

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

Dates of Third Ballot: 10/2/10 - 10/14/10

Summary: A successive ballot of the definition of Protection System was conducted from October 2-14, 2010 and achieved a quorum and an overall weighted segment approval of 84.52%.

Numerous balloters confused the definition with its applicability in various standards. Several balloters questioned the applicability of this defined term in PER-005 and the SDT modified the Implementation Plan for the definition to remove the reference to PER-005.

Several balloters used the ballot period as a forum to show displeasure with the NERC and Regional BES definitions. Modifying the definition of Bulk Electric System is outside the scope of this drafting team.

Some balloters made suggestions to modify various portions of the definition, however most balloters supported the definition as posted and the drafting team did not adopt any suggestions for further modifications to the definition.

Several balloters opposed this ballot because they felt the definition of Protection System should not have been balloted separately from the draft standard PRC-005-2. 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 directed that the revised definition be applied to PRC-005-1 as soon as practical - not years from now. The implementation plan allows entities at least 12 months to apply the new definition to PRC-005-1, and that should give entities time to apply the new definition to PRC-005-1.

Segment	Entity	Member	Ballot	Comments
1	American Electric Power	Paul B. Johnson	Negative	1. This change in definition needs to occur concurrently with other related projects (PRC-005-2). Neither the SDT nor the SC should establish a practice of making changes to definitions outside the parameters of changes to standards. This will introduce opportunities for confusion and does not provide the appropriate signals to the Registered Entities to adjust their programs and make the appropriate
5	AEP Service Corp.	Brock Ondayko		

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6	AEP Marketing	Edward P. Cox		<p>changes. If this has to be done faster than the pace of the current PRC-005-2 project, we suggest it still be paired with that project, but a smaller scope be considered to allow for this to pass quickly as possible and then the remaining work can be accomplished in PRC-005-3.</p> <ol style="list-style-type: none"> 2. We suggest that the SDT consider the creation of sub-definitions opposed to crafting a single term for complex and diverse components that could make up the Protection System. As it stands, AEP cannot support this as it still does not remove the degree of ambiguity that could result in interpretation challenges during later enforcement and monitoring activities. We understand the urgency to make progress; however, the deliverables of this team can have significant collateral impacts in the compliance process. 3. The bullet for Protective relays should be further clarified with the addition of applied on or designed to provide protection for the BES that responds to the electrical fault or disturbance conditions. 4. Below are the comments that were provided in the second draft that were not adequately addressed in the consideration of the comments. <ol style="list-style-type: none"> A. 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. 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. B. The definition as drafted includes "Communications systems necessary. . .". Once again, this term appears innocuous, but it is

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				<p>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".</p> <p>C. 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>Response: 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 believes the current draft of the definition as balloted is clear, concise, and supported by industry.</p> <p>3. The SDT believes these questions are not within the scope of Project 2007-17 and should be addressed by the Regional Entities.</p> <p>4A. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry. The definition of Protection System with regards to dc supply has been modified and now reads: Station dc supply associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply).</p> <p>4B. The SDT believes your comment pertains to standards and requirements, and not the definition of Protection System.</p> <p>4C. The SDT believes the current draft of the definition as balloted is better supported by industry.</p>				

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1	Baltimore Gas & Electric Company	John J. Moraski	Negative	The definition can be read to imply an obligation to test PTs and CTs in a way that exceeds the apparent intention of the SDT as expressed in the FAQs. The definition should be constructed so as to present no conflict with idea that the standard can be met by verifying the correctness of signal delivered from PTs and CTs to protective relays. Suggestive language included with the previous ballot --- 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: The SDT believes your comment is aimed at revising the definition so that it achieves a particular outcome when applied to specific requirements in the proposed PRC-005. The team is trying to develop a definition that would be applicable for use in several standards, and does not want to make modifications to the definition that would limit the term's applicability.</p>				
1	Colorado Springs Utilities	Paul Morland	Negative	CSU feels that battery chargers should not be included in the "Protection System" definition based on the following: Battery chargers are not a single point of immediate failure. As long as real-time station battery monitoring is provided, a reliable protection system will be maintained.
<p>Response: 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" not including battery chargers, 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>				
1	FirstEnergy Energy Delivery	Robert Martinko	Affirmative	FirstEnergy supports the definition and thanks the drafting team for incorporating our suggestion for clarification of the phrase "station dc supply".
3	FirstEnergy Solutions	Kevin Querry		
6	FirstEnergy Solutions	Mark S Travaglianti		

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4	Ohio Edison Company	Douglas Hohlbaugh		
<p>Response: The SDT appreciates your support.</p>				
1	MidAmerican Energy Co.	Terry Harbour	Negative	<p>The drafting team did not properly address previous comments to include BES references in each PRC-005 sub bullet definitions and left "DC system" wording in the definition with only a comment in parentheses. The Protection System definition affects multiple standards and must stand alone across those standards. Therefore:</p> <ol style="list-style-type: none"> 1. BES references are still needed in each sub bullet definition to eliminate ambiguity and to create clearly auditable requirements, meeting a basic standards drafting principal being requested both by FERC and the industry. 2. "DC system" remains a wide open definition. Because regulators and auditors are auditing to "zero" defect requirements and imposing their own interpretations, only specific wording is acceptable. The term "DC system" needs to be replaced with explicit pieces of equipment such as "batteries, battery chargers, and AC / DC converters". To be a credible audit process, both the auditor and audited entity must have a clear understanding of what is being audited. DC system can be interpreted in many ways by an entity or auditor and is not an acceptable term. Further, BES references are needed to create clear and auditable boundaries for this definition.
<p>Response: The SDT believes your comment is aimed at revising the definition so that it achieves a particular outcome when applied to specific requirements in the proposed PRC-005. The team is trying to develop a definition that would be applicable for use in several standards, and does not want to make modifications to the definition that would limit the term's applicability.</p>				

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1	Nebraska Public Power District	Richard L. Koch	Affirmative	<ol style="list-style-type: none"> 1. Please provide the reasoning for including the battery chargers. Where do you draw the line of what is included. For example, should the panel providing power to the chargers be included? 2. Better clarification is needed when defining the DC control circuit. The trip coils are identified on one end of the circuit but nothing is identified upstream of the trip coils. For example, control switches, indicators, auxiliary relays, power supply breakers, etc.
<p>Response: 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" not including battery chargers, and directed that work to close this reliability gap should be given "priority." The definition of Protection System with regards to dc supply has been modified and now reads: Station dc supply associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply). The SDT believes this clearly limits the dc supply.</p> <p>2. The SDT believes the balloted definition includes all the control circuitry essential for the Protection System to function properly.</p>				
1	Pacific Gas and Electric Company	Chifong L. Thomas	Negative	<p>We disagree with the drafting team response to comments that the term BES should be included only in the standard. It is an essential part of the definition as it pertains to the purpose of NERC Standards. As a result we have changed our vote to negative. We view the basic intent of this definition is to identify what protective systems in facilities are to be utilized to protect the BES from two primary troubles 1) minimize interruption of the flow of electrical power from one portion of the BES to another, and 2) to prevent the propagation of BES trouble from one portion of the BES to another. While we agree that protection systems for all transmission related components can be adequately limited in scope by utilizing "electrical quantities", we do not feel that it is adequate for generating facilities. There are multitudes of elements in generating facilities that can remove the facility from service and impact the power flow from the facility to other portions of the BES. The efforts utilized thus far demonstrate that it is not desirable or realistically possible to address all devices from an oversight point of view and that the current definition which discriminates solely with the qualifier of "electrical quantities" is too broad and leaves much open to interpretation to define what types of protection are included in the definition. The definition, as it currently reads, leaves many protective devices to the owner/operator to manage for</p>

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				<p>maximum reliability of the generating facility. In the interest of clarity the definition should limit the scope for protective relays to those relays designed to prevent the propagation of trouble from one portion of the BES to another. We recommend changing the proposed definition to read as follows: A control system designed to detect electrical faults or abnormal conditions in the power system and initiate corrective action(s). A protection system consists of the following components: 1. Protective relays which protect: a) Transmission BES elements, including generating facility step up transformers, and respond to power system electrical quantities such as voltage and current, b) Generating facilities by responding to power system electrical quantities, such as voltage and current, and are designed to protect against potential problems in the BES on the high side of the generator step up transformer. 2. Communications systems necessary for correct operation of protective functions, 3. Voltage and current sensing devices which transform high level power system quantities to low level inputs for protective relays, and the associated circuitry to the inputs for protective relays. 4. Station DC supply associated with protective relay power supplies and control functions (including station batteries, battery chargers, and non-battery-based DC supply), and 5. Control circuitry associated with protective relay functions (including auxiliary relays) through the trip coil(s) of the circuit breakers or other interrupting devices.</p>
<p>Response: The SDT believes your comment is aimed at revising the definition so that it achieves a particular outcome when applied to specific requirements in the proposed PRC-005. The team is trying to develop a definition that would be applicable for use in several standards, and does not want to make modifications to the definition that would limit the term's applicability. The applicability of the definition of Protection System will be addressed in the various standards which utilize the definition. The SDT believes the current draft of the definition as balloted is better supported by industry.</p>				
1 3 4 5	Seattle City Light	Pawel Krupa Dana Wheelock Hao Li Michael J. Haynes	Affirmative	Seattle supports this definition with the understanding that issues that have been previously addressed through comment will be considered during the Standard development process.

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6		Dennis Sismaet		
Response: The SDT appreciates your support.				
1 3	Tri-State G & T Association, Inc.	Keith V. Carman Janelle Marriott	Negative	2nd bullet - Add communication-aided before protective functions. We think that this is important because you can have correct operation of protective functions without the communication-aided tripping functions operating correctly, especially with POTT or DCUB schemes. 5th bullet - replace through with including. We think that the phrase through the trip coil could be misinterpreted to mean protective functions that cause current to flow through the trip coil rather than the inclusive meaning such as from A through Z. If the intent of the drafting team is to exclude the trip coil, then we think it should be changed to control circuitry associated with protective functions required to operate the trip coil(s) of the circuit breakers or other interrupting devices.
Response: The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.				

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1	Western Area Power Administration	Brandy A Dunn	Negative	<p>The term "protection functions" is ambiguous as it is not related to the protection function associated with the protective relays. There are other protection functions not associated with protective relays that respond to electrical quantities.</p> <p>The language for Communication systems should be changed to remove the ambiguity. The following change would be clear, "Communication system necessary for the correct operation of the protective relays" The input to the relays is from voltage and current sensing devices through their respective circuits. Since the definition for protective relays separates the term "control circuitry" associated with protective relays, it is clear that protective relays do not also include the "control circuitry". By the same token, voltage and current sensing devices do not include their related circuits. The definition for voltage and current sensing devices should be revised to include the term "circuits". The following language change would serve make it clear: "Voltage and current sensing devices and their respective circuits providing inputs protective relays,".</p>
5	U.S. Bureau of Reclamation	Martin Bauer P.E.	Negative	<p>The term "protection functions" is ambiguous as it is not related to the protection function associated with the protective relays. There are other protection functions not associated with protective relays that respond to electrical quantities.</p> <p>The language for Communication systems should be changed to remove the ambiguity. The following change would be clear, "Communication system necessary for the correct operation of the protective relays" The input to the relays is from voltage and current sensing devices through their respective circuits. Since the definition for protective relays separates the term "control circuitry" associated with protective relays, it is clear that protective relays do not also include the "control circuitry". By the same token, voltage and current sensing devices do not include their related circuits. The definition for voltage and current sensing devices should be revised to include the term "circuits". The following language change would serve make it clear: "Voltage and current sensing devices and their respective circuits providing correct inputs to protective relays."</p>

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Response: The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.				
2	Midwest ISO, Inc.	Jason L Marshall	Negative	We disagree with the implementation plan. The implementation plan calls for capitalizing protection system in NUC-001-2 and PER-005-1. Because Protection System had been included in the NERC Glossary of Terms before the development of these standards, we believe the drafting teams would have capitalized those terms in these standards if they had intended for the Protection System definition to apply. Furthermore, we believe the use of protection system PER-005-1 was actually intended to be special protection systems or remedial actions schemes. To capitalize protection system in PER-005-1 will fundamentally alter the requirement in which it is contained.
Response: The SDT agrees and will revise the Implementation Plan to remove PER-005 from the list of standards to be modified. However, the SDT believes the term Protection System should be capitalized as described in the Implementation Plan for NUC-001-2.				
3	Consumers Energy	David A. Lapinski	Negative	We understand that this posting is intended to address perceived flaws in the currently approved definition. However, since this change, if approved, is likely to result in changes to an entity's PRC-005-1 maintenance program, we feel that it is inappropriate to approve this definition without simultaneous approval of the revised PRC-005-2 which will clarify the related changes to maintenance programs.
4		David Frank Ronk		
5		James B Lewis		
Response: 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" not including battery chargers, 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.				
3	MidAmerican Energy Co.	Thomas C. Mielnik	Negative	BES references are needed in each sub bullet definition to eliminate ambiguity and to create clearly auditable requirements. The term "DC system" needs to be replaced with explicit pieces of equipment such as "batteries, battery chargers, and AC / DC converters".
Response: The SDT believes these comments relative to BES are not within the scope of Project 2007-17 and should be addressed by the Regional Entities; and that the current draft of the definition as balloted is clear, concise, and contains the specific dc systems equipment you mention.				

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3	San Diego Gas & Electric	Scott Peterson	Affirmative	SDG&E believes that the following changes should be incorporated. Third item: DC supply sources affecting the "Protection System" (including station batteries, battery chargers, and non-battery-based dc supply), and SDG&E also believe that a definition of non-battery-based dc supply should be included to avoid confusion and recommend the following: "The inverter or rectifier in the circuit, dependent upon how the end use equipment is designed. Uninterruptible power supply (UPS) such as on-line, line-interactive or standby that some of the protection system could be on."
<p>Response: The SDT appreciates your support, and believes the current draft of the definition as balloted is clear, concise, and supported by industry. The term "non-battery-based dc supply" is meant to be a broad term to capture other methods such as flywheels, compressed air, fuel cells, or any other emerging technology which is capable of supplying dc power to the Protection System.</p>				
3	Wisconsin Electric Power Marketing	James R. Keller	Negative	<ol style="list-style-type: none"> 1. The Protection System definition needs to indicate that the listed items after relays are intended to be associated with relays. As written, most of the items apply to undefined "protective functions". The Implementation Plan's change to PER-005-1 R3.1 restricts where R3.1 applies. For example, changing "protection systems" to "Protection Systems" will exclude an SPS that does not operate relays. Replace term "voltage & current sensing devices" with "voltage & current sensing inputs to protective relays". 2. Remove the battery chargers from the definition and make reference to station batteries only. There needs to be improved coordination between proposed changes and definitions and the associated proposed changes and testing.
4	Wisconsin Energy Corp.	Anthony Jankowski		
5	Wisconsin Electric Power Co.	Linda Horn		
<p>Response: 1. The drafting team does not believe that the additional language is needed in the definition. The SDT agrees with the comment on PER-005 and will revise the Implementation Plan to remove PER-005 from the list of standards to be modified. 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" not including battery chargers, 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. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.</p>				

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4	Madison Gas and Electric Co.	Joseph G. DePoorter	Affirmative	Believe that Communication systems necessary for correct operation of protective "relay" functions be considered as an enhancement to the definition. This would also need to be added within the Station dc supply and Control circuitry bullets. This will provide clarity to exactly what the definition is describing.
<p>Response: The SDT appreciates your support. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.</p>				
5	Constellation Power Source Generation, Inc.	Amir Y Hammad	Negative	<p>Constellation has previously voted against these revised definitions because as written, it implies that the testing of PTs and CTs in PRC-005 is required. This latest proposal is no different. Constellation agrees with the SDT in that current and voltage sensing devices are an important aspect of the Protection System. However, by including PTs and CTs in the definition, auditors have been interpreting that as stating that dielectric testing and other tests are necessary on them. This does not seem to be the intention of the SDT. The intention of the SDT seems to be to verify that the sensing devices are delivering acceptable signals to relays. Table 1 a of the PRC-005-2 standard includes: Voltage & 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 for PRC-005-2 is even clearer in stating that ensuring the protection system is receiving the expected values from current and voltage sensing devices. But neither the originally revised or newly revised definitions carry that implication very well. The definitions are still including the devices themselves and not their outputs. To make the definition less ambiguous with PTs and CTs, Constellation proposes the following change in the definition: 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.</p>

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6	Constellation Energy Commodities Group	Brenda Powell	Negative	<p>Constellation has previously voted against these revised definitions because as written, it implies that the testing of PTs and CTs in PRC-005 is required. This latest proposal is no different. Constellation agrees with the SDT in that current and voltage sensing devices are an important aspect of the Protection System. However, by including PTs and CTs in the definition, auditors have been interpreting that as stating that dielectric testing and other tests are necessary on them. This does not seem to be the intention of the SDT. The intention of the SDT seems to be to verify that the sensing devices are delivering acceptable signals to relays. Table 1 a of the PRC-005-2 standard includes: Voltage & 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 for PRC-005-2 is even clearer in stating that ensuring the protection system is receiving the expected values from current and voltage sensing devices. The definitions are still including the devices themselves and not their outputs. To make the definition less ambiguous with PTs and CTs, Constellation proposes the following change in the definition: 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.</p>
<p>Response: The SDT believes your comment is aimed at revising the definition so that it achieves a particular outcome when applied to specific requirements in the proposed PRC-005. The team is trying to develop a definition that would be applicable for use in several standards, and does not want to make modifications to the definition that would limit the term's applicability.</p>				
5	Dynergy Inc.	Dan Roethemeyer	Affirmative	Please clarify "non-battery-based dc supply". It is vague.
<p>Response: The SDT appreciates your support, and believes the current draft of the definition as balloted is clear, concise, and supported by industry. The term "non-battery-based dc supply" is meant to be a broad term to capture other methods such as flywheels, compressed air, fuel cells, or any other emerging technology which is capable of supplying dc power to the Protection System.</p>				

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5	Indeck Energy Services, Inc.	Rex A Roehl	Negative	Neither batteries nor battery chargers are part of protection systems. They may be included in protection system maintenance procedures, but are not part of a protection system. Similarly, current and voltage measuring devices that are used for metering or monitoring and not exclusively for protection, are not part of the protection system, but may be included in protection system maintenance. THE SDT seems to have tried to incorporate some of the PRC standards with this definition rather than focusing on the one element being defined.
<p>Response: 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" not including battery chargers, 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.</p>				
5	Liberty Electric Power LLC	Daniel Duff	Negative	Battery chargers are not protection system elements. This part of the definition should be redacted.
<p>Response: 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" not including battery chargers, 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.</p>				
5	Public Utility District No. 1 of Lewis County	Steven Grega	Negative	Do not support the expanded definition of the protection system. Battery chargers are not part of the protection system.
<p>Response: : 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" not including battery chargers, 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.</p>				

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5	RRI Energy	Thomas J. Bradish	Negative	It is not appropriate to define the battery or chargers as protection system elements. For DC circuits or supply, the definition and subsequent boundary of the protection system should end at the fuses or circuit breakers of the sources supplying the individual DC control circuits of the protection system. For a typical power plant station battery, the percent of the battery capacity sized for the protection system is very small. The battery and chargers are power source elements, not protection elements. Likewise, all intermediate power distribution elements between the battery, chargers, and dedicated protection system branch circuits, do not belong in the definition of the Protection System.
6		Trent Carlson		
<p>Response: : 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" not including battery chargers, 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.</p>				
5	TransAlta Centralia Generation, LLC	Joanna Luong-Tran	Negative	To increase the clarity of the definition, TransAlta proposes the following: Control circuitry associated with protective functions through to and including the trip coil(s) of the circuit breakers or other interrupting devices
<p>Response: The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.</p>				

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8	SPS Consulting Group Inc.	Jim R Stanton	Negative	The term "Communication System" remains in the definition, despite the reality that at least for most generators, there is no communication system within the Protection System. Communication from device to device, such as a protective relay to a trip coil or alarm, it not a "system" per se but merely a wire connecting the devices. Keeping this definition as is perpetuates the confusion of generators when they design, modify and execute their protection system maintenance and testing program as the definition of the Protection System requires addressing a "communication system" which they do not have. Keeping the definition as is could lead to confused auditors who insist on literal adherence to the requirement language, clouding the audit and imposing ad hoc and perhaps inconsistent interpretations for audits, spot checks and self reports. What will most surely happen if this definition is approved is a quick request for interpretation by one or more entities seeking clarification on the requirement to include "communication systems" within their maintenance and testing program when they in fact have no such system. All this can be avoided by changing the term "communication systems" to "communication components." This is a primary example of fixing something on the front end so we don't have to go through interpretations and revisions to fix an ambiguity. This definition would also not pass a Quality Review due to the ambiguity of terms.
Response: The SDT believes the language is clear and addresses relay communication systems currently used by industry.				
8	Utility Services, Inc.	Brian Evans-Mongeon	Negative	While the language by itself is supportable, the definition is not complete. The SDT has still not addressed the question of when the definition will apply to Distribution Providers. Many DPs own and or operate the elements listed in the definition; however, the definition lacks clarity when such ownership or operation is subject to the performance obligations under the standard.
Response: This clarification is provided in each requirement that uses the term, "Protection System" by identifying the responsible entity. The comment relates to "application" of the definition, not to the definition.				

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9	California Energy Commission	William Mitchell Chamberlain	Affirmative	The proposed definition is generally acceptable. However, a slight modification to the third bullet in the definition would be an improvement to the proposed wording: "DC supply sources affecting the 'Protection System' (including station batteries, battery chargers, and non-battery-based dc supply), and " In addition, a definition of non-battery-based dc supply should be included to avoid confusion we recommend the following: "The inverter or rectifier in the circuit, dependent upon how the end use equipment is designed. Uninterruptible power supply (UPS) such as on-line, line-interactive or standby that some of the protection system could be on."
<p>Response: The SDT appreciates your support. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry. The term "non-battery-based dc supply" is meant to be a broad term to capture other methods such as flywheels, compressed air, fuel cells, or any other emerging technology which is capable of supplying dc power to the Protection System.</p>				
9	Oregon Public Utility Commission	Jerome Murray	Affirmative	Although I voted yes, I recommend the following proposed wording for the third bullet: DC supply sources affecting the "Protection System" (including station batteries, battery chargers, and non-battery-based dc supply), and Also the definition of non-battery-based dc supply should be included to avoid confusion. I recommend the following: The inverter or rectifier in the circuit, dependent upon how the end use equipment is designed. Uninterruptible power supply (UPS) such as on-line, line-interactive or standby that some of the protection system could be on.
<p>Response: The SDT appreciates your support. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry. The term "non-battery-based dc supply" is meant to be a broad term to capture other methods such as flywheels, compressed air, fuel cells, or any other emerging technology which is capable of supplying dc power to the Protection System.</p>				
10	Midwest Reliability Organization	Dan R. Schoenecker	Affirmative	Suggest the second bullet language replace the term correct with the intended. Communications systems necessary for the intended operation of protective functions.
<p>Response: The SDT appreciates your support. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry.</p>				

Segment	Entity	Member	Ballot	Comments
10	Western Electricity Coordinating Council	Louise McCarren	Affirmative	<p>The definition is generally acceptable. However, we believe that better language for the third bullet is as follows: DC supply sources affecting the "Protection System" (including station batteries, battery chargers, and non-battery-based dc supply), and A definition of non-battery-based dc supply should be included to avoid confusion and we offer the following: The inverter or rectifier in the circuit, dependent upon how the end use equipment is designed. Uninterruptible power supply (UPS) such as on-line, line-interactive or standby that some of the protection system could be on. The intent of the suggestion would consider that the entire protection system has to operate in order to maintain the reliability of the BES. An example would be if the protective relay and associated communications were on a UPS system and the intended device to operate were on station batteries, this would be the best case scenario as the Micro processors relays and the newer associated communications do not like the voltage drop when the station switches to the station batteries, hence the use of UPS options. Micro processors relays do have internal battery backup to keep them up and running, though a maintenance task would have to be included to be sure that they are properly maintained and tested, so the UPS option is easier and has been kind of an industry standard in the past. In the end the UPS would have to be on a maintenance schedule also.</p>
<p>Response: The SDT appreciates your support. The SDT believes the current draft of the definition as balloted is clear, concise, and supported by industry. The term "non-battery-based dc supply" is meant to be a broad term to capture other methods such as flywheels, compressed air, fuel cells, or any other emerging technology which is capable of supplying dc power to the Protection System.</p>				