

## Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)

**Date of Second Ballot: 07/23/10 - 08/02/10**

**Summary Consideration:** There were numerous comments opposing balloting the definition separately from the definition; the NERC BOT has directed that a revised definition be approved as quickly as possible to close a reliability gap. Many other comments were offered relative to the standard, not the definition, and the SDT noted this in its responses.

Some commenters suggested the “station dc supply” portion of the definition be modified to specifically address battery chargers; the SDT modified the definition as suggested. The revised definition is shown below:

Protection System –

- Protective relays which respond to electrical quantities,
- Communications systems necessary for correct operation of protective functions,
- Voltage and current sensing devices providing inputs to protective relays,
- Station dc supply **associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply)**, and
- Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.

The SDT did not make any other modifications to the definition and did not make any modifications to the implementation plan based on stakeholder comments submitted with ballots.

If you feel that the drafting team overlooked your comments, 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, Herb Schrayshuen, at 609-452-8060 or at [herb.schrayshuen@nerc.net](mailto:herb.schrayshuen@nerc.net). In addition, there is a NERC Reliability Standards Appeals Process.<sup>1</sup>

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<sup>1</sup> The appeals process is in the Reliability Standards Development Procedure: [http://www.nerc.com/files/RSDP\\_V6\\_1\\_12Mar07.pdf](http://www.nerc.com/files/RSDP_V6_1_12Mar07.pdf).

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Kirit S. Shah	Ameren Services	1	Negative	<p>1. Remove “devices providing” yielding ‘voltage and current sensing inputs to protective relays’. This will match the SDT intent with which we concur. “The definition has been changed for clarity; the SDT intends that the output of these devices, measured at the relay should properly represent the primary quantities.”</p> <p>2. The 12 month implementation plan is an improvement, but will result in multiple maintenance plan changes within a short time. We believe that the implementation of the revised definition and PRC-005-2 PSMP must align on the same date.</p>
<p><b>Response:</b> Thank you for your comments.</p> <p>1. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of this element of the definition relative to maintenance within PRC-005-2 is addressed within the standard by specifying, “Verify that acceptable measurements of the current and voltage signals are received by the protective relays”.</p> <p>2. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given “priority.” To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Terri F Benoit	Entergy Services, Inc.	6	Negative	<p>2007-17 the definition - Negative with Comments: The following are the reasons associated with our Negative Ballot.</p> <p>1. We agree with the definition, however we do not agree with the implementation plan. We believe implementation of the definition needs to coincide with the implementation of Standard PRC-005-2. To do otherwise, will cause entities to address equipment, documentation, work management process, and employee training changes needed for compliance twice within an unreasonably short timeframe.</p> <p>2. A 12 month minimum timeframe is need to implement this definition</p>
<p><b>Response:</b> Thank you for your comments.</p>				

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<p>1. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p> <p>2. The SDT modified the implementation plan to provide a 12-month implementation period with the previous posting.</p>				
Brenda L Truhe	PPL Electric Utilities Corp.	1	Affirmative	Although PPL EU previously voted against this definition, due to the change in language, we now support this definition.
<b>Response:</b> Thank you for your comments.				
John C. Collins	Platte River Power Authority	1	Negative	Although the applicable relays to which protective relays are outlined in the NERC PRC-005-2 Protection system Maintenance Draft Supplementary Reference dated May 27, 2010, they are not defined in the NERC Glossary of terms. Until it is clearly defined which relays are included inconsistencies will exist from region to region in their audit approaches and which relays they will be looking at. Also, there is still debate why the protective relays would extend to mechanical devices such as the lock-out relay and tripping for trip-free relays. In our system configuration we risk reliability to customer load by testing the lock-out relays which we feel outweighs the benefit of testing devices that we see little to no evidence of failure in.
Terry L Baker	Platte River Power Authority	3	Negative	
<b>Response:</b> Thank you for your comments. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of the definition relative to maintenance within PRC-005-2 is addressed within the standard. Your comments appear to be on the draft standard PRC-005-2, rather than on the definition. Failure of a lock-out relay or tripping relay can keep a circuit (or multiple circuits) from clearing a fault. Routine testing of these devices could find problems before the system needs them to clear a fault.				
Mel Jensen	APS	5	Negative	Although the SDT has made changes in trying to define the Protection System the definition remains too prescriptive. In particular, the devices providing current and voltage inputs as well as the dc supply. These items are also used for other functions not related to the reliability of the BES. They are critical to business and operation of the generating systems and not solely dedicated to protective relaying. Including them in the definition obligates the utility to methods where there should be some discretion.
Robert D Smith	Arizona Public Service Co.	1	Negative	

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<p><b>Response:</b> Thank you for your comments. The SDT is aware that many devices have multiple functions within the business of supplying power to loads. Regardless of these other functions, if a device is a part of a Protection System then it must be maintained in accordance with PRC-005. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of the definition relative to maintenance within PRC-005-2 is addressed within the standard.</p>				
Stan T. Rzad	Keys Energy Services	1	Negative	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. The standard unreasonably retains the "100% compliance" paradigm for thousands, if not millions of protection system components.
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
Joseph S. Stonecipher	Beaches Energy Services	1	Negative	Because the definition changes the scope of what PRC-005 covers, the definition should not be balloted separately from PRC-005 so that the industry knows what is being committed to. What happens if the standard is voted down but the definition change is passed? For instance, the circuitry connecting the voltage and current sensing devices to the relays is a scope expansion. Station DC supply increases the scope to include the charger, etc. This scope increase needs to have an appropriate implementation period.
Thomas W. Richards	Fort Pierce Utilities Authority	4	Negative	
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Paul Rocha	CenterPoint Energy	1	Negative	CenterPoint Energy does not support any Protection System definition that includes the trip coils of the interrupting devices.
<p><b>Response:</b> Thank you for your comments. The current definition includes "DC Control Circuitry"; the SDT attempted to clarify the definition by stating which</p>				

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of the many control circuits are included. Because the current definition is vague, it can certainly include the trip coils, close coils, and alarm circuits of the interrupting device. The SDT believes that the electrically-operated trip coils are an important part of the control circuitry.				
Christopher L de Graffenried	Consolidated Edison Co. of New York	1	Negative	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.
Nickesha P Carrol	Consolidated Edison Co. of New York	6	Negative	
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p> <p>Regarding the comment that the definition needs to identify when equipment is part of the transmission system, this is properly an issue to address in the various standards that use this definition.</p>				
Hugh A. Owen	Public Utility District No. 1 of Chelan County	6	Negative	Comments have convinced me that ambiguities in the requirements will make compliance/enforcement difficult and the testing procedures may not lead to greater reliability.
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
Charles A. Freibert	Louisville Gas and Electric Co.	3	Affirmative	Comments will be submitte4d under the comment form
<p><b>Response:</b> Thank you for your comments. There was no formal comment period with the second ballot of the proposed definition.</p>				

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Ralph Frederick Meyer	Empire District Electric Co.	1	Negative	Comments: It is still unclear whether relays that respond to mechanical inputs, such as sudden pressure relays, are included in the proposed definition as protective relays. While PRC-005-2 R1 limits the scope of that particular standard to protection systems that sense electrical quantities, it remains unclear in other standards that use the defined term whether mechanical input protections are included. We suggest that "Protective Relay" also be defined, and that the definition clearly exclude devices that respond to mechanical inputs in line with the NERC interpretation of PRC-005-1 in response to the CMPWG request.
<p><b>Response:</b> Thank you for your comments. The definition has been modified to include only protective relays that respond to electrical quantities. The SDT sees no need to either repeat or modify the IEEE definition of protective relays.</p>				
Michael J. Haynes	Seattle City Light	5	Negative	Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices. - In order to comply with this statement utilities would need to conduct functional tests of their relay system. This type of test is problematic. A better definition would be to test the output of the relay.
<p><b>Response:</b> Thank you for your comments. This component of the Protection System definition is to generally include this functionality as a part of the Protection System for all applications of the definition throughout NERC Standards. The detailed applicability of this component relative to maintenance within PRC-005-2 is addressed within the standard, which defines the maintenance required relative to control circuits. The SDT agrees that testing will be required in the standard itself.</p>				
Jim D. Cyrulewski	JDRJC Associates	8	Negative	<ol style="list-style-type: none"> <li>1. Definition needs to be more specific. Case in point if the drafting team wants to include battery chargers should state so.</li> <li>2. Also implementation plan does not appear to be in synch with proposed changes.</li> </ol>
<p><b>Response:</b> Thank you for your comments.</p> <ol style="list-style-type: none"> <li>1. The current definition uses the term batteries in place of dc supply. The use of the term batteries was quite specific and as such excluded battery chargers. The definition has been modified to specifically include battery chargers. Battery chargers are now expected to be covered within the proposed definition and the term dc supply, so too are systems that do not use batteries and/or battery chargers.</li> <li>2. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given</li> </ol>				

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<p>"priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Daniel Brotzman	Commonwealth Edison Co.	1	Affirmative	Exelon suggests that the definition further clarify protective relays that are in scope by adding the following to the frequently asked questions: 1. "devices providing inputs to protective relays" - this is to clarify that testing for CTs and PTs will only ensure proper voltage and current into the relay - therefore not requiring CT and PT testing. 2. Elimination of "from the station dc supply" - the intent here is that the DC is testing only the trip functionality to ensure that certain relays actuate (e.g., 86 and 94 devices) and to ensure that breaker trip coils are exercised on a 6 year periodicity. Therefore, the ancillary wiring part of the controls will be on a longer periodicity (e.g., 12 years)
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the FAQs for PRC-005-2, rather than the definition. The SDT will consider these comments when it updates the FAQs.</p>				
Robert Martinko	FirstEnergy Energy Delivery	1	Affirmative	<p>FirstEnergy appreciates the hard work of the drafting team, but ask that the team consider the following suggestions: It is our understanding that the phrase "Station DC supply" in the definition is intended to cover the Battery, Battery Charger, and other DC supplies sources such as flywheels, fuel cells, and motor-generator sets. However, since the current Protection System Maintenance and Testing standard PRC-005-1 does not specify maintenance activities, as does the proposed Version 2 of PRC-005, it therefore does not provide compliance certainty related to mandatory expectations. This is because the current standard only requires that an entity develop a maintenance program and follows their program. Therefore, it is not clear from the definition that Battery Chargers must be included in the maintenance program developed per PRC-005-1. As we stated in our Initial Ballot comments, the phrase "Station DC supply" should be clarified. In response to our Initial Ballot comments the SDT stated "Clarifications such as this properly belong in supplementary materials. This is described in the FAQ posted in June 2010 (FAQ II.5.A)". We do not agree that supplementary materials should be relied upon to determine</p>
Kevin Querry	FirstEnergy Solutions	3	Affirmative	
Kenneth Dresner	FirstEnergy Solutions	5	Affirmative	
Mark S Travaglianti	FirstEnergy Solutions	6	Affirmative	
Douglas Hohlbaugh	Ohio Edison Company	4	Affirmative	

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				"what" is required and should only give you guidance on "how" to comply. The "what" should be described in the standard requirements and definitions.
<p><b>Response:</b> Thank you for your comments. It is the intent of the SDT that battery chargers and other devices that supply power to Protection System devices be included within the definition. As such, those devices have been included within the minimum maintenance activities of PRC-005-2. However, in the interim before PRC-005-2 is accepted, under the present PRC-005-1 an entity must have a maintenance program that includes the devices within the definition. PRC-005-1 does not prescribe the maintenance, only that the PSMP must include maintenance for the device. The definition has been modified to specifically include battery chargers.</p>				
Pawel Krupa	Seattle City Light	1	Negative	Functional testing is impractical.
Dana Wheelock	Seattle City Light	3	Negative	
Hao Li	Seattle City Light	4	Negative	
<p><b>Response:</b> Thank you for your comments. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of this element relative to maintenance within PRC-005-2 is addressed within the standard, which defines the maintenance required relative to control circuits. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself. The SDT agrees that testing will be required in the standard itself.</p>				
Dennis Sismaet	Seattle City Light	6	Negative	Functional testing is impractical. Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices. - " In order to comply with this statement utilities would need to functional test their relay system. A better definition would be to test the output of the relay"
<p><b>Response:</b> Thank you for your comments. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of this element relative to maintenance within PRC-005-2 is addressed within the standard, which defines the maintenance required relative to control circuits. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself. The SDT agrees that testing will be required in the standard itself.</p>				
Mark Ringhausen	Old Dominion Electric Coop.	4	Affirmative	I am voting Yes on the ballot, but I do have a small issue with the wording of 'station DC supply'. In some of our UFLS locations, we are not in a substation, but out on the feeder circuit and utilizing the DC supply on the feeder recloser. I think my reading of this definition would apply to this recloser DC supply as well as the

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				Station DC Supply.
<p><b>Response:</b> Thank you for your comments. Your concern is appreciated. A review of the standard itself shows that the dc supply maintenance activities are minimal related to UFLS.</p>				
Jeff Mead	City of Grand Island	5	Negative	I echo MRO NSRS comments.
<p><b>Response:</b> Thank you for your comments. The station dc supply element has been modified essentially as you suggest. As to your suggestion regarding inclusion of "BES" within the definition – this is properly an issue to address in the various standards that use this definition.</p>				
John Yale	Chelan County Public Utility District #1	5	Negative	<p>If the new definition is: The new proposed definition of Protection System reads as follows: Protection System:</p> <ul style="list-style-type: none"> <li>o Protective relays which respond to electrical quantities,</li> <li>o Communications systems necessary for correct operation of protective functions,</li> <li>o Voltage and current sensing devices providing inputs to protective relays,</li> <li>o Station dc supply, and</li> <li>o Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</li> </ul> <p>In this list format, it appears it is the entire station dc supply not just that portion and circuitry associated with the protective circuits. This is an unreasonable burden as many parts of the station dc supply are used for non-protective functions.</p>
<p><b>Response:</b> Thank you for your comments. The SDT has modified the definition in consideration of your comments. That bullet now reads: station dc supply associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply)</p>				
Joseph O'Brien	Northern Indiana Public Service Co.	6	Negative	<ol style="list-style-type: none"> <li>1. It is still not clear whether battery chargers fall under this definition.</li> <li>2. The implementation plan should be coordinated with the new PRC-005-2, not -1.</li> <li>3. It's not clear if a breaker trip has to be actuated to test/maintain the control circuitry through the trip coils.</li> </ol>

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<p><b>Response:</b> Thank you for your comments.</p> <ol style="list-style-type: none"> <li>The definition has been modified to specifically include battery chargers.</li> <li>When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</li> <li>The draft standard PRC-005-2 includes the minimum maintenance activities. Until PRC-005-2 is approved, you need to define the activities and provide a basis for those activities in accordance with PRC-005-1.</li> </ol>				
Thomas E Washburn	Florida Municipal Power Pool	6	Negative	It is still unclear whether relays that respond to mechanical inputs, such as sudden pressure relays, are included in the proposed definition as protective relays. While PRC-005-2 R1 limits the scope of that particular standard to protection systems that sense electrical quantities, it remains unclear in other standards that use the defined term whether mechanical input protections are included. We suggest that "Protective Relay" also be defined, and that the definition clearly exclude devices that respond to mechanical inputs in line with the NERC interpretation of PRC-005-1 in response to the CMPWG request
<p><b>Response:</b> Thank you for your comments. The definition has been modified to include only protective relays that respond to electrical quantities. The SDT sees no need to either repeat or modify the IEEE definition of protective relays.</p>				
Frank Gaffney	Florida Municipal Power Agency	4	Affirmative	It is unclear in the Implementation Plan if the expectation is to complete the first maintenance and testing cycle, or whether the entities need to be auditably compliant within the one year implementation plan, e.g., prove that they have performed maintenance and testing within the interval defined in the maintenance and testing program of R1, which essentially could mean two maintenances and tests of the same component during the first year for the components identified in the expansion of scope of the definition of Protection System (e.g., battery charger). We encourage the SDT to make this crystal clear, i.e., is only the first maintenance and test needed as long as the end of the maintenance and testing interval identified in the maintenance
David Schumann	Florida Municipal Power Agency	5	Affirmative	
Richard L. Montgomery	Florida Municipal Power Agency	6	Affirmative	
Bob C. Thomas	Illinois Municipal Electric Agency	4	Affirmative	

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				and testing program of R1 has not been reached yet, or are two maintenance and tests needed to be auditably compliant?
<p><b>Response:</b> Thank you for your comments. The SDT observes that the implementation plan for the definition requires that the entity implement the revised program. The implementation plan also requires completion of maintenance within one full cycle of the revised program.</p>				
Martin Bauer P.E.	U.S. Bureau of Reclamation	5	Negative	<ol style="list-style-type: none"> <li>1. It is unfortunate that the definition did not retain consistency in the terms. As an example, the definition indicates it includes protective relays and communication systems for the correct operation of protective functions. It would have been better to use the term relays instead of the term functions.</li> <li>2. Now it is unclear what the communication systems are for, since a different term was used rather than protective relays. Since it is not clear what the communications have to do with protective relays, as it may also include those that do not just respond to electrical quantities, the definition cannot be used to support the standard.</li> <li>3. The change to insert the term "devices providing" when referring to voltage and current sensing unfortunately eliminates the circuitry from the voltage and current sensing devices to the relays. This was caused by inserting the word "devices". I do not believe it was the SDT intent, however, we are in a literal word world. Since we are primarily focused on the performance of the device as a function of the burden on the device, I cannot vote in favor. My company believes the circuit from the PT and CT must be a part of the Protection System and is arguably of greater concern. Consider that if a PT or CT fails partially or completely it will be known immediately. Maintenance practices will rarely help that predict failure. On the other hand, the circuitry from the voltage and current sensing devices can have a problem that will affect relay performance through instrument transformer error and in most cases is only found through testing. Had you changed "devices" to "circuits" I would agree with providing the first issue addressed as well. The term</li> </ol>

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				<p>“circuits” could have included both (devices and circuits), but as I explained, the latter is more important, more variable, and has been attributed to many protection system failures.</p>
<p><b>Response:</b> Thank you for your comments.</p> <ol style="list-style-type: none"> <li>1. “Protective relays which respond to electrical quantities” is a description intended to clarify which relays are excluded (those not responding to electrical quantities are excluded). However a different descriptor was aimed at communications devices; after all there are many communication circuits employed that are not used for protective functions (voice, alarm data, revenue data, etc.).</li> <li>2. The term “communications systems necessary for correct operation of protective functions” was chosen to include all methods of conveying tripping, permissive and blocking signals that are used now or may be used in the future. The SDT saw no need to include language that might result in the inclusion of voice equipment.</li> <li>3. The change to insert the term “devices providing” was to improve clarity while also excluding voltage and current measuring devices that provide data exclusively to metering equipment as opposed to Protection Systems. The SDT agrees with the commenter that an appropriate maintenance activity is to ensure that the measured voltage and current values correctly make it to the relays. The maintenance activity is a part of the standard. The absence of this activity from the definition is not intended to lead one to believe that the activity is not important.</li> </ol>				
John J. Moraski	Baltimore Gas & Electric Company	1	Negative	<p>It seems not to be the intention of the SDT to require testing of CT's and PT's beyond verifying that they that are delivering acceptable signals to relays. Table 1 a of the standard includes: - Voltage &amp; Current Sensing Devices / 12 Calendar Years / Verify proper functioning of the current and voltage circuit inputs from the voltage and current sensing devices to the protective relays. The FAQ's are even clearer and say:                      ***** 3. Voltage and Current Sensing Device Inputs to Protective Relays A. What is meant by “...verify the current and voltage circuit inputs from the voltage and current sensing devices to the protective relays ...” Do we need to perform ratio, polarity and saturation tests every few</p>

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Amir Y Hammad	Constellation Power Source Generation, Inc.	5	Negative	<p>years? No. You must prove that the protective relay is receiving the expected values from the voltage and current sensing devices (typically voltage and current transformers). This can be as difficult as is proposed by the question (with additional testing on the cabling and substation wiring to ensure that the values arrive at the relays); or simplicity can be achieved by other verification methods. Some examples follow: - Compare the secondary values, at the relay, to a metering circuit, fed by different current transformers, monitoring the same line as the questioned relay circuit. - Compare the values, as determined by the questioned relay, to another protective relay monitoring the same line, with currents supplied by different CTs. - Query SCADA for the power flows at the far end of the line protected by the questioned relay, compare those SCADA values to the values as determined by the questioned relay. - Totalize the Watts and VARs on the bus and compare the totals to the values as seen by the questioned relay. The point of the verification procedure is to ensure that all of the individual components are functioning properly; and that, an ongoing proactive procedure is in place to re-check the various components of the protective relay measuring systems.</p> <p>***** But the neither the originally revised or newly revised definitions carry that implication very well. Suppose the phrase in the definition were changed from: "Voltage and current sensing devices providing inputs to protective relays" to; "Voltage and current sensing device output circuits and the associated circuits to the inputs of protective relays". This would make the whole definition read: Protection System: Protective relays which respond to electrical quantities, communication systems necessary for correct operation of protective functions, voltage and current sensing device output circuits and the associated circuits to the inputs of protective relays, station dc supply, and control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</p>

**Response:** Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the

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responses to ballot comments and the consideration of comments on the standard itself. You have put together a complete discussion of the fact that there is more to a system than merely 5 listed devices.				
Garry Baker	JEA	3	Negative	JEA believes the change in the definition should coordinate with the new standard PRC-005-002.
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
William Mitchell Chamberlain	California Energy Commission	9	Negative	Lack of clarity or apparent conflict between certain requirements would make compliance assessment difficult.
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
Bruce Merrill	Lincoln Electric System	3	Negative	LES would like to thank the Drafting Team for its time and effort in developing the definition. However, at this time LES believes that the implementation plan for the definition should be directly linked to the approval and implementation schedule for PRC-005-2 and the proposed definition of Protection System is incomplete as written and remains open to interpretation.
Dennis Florom	Lincoln Electric System	5	Negative	
Eric Ruskamp	Lincoln Electric System	6	Negative	
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
<p>this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
<p>The SDT disagrees with several aspects of your suggested changes: Auxiliary relays are not a protective relay, but are instead a part of the dc control circuit; "associated" communication systems is too vague to address existing concerns with the definition; battery chargers specifically should NOT be excluded; and "to the trip coils" does not include trip coils as intended by the SDT. The SDT has made changes to the definition which may address other parts of your comment</p>				
Robert Ganley	Long Island Power Authority	1	Affirmative	LIPA offers the following definition which we feel is clearer: Protective relays which respond to electrical quantities, communication systems required for operation of protective functions, voltage and current sensing devices to protective relays, station dc supply, and control circuitry from the associated protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.
<p><b>Response:</b> Thank you for your comments. The SDT has adopted your suggestion regarding Protective Relays.</p>				
Saurabh Saksena	National Grid	1	Affirmative	National Grid suggests adding "Protection System Components including" in the beginning. This is because the word "components" has been used extensively throughout the standard and there is no mention of what constitutes a protection system component in the standard. The word "component" does find mention in FAQs, however, it is recommended to mention it in the main standard. Also, National Grid proposes a change in the proposed definition (changing "voltage and current sensing inputs" to "voltage and current sensing devices providing inputs"). The revised definition should read as follows: Protective System Components including Protective relays, communication systems necessary for correct operation of protective functions, voltage and current sensing devices providing inputs to protective relays and associated circuitry from the voltage and current sensing devices, station dc supply, and control circuitry associated with protective functions from the station dc supply through the trip coil(s) of the circuit breakers or other interrupting devices. The time provided for the first phase "at least six months" is too open ended and does not give entities a clear timeline. National Grid

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				suggests 1 year for the first phase. As a result, National Grid suggests phasing out the second phase in stages.
<b>Response:</b> Thank you for your comments. The SDT believes that inclusion of the defined term within its own definition is not appropriate, and declines to adopt your suggestion regarding the definition. The Implementation Plan and definition have both been modified in a manner that supports your comments.				
Liam Noailles	Xcel Energy, Inc.	5	Negative	NERC has indicated that this definition is being processed to close a reliability gap. It is not clear as to what gap this proposed definition is closing. The use of the term "Station DC Supply" actually introduces more confusion since some entities may view this as only batteries, and not include chargers. It would appear that the intent is to ensure that during a loss of substation service power scenario that the source of power (whatever that may be) to the Protection System is available and able to perform as designed. Recommend the definition be re-written to make it clear as to what components related to this assured source of power are required to be maintained as part of the Protection System, or alternatively define "Station DC Supply".
David F. Lemmons	Xcel Energy, Inc.	6	Negative	
<b>Response:</b> Thank you for your comments. The definition has been modified to specifically include battery chargers.				
David H. Boguslawski	Northeast Utilities	1	Negative	NU believes that a protection system includes: 1) Protective relays which respond to electrical quantities, 2) Communications systems necessary for correct operation of protective functions, 3) Voltage and current sensing devices providing inputs to protective relays", and associated circuitry from the voltage and current sensing devices" 4) Station dc supply, and 5) Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices The proposed definition excludes "and associated circuitry from the voltage and current sensing devices" from item 3. NU believes that the associated circuitry for voltage and current sensing devices should be included. It is our concern that the proposed definition implies PRC-005 will apply specifically to the voltage and current sensing devices and not include the AC circuitry between these devices and the relay inputs.
<b>Response:</b> Thank you for your comments. The words of the definition were chosen to help clarify and exclude devices used exclusively for non-protective functions (metering, etc.), while the maintenance standard itself has a minimum maintenance activity that seeks to demonstrate the importance of the entire				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
scheme.				
Chifong L. Thomas	Pacific Gas and Electric Company	1	Affirmative	PG&E believes the definition should identify that the protection system is associated with direct BES electrical quantities with the intention of protecting the BES from any device from propagating a problem in one part of the BES to another. The definition should not include associated systems, i.e. auxiliary systems including their transformers, motors, etc. For generating stations the protection included should only be the generator itself and its associated main bank transformer that delivers the power to the system. Likewise, for distribution substations, the protection should only include equipment such as the main transformer that draws power from the BES and not equipment such as distribution feeders.
<b>Response:</b> Thank you for your comments.				
James D. Hebson	PSEG Energy Resources & Trade LLC	6	Affirmative	Please reference comments submitted by the PSEG companies on the official comment form for this standard.
<b>Response:</b> Thank you for your comments. For this second ballot, there was no formal comment period.				
Rebecca Berdahl	Bonneville Power Administration	3	Negative	Please see BPA's comments submitted during the concurrent formal comment period ending July 16, 2010.
<b>Response:</b> Thank you for your comments. The SDT changed the definition following the formal comment period that ended July 16, 2010.				
Mark A Heimbach	PPL Generation LLC	5	Negative	Please see comments submitted by "PPL Supply" on 7/16/10.
<b>Response:</b> Thank you for your comments. The SDT changed the definition following the formal comment period that ended July 16, 2010.				
Laurie Williams	Public Service Company of New Mexico	1	Negative	PNM rejects this definition as too broad and not consistent with the way utilities treat the various items in the definition, but agrees with the proposed changes to the implementation plan.
<b>Response:</b> Thank you for your comments. Absent specific comments on the definition, the SDT is unable to respond to your concerns.				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Wayne Lewis	Progress Energy Carolinas	5	Affirmative	Progress Energy does not believe that the definition should be implemented separately from and prior to the implementation of PRC-005-2. We believe there should be a direct linkage between the definition's effective date to the approval and implementation schedule of PRC-005-2. Since this new definition should be directly linked to the proposed revised standard, it would be premature to make this new definition effective prior to the effective date of the new standard. We believe that changes to the maintenance program should be driven by the revision of the PRC standard, not by the revision of a definition.
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Kenneth D. Brown	Public Service Electric and Gas Co.	1	Affirmative	PSE&G is now voting affirmative. Thanks to the drafting team for improving the clarity of the definition.
<p><b>Response:</b> Thank you for your comments.</p>				
Dan R. Schoenecker	Midwest Reliability Organization	10	Negative	Revise Protection System definition to: <ul style="list-style-type: none"> <li>o BES Protective relays which respond to electrical quantities,</li> <li>o Communications systems necessary for correct operation of the BES protective functions,</li> <li>o Voltage and current sensing devices providing inputs to BES protective relays,</li> <li>o Battery and battery chargers that supply dc to BES protective relays, communications, and control circuitry, and</li> <li>o Control circuitry associated with the BES protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</li> </ul>
<p><b>Response:</b> Thank you for your comments. The station dc supply component type has been modified essentially as you suggest. As to your suggestion regarding inclusion of "BES" within the definition – this is properly an issue to address in the various standards that use this definition.</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Thomas C. Mielnik	MidAmerican Energy Co.	3	Negative	Revise Protection System definition to: BES Protective relays which respond to electrical quantities, Communications systems necessary for correct operation of the BES protective functions, Voltage and current sensing devices providing inputs to BES protective relays, Battery and battery chargers that supply dc to BES protective relays, communications, and control circuitry, and Control circuitry associated with the BES protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.
<p><b>Response:</b> Thank you for your comments. The station dc supply component type has been modified essentially as you suggest. As to your suggestion regarding inclusion of "BES" within the definition – this is properly an issue to address in the various standards that use this definition.</p>				
Brian Evans-Mongeon	Utility Services, Inc.	8	Negative	see filed comments
<p><b>Response:</b> Thank you for your comments. The SDT changed the definition following the formal comment period that ended July 16, 2010; there was no formal comment period during the second ballot of the proposed definition.</p>				
Glen Reeves	Salt River Project	5	Affirmative	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.
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT provides the following response, in accordance with the responses to comments on the standard itself.</p>				
James V. Petrella	Atlantic City Electric Company	3	Affirmative	Suggested improvement: add "and associated circuitry" to "Voltage and current sensing devices and associated circuitry providing inputs to protective relays".

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
<p><b>Response:</b> Thank you for your comments. Many other commenters have previously expressed concern with the definition as you suggest, and the SDT believes that the definition as currently posted best expresses this portion of the definition.</p>				
Thomas R. Glock	Arizona Public Service Co.	3	Negative	The change to the definition relative to the voltage and current sensing devices is too prescriptive. Methods of determining the integrity of the voltage and current inputs into the relays to ensure reliability of the devices should be up to the discretion of the utility.
<p><b>Response:</b> Thank you for your comments. Absent any specific comment regarding how the definition is too prescriptive, the SDT is unable to respond to your concerns. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
William D Shultz	Southern Company Generation	5	Negative	The definition alone is acceptable, but the existing version of PRC-005 does not guarantee any additional maintenance or testing will occur with its ratification. Maintenance methodology documents will have to be revised to include the new definition, but entities may still dictate limited maintenance activities and lengthy intervals which require no additional maintenance to be done. The PRC-005-2 version of the standard includes this revised definition and requires specific maintenance activities at specific intervals. Establishing only a new definition does not close the perceived reliability gap that is the basis for the current vote. The new definition needs to be ratified along with the revised standard.
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Raj Rana	American Electric Power	3	Negative	The definition as drafted includes "Station dc supply." While this appears reasonable and innocuous, the term is unclear and could be construed by an auditor to include a lot of equipment and infrastructure not intended by the PSMT SDT. For example, station battery chargers are typically supplied by station auxiliary power transformers, which in turn are supplied by primary-voltage bus work, primary-voltage fuses, or primary-voltage circuit breakers.

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				<p>An auditor for either PRC-005 or any other Standard referencing "Protection System" could read that such primary-voltage equipment is part of the Protection System and therefore subject to certain requirements in either PRC-005 or any other Standard referencing Protection System. The definition as drafted includes "Communications systems necessary. . . ". Once again, this term appears innocuous, but it is actually unclear. For example, if a transfer-trip channel is carried on a microwave path, an auditor may decide that the entire microwave equipment, microwave building battery, and microwave building emergency generator are all part of the Protection System, and thus subject to requirements in either PRC-005 or other existing or future Standards that refer to Protection System. AEP recommends that the term be phrased "communications paths" opposed to "communications systems". Similar to the above two items, we are concerned about the inclusion of voltage and current-sensing "devices" in the Definition. As written, applicability can be inferred to the entire device and not merely its output quantities, not only for this Standard but any other that references a Protection System. AEP recommends the phrase "circuitry from voltage and current-sensing devices providing inputs to protective relays" instead of "voltage and current-sensing devices providing inputs to protective relays"</p>
<p><b>Response:</b> Thank you for your comments. The definition has been modified to specifically include battery chargers. As to your other comments, it appears that your comments apply more to the application of the definition within PRC-005-1 or PRC-005-2 than they do to the definition itself. Within the reference materials associated with PRC-005-2, the SDT advises that equipment associated with microwave systems is part of the communications system. The SDT believes that the proposed definition is less vague than the current definition on the issues you cite, and would improve the situation that you discuss from the current level.</p>				
Michael Moltane	International Transmission Company Holdings Corp	1	Negative	<p>The definition contained in this ballot really needs to be part and parcel of the PRC-005-2 Standard Ballot, since the definition has such a huge impact on the standard itself. It is problematic to vote on a definition and on the standard independent of one another. Therefore, ITC must vote negative on this Ballot.</p>
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
- not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.				
Michael Schiavone	Niagara Mohawk (National Grid Company)	3	Affirmative	The definition could be worded better
<b>Response:</b> Thank you for your comments. The SDT has modified the definition for improved clarity.				
Kenneth Parker	Entegra Power Group, LLC	5	Negative	The definition infers testing of CTs and PTs which should not be necessary.
<b>Response:</b> Thank you for your comments. The definition of Protection System is for all applications of this term throughout NERC Standards. The detailed applicability of this element of the definition relative to maintenance within PRC-005-2 is addressed within the standard by specifying, "Verify that acceptable measurements of the current and voltage signals are received by the protective relays".				
Christopher Plante	Integrays Energy Group, Inc.	4	Negative	<ol style="list-style-type: none"> <li>1. The definition should state what is meant by "station dc supply". There continues to be questions in the industry regarding if dc supply includes the battery charger. We believe the charger is not included in station dc supply and that the Definition of Protection System should specifically address the point.</li> <li>2. Also, the definition should specify BES relays, BES protection functions and elements associated with BES relays and functions.</li> </ol>
<b>Response:</b> Thank you for your comments. <ol style="list-style-type: none"> <li>1. The definition has been modified to specifically include battery chargers.</li> <li>2. This is properly an issue to address in the various standards that use this definition.</li> </ol>				
Terry Harbour	MidAmerican Energy Co.	1	Negative	The following changes should be incorporated in the definition to insure it is used consistently in PRC-005 and any other standards where it appears. Revise Protection System definition to: <ul style="list-style-type: none"> <li>o BES Protective relays which respond to electrical quantities,</li> <li>o Communications systems necessary for correct operation of the BES protective functions,</li> <li>o Voltage and current sensing devices providing inputs to BES protective relays,</li> <li>o Battery and battery chargers that supply dc to BES protective relays, communications, and control circuitry, and Control circuitry associated with the BES</li> </ul>

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.
<p><b>Response:</b> Thank you for your comments. The station dc supply component type has been modified essentially as you suggest. As to your suggestion regarding inclusion of "BES" within the definition – this is properly an issue to address in the various standards that use this definition.</p>				
Robert W. Roddy	Dairyland Power Coop.	1	Negative	The implementation of the revised definition should not take place until the revised standard PRC-005-2 is in effect.
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
John Tolo	Tucson Electric Power Co.	1	Negative	The mention of communication systems maintenance (M1.) needs more clarity as to the depth of the maintenance required. Also, Table 1a, a 3-month interval to verify that the Protection System communications system is functional is too frequent to be practical.
<p><b>Response:</b> Thank you for your comments. Your comments do not seem relevant to the definition, but instead appear to be related directly to the revisions to the draft PRC-005-2 itself. The SDT had not completed consideration of comments on the standard when the definition was re-posted. The SDT provides the following response, in accordance with the responses to comments on the standard itself.</p>				
Scott Kinney	Avista Corp.	1	Negative	The modified definition of Protection System now refers to "functions" rather than "devices." What are the "functions?" This new term adds confusion without being defined in the standard.
<p><b>Response:</b> Thank you for your comments. The reference to "functions" is intended to reflect that there is increasing use, particularly in SPS, of devices which mimic protective relays but are not actually traditional relays.</p>				
Michael Gammon	Kansas City Power & Light Co.	1	Negative	The proposed changes in the Standard are far too prescriptive and do not take into account the multitude of manufacturers

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Charles Locke	Kansas City Power & Light Co.	3	Negative	equipment by establishing broad maintenance cycles and testing intervals.
Scott Heidtbrink	Kansas City Power & Light Co.	5	Negative	
Thomas Saitta	Kansas City Power & Light Co.	6	Negative	
<b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. In Order 693, the FERC directed that NERC establish maximum allowable intervals for maintenance of protection systems.				
Jack Stamper	Clark Public Utilities	1	Negative	The proposed definition does not provide the level of clarity that is needed.
<b>Response:</b> Thank you for your comments. The SDT has modified the definition for improved clarity.				
Ajay Garg	Hydro One Networks, Inc.	1	Affirmative	The proposed definition of Protection System needs clarification on when such equipment is a part of the transmission protection system. Emphasis should be on systems and not individual components.
<b>Response:</b> Thank you for your comments. This issue is better addressed in the various standards that use the definition.				
Mace Hunter	Lakeland Electric	3	Affirmative	The proposed draft may introduce TFEs into the PRC standards, not a good thing. The proposed draft reaches beyond the statutory scope of the reliability standards. Perfection is not a realistic goal.
<b>Response:</b> Thank you for your comments. The SDT has modified the definition for improved clarity.				
Kim Warren	Independent Electricity System Operator	2	Affirmative	The proposed revision to the definition has removed the "associated circuitry from the voltage and current sensing devices" which we believe should be included since failure of this wiring will render the Protection System inoperative. On this basis we recommend the following change to once again include this circuitry in the definition: "Protective relays which respond to electrical quantities, communication systems necessary for correct operation of protective functions, voltage and current sensing devices AND ASSOCIATED CIRCUITRY [emphasis added] providing inputs to protective relays, station dc supply, and control circuitry

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices."
<p><b>Response:</b> Thank you for your comments. The change to insert the term "devices providing" was to improve clarity while also excluding voltage and current measuring devices that provide data exclusively to metering equipment as opposed to Protection Systems. The SDT agrees with the commenter that an appropriate maintenance activity is to ensure that the measured voltage and current values correctly make it to the relays. The maintenance activity is a part of the standard. The absence of this activity from the definition is not intended to lead one to believe that the activity is not important.</p>				
Roger C Zaklukiewicz		8	Negative	The proposed rewording of the definition implies that the wiring from the current transformers and voltage transformers to the protective relay systems are independent of the protection system being tested and that separate maintenance standards will have to be established to test the integrity of the wiring and the Potential device and current transformer. The definition of the Protection System should not exclude the wiring and devices which generate the current and voltage sources to the protective relays.
<p><b>Response:</b> Thank you for your comments. The change to insert the term "devices providing" was to improve clarity while also excluding voltage and current measuring devices that provide data exclusively to metering equipment as opposed to Protection Systems. The SDT agrees with the commenter that an appropriate maintenance activity is to ensure that the measured voltage and current values correctly make it to the relays. The maintenance activity is a part of the standard. The absence of this activity from the definition is not intended to lead one to believe that the activity is not important.</p>				
Jim R Stanton	SPS Consulting Group Inc.	8	Negative	The reference to "communication systems" should be deleted from the definition. It is confusing to Registered Entities who do not consider the circuits that connect components of a protection system to be a communication "system" such as a telephone system, postal service or computer network which is more properly called a communication system. Suggest changing it to "signal carrying circuitry."
<p><b>Response:</b> Thank you for your comments. The SDT believes that "Communication Systems" is a term that is generally well understood within the industry.</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Brock Ondayko	AEP Service Corp.	5	Negative	<p>The term "station" should either be defined or removed from the definition, as it implies transmission and distribution assets while the term "plant" is used to define generation assets. It would suffice to simply refer to the "DC Supply". As written, the implementation plan only specifies a time frame for entities to update their documentation for PRC-005-1 and PRC-005-2 compliance. The implementation plan also needs to give entities a time frame to address any required changes to their documentation for other standards that use the term "Protection System", including but not limited to NUC-001-2, PER-005-1, PRC-001-1, etc.</p>
<p><b>Response:</b> Thank you for your comments. The term 'station' was used because it could include both a substation and a generation station while at the same time excluded installations that were strictly communications repeater sites. As noted on the "Assessment of Impact of Proposed Modification to the Definition of "Protection System" which was posted with the first comment period, the SDT believes that the bulk of the implementation of the new definition will be regarding PRC-005 (generically) and that there will be very little implementation associated with the other standards that utilize this term.</p>				
Paul B. Johnson	American Electric Power	1	Negative	<p>1. The term "station" should either be defined or removed from the definition, as it implies transmission and distribution assets while the term "plant" is used to define generation assets. It would suffice to simply refer to the "DC Supply". As written, the implementation plan only specifies a time frame for entities to update their documentation for PRC-005-1 and PRC-005-2 compliance. The implementation plan also needs to give entities a time frame to address any required changes to their documentation for other standards that use the term "Protection System", including but not limited to NUC-001-2, PER-005-1, PRC-001-1, etc. we still support a "negative" ballot with the following comments:</p> <p>2. The definition as drafted includes "Station dc supply." While this appears reasonable and innocuous, the term is unclear and could be construed by an auditor to include a lot of equipment and infrastructure not intended by the PSMT SDT. For example, station battery chargers are typically supplied by station auxiliary power transformers, which in turn are supplied by primary-voltage buswork, primary-voltage fuses, or primary-voltage circuit</p>

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				<p>breakers. An auditor for either PRC-005 or any other Standard referencing "Protection System" could read that such primary-voltage equipment is part of the Protection System and therefore subject to certain requirements in either PRC-005 or any other Standard referencing Protection System.</p> <p>The definition as drafted includes "Communications systems necessary. . . ". Once again, this term appears innocuous, but it is actually unclear. For example, if a transfer-trip channel is carried on a microwave path, an auditor may decide that the entire microwave equipment, microwave building battery, and microwave building emergency generator are all part of the Protection System, and thus subject to requirements in either PRC-005 or other existing or future Standards that refer to Protection System. Similar to the above two items, we are concerned about the inclusion of voltage and current-sensing "devices" in the Definition. As written, applicability can be inferred to the entire device and not merely its output quantities, not only for this Standard but any other that references a Protection System.</p>
<p><b>Response:</b> Thank you for your comments.</p> <ol style="list-style-type: none"> <li>The term 'station' was used because it could include both a substation and a generation station while at the same time excluded installations that were strictly communications repeater sites. As noted on the "Assessment of Impact of Proposed Modification to the Definition of "Protection System" which was posted with the first comment period, the SDT believes that the bulk of the implementation of the new definition will be regarding PRC-005 (generically) and that there will be very little implementation associated with the other standards that utilize this term.</li> <li>The definition has been modified to specifically include battery chargers. As to your other comments, it appears that your comments apply more to the application of the definition within PRC-005-1 or PRC-005-2 than they do to the definition itself. Within the reference materials associated with PRC-005-2, the SDT advises that equipment associated with microwave systems is part of the communications system. The SDT believes that the proposed definition is less vague than the current definition on the issues you cite, and would improve the situation that you discuss from the current level.</li> </ol>				
Peter T Yost	Consolidated Edison Co. of New York	3	Negative	<ol style="list-style-type: none"> <li>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.</li> </ol>

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				<p>2. 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.</p>
<p><b>Response:</b> Thank you for your comments.</p> <p>1. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself. "When such equipment is part of the transmission protection system" is properly a matter to be resolved within the various standards that use this term.</p> <p>2. The implementation period has been revised from six months to twelve months.</p>				
Greg Lange	Public Utility District No. 2 of Grant County	3	Negative	<p>These systems are not always maintained at the component level. ie. meggering from the relay input test switch through the cable and the CT. This has not closed all the issues around professional judgement (interpretations) that make us nervous when faced with the human element of an audit. We need more specificity to close that gap.</p>
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
Silvia P Mitchell	Florida Power & Light Co.	6	Affirmative	<p>This revision is better written.</p>
<p><b>Response:</b> Thank you for your comments.</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Joseph G. DePoorter	Madison Gas and Electric Co.	4	Negative	Upon review of the updated proposed "Protection System" definition and its main use in describing PRC-005, which applies to BES Protective Systems, the definition needs to incorporate BES within it. Without BES used within the definition, it will be used to interpret every protection system that the industry uses. This is not the course that we wish to travel. Please note the following recommended definition: <ul style="list-style-type: none"> <li>o BES Protective relays which respond to electrical quantities,</li> <li>o Communications systems necessary for correct operation of the BES protective functions,</li> <li>o Voltage and current sensing devices providing inputs to BES protective relays,</li> <li>o Battery and battery chargers that supply dc power to BES protective relays, communications, and control circuitry, and</li> <li>o Control circuitry associated with the BES protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</li> </ul>
<p><b>Response:</b> Thank you for your comments. The station dc supply component type has been modified essentially as you suggest. As to your suggestion regarding inclusion of "BES" within the definition – this is properly an issue to address in the various standards that use this definition.</p>				
Richard J. Mandes	Alabama Power Company	3	Affirmative	<p>We agree that the definition provides clarity and will enhance the reliability of the Protection Systems to which it is applicable. However, we feel that there needs to be a direct linkage of the definition's effective date to the approval and implementation schedule of PRC-005-2. Since this new definition is directly linked to the proposed revised standard, it would be premature to make this definition effective prior to the effective date of the new standard.</p>
Anthony L Wilson	Georgia Power Company	3	Affirmative	
Gwen S Frazier	Gulf Power Company	3	Affirmative	
Don Horsley	Mississippi Power	3	Affirmative	
Horace Stephen Williamson	Southern Company Services, Inc.	1	Affirmative	
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.</p>				
Jason L Marshall	Midwest ISO, Inc.	2	Abstain	We are abstaining because a number of our stakeholders have concerns regarding the definition of Protection System.
<p><b>Response:</b> Thank you for your comments. The SDT responded to the individual stakeholder comments submitted.</p>				

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
Claudiu Cadar	GDS Associates, Inc.	1	Negative	We do not agree with inclusion of the trip coil. The trip coil is not a protective device; it does not sense voltage or current and operates based on a faulted condition. It is supplied the necessary input from the DC system which is based on protective relays signaling and contact operation. The trip coil is part of the circuit breaker; it is not separate equipment. Does this mean that the circuit breaker is now part of the protection system?
<p><b>Response:</b> Thank you for your comments. The current definition includes "DC Control Circuitry"; the SDT attempted to clearly define which of the many control circuits and the limit of the definition. While the current definition is vague, it can certainly include the trip coils and close coils and alarm circuits of the interrupting device. The SDT believes that the electrically-operated trip coils are an important part of the control circuitry.</p>				
Anthony Jankowski	Wisconsin Energy Corp.	4	Negative	We Energies does not agree to the implementation plan proposed. While it makes common sense to proceed with R1 prior to proceeding with implementing R2, R3, and R4, the timeline to be compliant for R1 is too short. It will take a considerable amount of resources to migrate the maintenance plan from today's standard to the new standard in phase one. ATC recommends that time to develop and update the revised program be increased to at least one year followed by a transition time for the entity to collect all the necessary field data for the protection system within its first full cycle of testing. (In ATC's case would be 6 years) To address phase two, We Energies believes human and technological resources will be overburdened to implement this revised standard as written. The transition to implementing the new program will take another full testing cycle once the program has been updated. Increased documentation and obtaining additional resources to accomplish this will be challenging. Implementation of PRC-005-2 will impact We Energies in the following manner: a. Increase costs: double existing maintenance costs. b. Since there will be a doubling of human interaction (or more), it is expected that failures due to human error will increase, possibly proportionately. c. Breaker maintenance may need to be aligned with protection scheme testing, which will always contain elements that are include in the non-monitored table for 6 yr testing. d. We Energies is developing standards for redundant bus and transformer protection schemes. This would allow We Energies to

**Consideration of Comments on Second Ballot — Project 2007-17 Protection System Maintenance (Protection System definition)**

Voter	Entity	Segment	Vote	Comment
				<p>test the protection packages without taking the equipment out of service. Further if one system fails, there is full redundancy available. With the current version of PRC-005-2, We Energies would need to take an outage to test the protection schemes for a transformer or a bus, there is not an incentive to install redundant schemes. We Energies is working with a condition based breaker maintenance program. This program's value would be greatly diminished under PRC-005-2 as currently written. Consideration also needs to be given for other NERC standards expected to be passed and in the implementation stage at the same time, such as the CIP standards.</p>
<p><b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. The SDT has responded to similar comments within the responses to ballot comments and the consideration of comments on the standard itself.</p>				
Linda Horn	Wisconsin Electric Power Co.	5	Negative	<p>We object strongly to the addition of the term "voltage and current sensing devices...". This revised definition will make it a requirement to perform actual tests on the voltage and current transformers. The previous definition was "voltage and current inputs to protective relays" and this is much preferred to allow the needed flexibility in maintenance practices.</p>
James R. Keller	Wisconsin Electric Power Marketing	3	Negative	
<p><b>Response:</b> Thank you for your comments. The current definition of Protection System uses the term "voltage and current sensing devices". The current standard PRC-005-1 requires the entity to have a PSMP for those devices. The proposed revision PRC-005-2 would require minimum maintenance activities that verify other than an annual IR Scan of the voltage and current sensing devices. As there is no method listed in the standard, some of the process flexibility that you seek has been maintained.</p>				
Brandy A Dunn	Western Area Power Administration	1	Affirmative	<p>Western agrees with the revised definition of a Protection System and disagree with the Implementation Plan under PRC-005-1. The definition implementation should be delayed until approval of PRC-005-2.</p>
<p><b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give</p>				

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entities time to apply the new definition to PRC-005-1.				
Henry Delk, Jr.	SCE&G	1	Negative	While SCE&G believes the majority of the PRC-005-2 standard is ready to be affirmed there are still inconsistencies with areas of the standard that need to be corrected prior to approval. These inconsistencies are addressed in SCE&G's comments which have been submitted for the current draft of this standard.
<b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. Please see the response to your comments on the first draft of the standard.				
Richard J Kafka	Potomac Electric Power Co.	1	Affirmative	While voting in the affirmative, PHI feels the definition could be improved by adding and associated circuitry to the third item Voltage and current sensing devices and associated circuitry providing inputs to protective relays
<b>Response:</b> Thank you for your comments. The SDT agrees with the commenter of the importance of this as a maintenance activity and has attempted to capture relevant maintenance activities within the revised standard itself.				
David A. Lapinski	Consumers Energy	3	Negative	Without the context of draft PRC-005-2, the changes to this definition are difficult to understand and even more difficult to implement. We therefore strongly recommend that this definition NOT be approved independently from the draft of PRC-005-2, and that development of both the definition and the standard proceed as a single activity.
David Frank Ronk	Consumers Energy	4	Negative	
<b>Response:</b> Thank you for your comments. When the Board of Trustees was asked to approve an interpretation of PRC-005-1 that was written by the PSMT SDT, the board acknowledged the reliability gap identified by the drafting team caused by the definition of "protection system" and directed that work to close this reliability gap should be given "priority." To close this reliability gap the BOT has directed that revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan now proposes at least 12 months for entities to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.				
Gregory L Pieper	Xcel Energy, Inc.	1	Negative	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.
Michael Ibold	Xcel Energy, Inc.	3	Negative	
<b>Response:</b> Thank you for your comments. Your comments appear to be relative to the draft standard PRC-005-2, rather than the definition. The SDT had not completed the consideration of comments on the standard when the definition was re-posted. Please see the response to your comments on the first draft of				

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<a href="#">the standard.</a>				
James A Ziebarth	Y-W Electric Association, Inc.	4	Affirmative	Y-WEA thanks the SDT for clarifying what relays are and are not included in this definition.
<b>Response:</b> <a href="#">Thank you for your comments.</a>				