not eliminate, and, by definition, by planning and operating to single and credible double contingencies and finite operating and planning reserves, we are actually defining the level of risk from a statistical basis we are willing to take. With that in mind, it does not make sense to require 100%

	compliance to avoid a smaller risk (relays) when we are planning to a specified level of risk with more major risk factors (single and credible double contingencies and finite planning and operating reserves).
Response:	<ol style="list-style-type: none"> 1. This comment appears to be related to the technical content of the standard, not on the VRFs or VSLs. 2. This comment appears to be related to the technical content of the standard, not on the VRFs or VSLs. 3. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation. Much of this comment appears to be related to the technical content of the Standard, not on the VRFs or VSLs.
Segment:	4
Organization:	Wisconsin Energy Corp.
Member:	Anthony Jankowski
Comment:	see comments on standard
Response:	Please refer to the SDT responses to your comments on the comment form.
Segment:	5
Organization:	Consumers Energy
Member:	James B Lewis
Comment:	<ol style="list-style-type: none"> 1. If multiple redundant Protection System components, with associated parallel tripping paths, are provided, Table 1a, 1b, and 1c require that each parallel path be maintained, and that the maintenance be documented. Often, these multiple schemes are provided not to meet specific reliability-related requirements, but instead to provide operating flexibility. Testing these likely will require outages, and those outages may result in decreased reliability. Further, the documentation related to maintenance of all paths will be very cumbersome, and will lead to increased compliance exposure simply by its volume. This may perversely lead to entities NOT installing the redundant schemes, resulting in decreased reliability. 2. Many of the activities described in the Tables are not, by themselves, clear. The standard should include sufficient detail such that entities are clear as to what must be done for compliance, rather than relying on supplementary documents for this information. For example, it's not clear, in Table 1a (Station DC Supply), what is meant by, "Verify that the dc supply can perform as designed when the ac power from the grid is not present." Similarly, it isn't clear from the general description within the Tables that components possessing different monitoring attributes within a single scheme, may be distinguished such that differing relevant tables can be used for the separate components. 3. In Table 1a, Station DC Supply, one of two optional activities is to "Verify that the station battery can

	<p>perform as designed by evaluating the measured cell/unit internal ohmic values to station battery baseline. Battery assemblies supplied by some manufacturers have the connections made internally, making this option unavailable. Experience with ASME standards show that NERC and SDT members may be jointly and separately liable for litigation by specifying methods that either prefer or prohibit use of certain technologies.</p> <p>4. Two of the four Maintenance Activities that begin with “Perform a complete functional trip ...” conclude with “... does not require actual tripping of circuit breakers or other interrupting devices. Do the other two such activities therefore require tripping of circuit breakers or other interrupting devices? 5. Performance of the minimum activities specified within Table 1a for legacy systems, particularly regarding control circuits, will require considerable disconnection and reconnection of portions of the circuits. Such activities will likely cause far more problems on restoration-to-service than they will locate and correct. We suggest that the SDT reconsider these activities with regard for this concern.</p> <p>5. We do not agree that Footnotes within the Standard are an appropriate method of providing information that is important to the application of the Standard. Important information should be provided within the standard text.</p> <p>6. As for the definition, it is unclear whether “voltage and current sensing inputs” include the instrument transformer itself, or does it pertain to only the circuitry and input to the protective relays.</p> <p>7. As for the definition, it is not clear what is included in the component, “station dc supply” without referring to other documents (the posted Supplementary Reference and/or FAQ) for clarification. The definition should be sufficiently detailed to be clear.</p> <p>8. If Protection Systems trip via AC methods, are those systems, and the associated control circuitry included in the definition and within the requirements of the Standard as expressed within the Tables?</p>
Response:	These comments all appear to be related to the technical content of the Standard and to the definition, not to the VRFs or VSLs.
Segment:	1, 3, 5, 6
Organization:	Kansas City Power & Light Co.
Member:	Mike Gammon, Charles Locke, Scott Heidtbrink, Thomas Saitta
Comment:	The proposed changes in the Standard are far too prescriptive and do not take into account the multitude of manufacturers' equipment by establishing broad maintenance cycles and testing intervals.
Response:	This comment appears to be related to the technical content of the Standard, not to the VRFs or VSLs.
Segment:	5

Organization:	Salt River Project
Member:	Glen Reeves
Comment:	SRP believes the requirements of the Standard are confusing and may be problematic in determining compliance. We also believe the required functional testing of the breaker trip coil may potentially increase maintenance outages of circuit breakers. In most cases, circuit breaker maintenance outages can be coordinated such that Protection System maintenance and testing can be done simultaneously. However, in some cases this may not be possible. Outages of any BES facility whether planned or unplanned can impact system reliability. SRP suggests that trip coil monitoring devices be included as an acceptable means of ensuring the trip coil is functioning properly. This will help to avoid unnecessary outages.
Response:	This comment appears to be related to the technical content of the Standard, not to the VRFs or VSLs.
Segment:	6
Organization:	Seattle City Light
Member:	Dennis Sismaet
Comment:	Functional testing is impractical.
Response:	This comment appears to be related to the technical content of the Standard, not to the VRFs or VSLs.
Segment:	1
Organization:	Keys Energy Services
Member:	Stan T. Rzad
Comment:	<ol style="list-style-type: none"> 1. As written, it opens up the PRC-005 standard to Technical Feasibility Exceptions because some batteries are not able to accommodate all of the tests proscribed in the draft standard. The draft standard would cause NERC to regulate through the standards battery testing, DC circuit testing, etc. on distribution elements with no significant improvement to BES reliability, which is beyond the statutory scope of the standards 2. The standard unreasonably retains the "100% compliance" paradigm for thousands, if not millions of protection system components.
Response:	<ol style="list-style-type: none"> 1. This comment appears to be related to the technical content of the Standard, not to the VRFs or VSLs. 2. The NERC criteria for VSLs do not currently permit them to allow some level of non-performance without being in violation. Much of this comment appears to be related to the technical content of the Standard, not on the VRFs or VSLs.

Segment:	1
Organization:	PPL Electric Utilities Corp.
Member:	Brenda L Truhe
Comment:	PPL EU is voting negative because Requirement 1.1 "Identify all Protection System components" is too broad and must be clarified and the definition of Protective Relays is not limited to only those devices that use electrical quantities as inputs (exclude pressure, temperature, gas, etc).
Response:	This comment appears to be related to the technical content of the Standard, not to the VRFs or VSLs.
Segment:	3
Organization:	Springfield Utility Board
Member:	Jeff Nelson
Comment:	Please refer to SUB's comments on VRFs and VFLs in the Comment Form
Response:	Please refer to the SDT responses to your comments on the comment form.
Segment:	3
Organization:	Louisville Gas and Electric Co.
Member:	Charles A. Freibert
Comment:	Comments will be submitted under a comment form
Response:	Please refer to the SDT responses to your comments on the comment form.