

Individual or group. (53 Responses)
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Organization (33 Responses)
Group Name (20 Responses)
Lead Contact (20 Responses)
Question 1 (49 Responses)
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Question 5 (40 Responses)
Question 5 Comments (49 Responses)

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| |
| Individual |
| Aaron Staley |
| Orlando Utilities Commission |
| Yes |
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| No |
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| No |
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| No |
| It is not clear what the status is of an RAS type system on nonBES facilities. For example a system that if installed at 230 kV would clearly be RAS, but is installed below 100kv. A system that only operates and protects nonBES facilities. |
| Yes |
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| Individual |
| Steve Alexanderson |
| Central Lincoln |
| Yes |
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| No |
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| No |
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| No |
| Central Lincoln proposes the following be excluded: "Automatic transfer or system reconfiguration schemes intended to limit the extent and/or duration of outages; and not intended to benefit the BES." These systems operate similar to reclosing, in that they are intended to restore power quickly. Unlike reclosing, they may restore the power via an alternate path. We note the radial systems likely to benefit from auto-reconfiguration of load are unlikely to meet the BES definition, but the proposed definition of RAS has little dependency on the BES definition. The third RAS inclusion (Maintain acceptable System voltages) might be interpreted to include the auto-reconfiguration of load described above. |
| Yes |
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| Group |
| Northeast Power Coordinating Council |
| Guy Zito |
| Yes |
| A single term will lead to a more consistent application of reliability standards. |
| Yes |
| The objective to "Meet requirements identified in the NERC Reliability Standards" improperly defines a NERC term by utilizing NERC requirements which can change over time. The purpose of this section is to describe the objectives of an RAS. An RAS is accomplished the objectives of adequate reliability. Those Standards and requirements that will apply to RAS will list RAS in their requirements. The final bullet in an RAS objective "Address other Bulk Electric System (BES) reliability concerns" is open ended. The previous bullets of voltage, stability, flows and Cascade are the hallmarks of adequate levels of reliability. To the existing definition of Special Protection System (Remedial Action Scheme), after "Such action may include changes in demand, generation (MW and Mvar)..." add the words HVDC power flows, FACTS device operating points,... |
| Yes |
| It is not clear why "unanticipated" was omitted from the first sentence of the definition. While it is true that at least in WECC most of the conditions its RASs detect are predetermined, in other regions that might not be the case and omission of the term creates a loophole that is not there now. A RAS is designed to respond to System Conditions that could happen. The schemes are developed in response to Planning Studies. Protection systems are not installed without considering the conditions that will activate them. First bullet: Have SPS/RAS requirements literally been identified in NERC standards, or is the intent that the SPS/RAS be applied so that the power system meets the performance requirements identified in the NERC reliability standards? Sixth bullet: What is a reliability "concern"? Wouldn't it be more accurate to say address other conditions that could otherwise result in failure to comply with reliability standards? |
| No |
| Regarding Item "c" (Undervoltage Load Shedding Programs [UVLS Programs]) of what does not individually constitute a RAS, UVLS Program must become an approved definition. Local undervoltage load shedding schemes that are not installed "to mitigate the risk of Cascading, voltage instability, voltage collapse, or uncontrolled separation resulting from undervoltage conditions" as defined in the draft PRC-010-1 should be excluded, therefore, "c. Undervoltage load Shedding Programs (UVLS Programs)" should be changed to "c. Automatic undervoltage load shedding schemes, including UVLS Programs. However, centrally controlled dispersed undervoltage load shedding schemes are RAS." An objective could be added to address centrally controlled Remedial Action Schemes. After the bulleted section, the sentence "The following do not individually constitute an RAS" could be read as implying that two or three of them taken together might constitute an RAS, which may or may not be the case. Suggest revising to read "The following do not individually, or combined in part or total, constitute a RAS." Please list UFLS and UVLS programs with the same capital letters and use of parentheses. |
| Yes |
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| Group |
| Colorado Springs Utilities |
| Kaleb Brimhall |
| Yes |
| RAS is good – we agree with having one term and do not have a preference on which term is used. |
| No Comments |
| No Comments |
| No |
| Colorado Springs Utilities does not agree with the exclusion list in the proposed definition. We do not think that it is reasonable or prudent to create a comprehensive list of exclusions. There will always be just one more exception that will force us to continue to modify the list of exclusions. Also, if it is not explicitly defined as an exception then by default it is automatically included whether it could |

affect reliability or not. The definition should clearly define what a RAS so as to include those schemes identified as essential to reliability. The only implicit exclusion we would recommend would be to exclude protection schemes that meet the definition of a RAS and are explicitly covered under other NERC reliability standards. Utilities would then use the definition to make sure that essential protection systems that meet the definition are included and document any further assumptions or judgement used in delineating between RAS and non-RAS schemes. Trying to micro-manage every possible exclusion or inclusion we think is not realistic and should not be necessary. If we do keep the exclusions list then we would offer the following suggestions on the current list of exclusions, and would anticipate a fairly steady flow of additions/modifications to this list moving forward. 1. Remove "automatic" from UFLS 2. Should we explicitly exclude GMD responses? Refer to EOP-010-1/TPL-007-1.

No Comments

Individual

Michael Hill

Tacoma Public Utilities

No

Tacoma Power supports FMPA's comments concerning Question 1.

No

No

No

Tacoma Power supports FMPA's comments concerning Question 4. Furthermore, additional clarification seems necessary for (e): "Schemes applied on an Element for non-Fault conditions, such as, but not limited to, generator loss-of-field, transformer top-oil temperature, high voltage, or overload to protect the Element against damage by removing it from service." Perhaps there could be another category for backing-up operator response and re-dispatch: "Locally sensing devices intended to mitigate thermal damage, within expected system re-dispatch response times, such as 10 minutes or greater. Examples are cooling fans, oil pumps, or thermal protection systems." Does the phrase "power system stabilizers" need to be explicitly added to (f)? In the FAQ document, on page 5 of 8, under "Schemes that automatically de-energize a line for a non-Fault operation when one end of the line is open," include something like the following two examples: (1) Opening the remote terminal(s) to remove an overload on the line in question following operation of the local terminal when there was no fault on the line in question and (2) opening the remote terminal(s) as a precaution against inadvertently closing back into a local island with generation.

No

Tacoma Power supports FMPA's comments concerning Question 5. Furthermore, in the FAQ document, on page 7 of 8, under "What are the Implementation Plan time frames," in the second paragraph, it should be 24 calendar months (or longer if the drafting team extends the timeframe) from the effective date (see page 6 of the Implementation Plan), not 24 calendar months beyond the date of approval by a governmental authority.

Individual

John Brockhan

CenterPoint Energy

Yes

No

No

Yes

(a) CenterPoint Energy believes the use of the capitalized term "UVLS Programs" is appropriate based upon the currently posted definition of "UVLS Program" that is proposed in NERC Project

2008-02 Undervoltage Load Shedding PRC-010-1. (b) CenterPoint Energy suggests changing "Autoreclosing schemes" to "Automatic reclosing schemes" (item d) to be consistent with other NERC documents, such as, Reliability Standard PRC-005-3 Protection System and Automatic Reclosing Maintenance. (c) The extensive list of what is not a RAS appears to be well developed with thirteen schemes specifically identified. However, with the opening sentence currently stating "The following do not individually constitute a RAS", it appears to be a finite list that would require a revision of the definition to include other possible control schemes. To not limit the list, CenterPoint Energy recommends the opening sentence be changed to "The following are examples of schemes that do not constitute a RAS". (d) CenterPoint Energy is concerned that the use of the term "individually" in the opening sentence, which currently states "The following do not individually constitute a RAS", reduces the clarity and specificity of the definition. Without clarity, this could result in inconsistent application across regions. As an example, if an entity has both a UVLS Program on their system and FACTS devices at a few locations, are these installations now considered to be collectively a RAS as opposed to individually? Under the existing NERC definition for SPS that states "An SPS does not include (a) underfrequency of Undervoltage load shedding", there would not be any confusion that these installations are not RAS. Of the thirteen items on the exclusions list, there is only one example (item d for autoreclosing) in the project FAQ document that provides insight of the team's intention with the use of "individually". CenterPoint Energy suggests deleting the word "individually" by changing the opening sentence to "The following are examples of schemes that do not constitute a RAS". Alternately, it may be possible to develop additional wording in the definition to codify the intent of the use of the term "individually". In addition, CenterPoint Energy recommends that the project FAQ document include additional examples to help clarify the intent. As an alternative to the FAQ document, NERC could instead develop an Applications Guidelines document, with specific examples, for the definition of RAS.

No

CenterPoint Energy recommends implementing the proposed definition of RAS and retirement of SPS as soon as practicable to incorporate the clarifications and help provide consistent application across all regions more quickly. Instead of 12 months, we suggest the definition become effective the first day of the first quarter after needed approvals. As this change would impact the proposed implementation plan time frame for newly-identified RAS resulting from the revised definition, we suggest changing the proposed twenty-four (24) months to thirty-six (36) months after the Effective Date of the definition.

Individual

Barbara Kedrowski

Wisconsin Electric Power Company

Yes

No

No

No

We recommend the following changes to the exclusions list a) through i), by item: e.) To simply include generator loss of field ignores many other generator protections for abnormal operating conditions. Revise this exclusions list to add the following: "Generator abnormal operating conditions listed in IEEE C37.102." (Or, list each individually, that is, "loss of field, unbalanced currents, loss of synchronism, overexcitation, motoring, over/under-voltage, and abnormal frequencies.") f.) This exclusion needs clarification. Does the clause "controllers that switch or regulate..." apply only to "series or shunt reactive devices", or does it extend to the rest of the items in this list? We suggest that the term "switch or regulate" creates ambiguity. We suggest simply using the term "controls ". Any controls for the various equipment listed should be excluded from being RAS. We also suggest that generator turbine controls be added to this list. j.) We propose that the SDT add a new item after item i), to include "Schemes that automatically shutdown a generator upon load rejection."

Yes

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| Individual |
| Kathy Caignon |
| City of Vineland |
| Yes |
| |
| Yes |
| With the statement in the definition of "but are not limited to", and the first of the inclusions of "Meet requirements identified in the NERC Reliability Standards", there is no real limit on the scope of the definition. Also, the last inclusion "Address other BES reliability concerns" looks like a catchall inclusion that could be applied after the fact. This is not so black and white when talking about a definition of a RAS. There needs to be categorization and guidance for the industry to determine their own situations. Not all RAS (in the proposed definition) are equally critical to reliability of the BES. |
| Yes |
| Categorization of RAS for criticality. |
| No |
| Problems with determining a UVLS Program and RAS. |
| No |
| |
| Individual |
| Muhammed Ali |
| Hydro One |
| Yes |
| |
| No |
| |
| No |
| |
| No |
| Local undervoltage load shedding schemes should be excluded, therefore, in the exclusion list, "c. Undervoltage load Shedding Programs (UVLS Programs)" should be changed to "c. Automatic undervoltage load shedding schemes, including UVLS Programs. However, centrally-controlled dispersed undervoltage load shedding schemes are RAS." |
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| Group |
| MRO NERC Standards Review Forum |
| Joe DePoorter |
| Yes |
| |
| Yes |
| |
| Yes |
| The definition as drafted includes use of Bulk Electric System in some places and not in others. Assuming the RAS that are covered under this standard are only those in the BES, the following changes are suggested to clarify this: A scheme designed to detect predetermined Bulk Electric System (BES) conditions and automatically take corrective actions that may include, but are not limited to, curtailing or tripping BES generation or other BES sources, curtailing or tripping load, or reconfiguring a System(s). RAS accomplish one or more of the following objectives: • Meet requirements identified in the NERC Reliability Standards; • Maintain BES stability; • Maintain acceptable BES voltages; • Maintain acceptable BES power flows; • Limit the impact of BES Cascading; or • Address other BES reliability concerns To eliminate any doubt that the text used in |

NERC Reliability Standards properly applies to only BES Remedial Action Schemes. The NSRF recommends establishing a RAS Definition that applies explicitly to the BES. This objective could be accomplished by defining it as a "BES Remedial Action Scheme" and replacing the references to "System" with "BES". The existing references in the proposed RAS Definition to "System or Systems" apply more broadly to non-BES transmission systems and distribution systems.

No

The NSRF suggests: Item c – Consider rewording to better show the correlation to Item b by including the adjective 'automatic', with text like, "Automatic Undervoltage Load Shedding Programs (UVLS Programs) Item f – consider adding ". . . and controllers that . . ." to the middle of the item for improved readability. Item h – Consider using wording more aligned with Item g, such as ". . . remotely switch static shunt reactive devices for voltage regulation . . .". Otherwise consider wording like, "remotely switch static shunt inductors or static shunt capacitors for voltage regulation . . .".

Yes

Individual

John Pearson

ISO New England

No

Since the terms were defined the same and referenced each other, there is no need for the change. However, there is no harm in making the change either.

No

No

No

Exclusion "e." is too broad. There are instances where an overcurrent device that opens a line should be considered a RAS. As currently written, these schemes would fall under exclusion "e." and would no longer be considered RAS. Exclusion "j." should be limited depending on the size of the island, as determined by the Reliability Coordinator. For example, in some areas 800 MW may be small for a single dedicated facility, but in other areas, an 800 MW island could be substantial. Exclusion "m." should be limited to SSR protection schemes that act solely at the same station. It should read: "Sub-synchronous resonance (SSR) protection schemes that directly detect and act solely at the same station depending on sub-synchronous quantities (e.g. currents or torsional oscillations)." Another exclusion ("n.") should be added to exclude schemes that are specifically designed to restore load (often called load throw-over schemes) so that they are not considered RAS. An example of this is a 115-kV line that has load tapped off the middle. After a fault on the line, switches automatically open up at the tapped station and each end of the 115 kV line tries to pick up the load. The unfaulted end of the line will restore the load, and the faulted end will trip out and remain open. However, we do not believe that schemes which are taking actions such as automatic network reconfiguration to reenergize equipment that was tripped as a result of fault clearing which is not restoring load should be excluded.

No

24 months will be needed due to all the changes in documentation that will be required to address the revised definition.

Individual

David Thorne

Pepco Holdings Inc

Yes

No

No

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| Yes |
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| Yes |
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| Individual |
| Michelle DAntuono |
| Ingleside Cogeneration LP |
| No |
| Ingleside Cogeneration LP (ICLP) believes that the second draft of the definition of a RAS is too open ended. Two modifications have been made to the base definition of a RAS that infer that almost any Protection System not specifically identified in the list of exclusions is in scope. First, the removal of the qualifier that RAS takes corrective action "other than the isolation of faulted elements" adds almost every relay scheme back into the equation. ICLP sees no good reason for its deletion – if there are such systems that isolate faulted elements and need RAS-like oversight, they should be explicitly listed. Second, the bulleted list under the base definition includes a catchall that stipulates that a RAS may address "other Bulk Electric System (BES) reliability concerns." We have seen ambiguous statements of this type lead to Regional variations, and have watched the original intent vary over time. As such, the item should be removed. In ICLP's view, the project team's decision to eliminate the four categories of RAS by function and extent of impact was also a step backwards. Several Regions have made similar distinctions of this type in order to account for variations in the most appropriate oversight methods – a tactic that has proven to be very effective. Furthermore, our reading of the stakeholder comments indicates that most respondents were comfortable with the concept, but had various concerns that were easily accommodated. As such, ICLP believes that the deferral of those distinctions to the individual NERC standards is too unstructured, and that the four original categories should be retained. |
| No |
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| Yes |
| The exclusions proposed by the drafting team are comprehensive and precise – and the bulleted list of "inclusions" under the base definition of RAS must be as well. In the original definition, such descriptors included those RAS whose loss or malfunction would lead to "Non-Consequential Load Loss \geq 300 MW", "Aggregate resource loss (tripping or runback of generation or HVdc) > the largest Real Power resource within the interconnection", "Loss of synchronism between two or more portions of the system each including more than one generating plant", and "Negatively damped oscillations". ICLP is not sure why specifics like this were removed to begin with – and we believe it is the responsibility of the drafting team to provide the rationale, not the industry. |
| No |
| If the core definition is not modified as ICLP proposes in response to Question 1, we believe that an exclusion must be made for a protective scheme that takes corrective action "other than the isolation of faulted elements". Without it, a relay owner will have to demonstrate to a CEA that they individually considered almost every relay system before determining that it is not a RAS. If there are such systems that isolate faulted elements and need RAS-like oversight, they can be explicitly listed under the core definition. |
| Yes |
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| Individual |
| Andrew Z.Pusztai |
| American Transmission Company, LLC |
| Yes |
| |
| No |
| |
| Yes |

To eliminate any doubt that the text used in NERC Reliability Standards properly applies to only BES Remedial Action Schemes, ATC recommends establishing a RAS Definition that applies explicitly to the BES. This could be accomplished by defining it as a "BES Remedial Action Scheme" and replacing the references to "System" with "BES." The existing references in the proposed RAS Definition to "System" or "Systems" apply more broadly to non-BES transmission systems and distribution systems.

Yes

Yes

Individual

Amy Casuscelli

Xcel Energy

Yes

No

No

Yes

We also feel that sudden pressure relays (SPRs) should also be explicitly stated in item "e".

Yes

Group

Dominion

Louis Slade

Yes

No

No

The objectives do not belong in a definition of RAS. These objectives are a restatement of the NERC defined term "Reliable Operation" which is the objective of all Reliability Standards. . These are too broad and will cast to wide a net. "Meet the requirements identified in the NERC Reliability Standards" could include standards that are not developed yet. A RAS should only be a RAS if it solves a reliability violation for a specific contingency (not a generic "System condition") of the type stated in TPL-001-4 or its successor standard. Additionally, we are not sure if it should be a RAS if it only solves "extreme" events in the TPL standards since the label of RAS takes away incentive to mitigate problems.

No

From item "f", strike the term "and that are located at and monitor quantities solely at the same station as the Element being switched or regulated." Why does it make a difference whether the controller is local or remote? The advent of high-speed phase measurement units (PMUs) and faster computer systems will eventually allow wide area control. This will become essential as the customer's load characteristic evolves (less voltage and frequency dependency means local PSSs will be less effective). We are concerned that the definition in general will hamper innovation. Right now there are schemes that control LTC's and capacitors to minimize losses. Certainly these are not RAS. There are EMS controls such as what PJM uses that dispatch generation precontingency to avoid overloads/voltage problems. These are not RAS either. Eventually computer EMS systems will become fast and robust enough to drop load or reconfigure the system so quickly that wide area blackouts will be virtually eliminated. Recall that only 500 MWs of load drop would have stopped the

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| 2003 blackout. Therefore wide area systems that generically react to problems (not designed for a single specific contingency (if line A opens, do xyz action)) should not be RAS. |
| Yes |
| Group |
| Seattle City Light |
| Paul Haase |
| Yes |
| No |
| Seattle appreciates the efforts of the drafting team to be complete, but has concern with a definition that is primarily a negative definition, i.e. a definition of what a RAS is NOT. If such an approach is deemed the most practical, Seattle recommends that a general item be added to the list of what a RAS is not, such as "n. any other scheme that does not automatically act to maintain System performance or BES reliability on a wide area." The point is to have a general item that entities or auditors could point to, in the likely case that additional non-RAS schemes are identified that do not fall within the 13 "these are not a RAS" items identified so far. |
| Individual |
| Jo-Anne Ross |
| Manitoba Hydro |
| Yes |
| Manitoba Hydro agrees that using a single term is the preferred approach. However, the proposed definition of "Remedial Action Scheme" is not clear. For example, it is not clear what "curtailing or tripping generation or other sources" means. Does it mean generation (real power) only but not reactive power? What does "other sources" refer to? The single term will take time getting used to in some regions that are used to SPS. However, there has always been confusion between protection systems and special protection system. A remedial action scheme is a better term. |
| No |
| No |
| No |
| 1. In the exclusion list a), it is not necessary to include power swing blocking 2. In the exclusion list e), it is not clear what "high voltage" here is intended to mean, does it mean overvoltage protection? Consider revise this as: "Schemes applied on an Element that react to non-Fault conditions, such as, but not limited to, generator loss-of-field protection, transformer top-oil temperature monitoring and protection, overvoltage protection, or overload protection to protect the Element itself against damage by removing it from service" 3. In exclusion list f), "switch or regulate" needs clarification, for example, what does "switch or regulate generation excitation" mean? Is converting a unit from a generator to a synchronous condenser considered as switching of generation excitation? Also, "at the same station" needs clarification. For example, if a generator switching station is less than 1 km away from its generating station, can they be considered as the same station? 4. The exclusion list covers transmission elements very well. One special transmission element missing is a braking resistor. Is use of a braking resistor a RAS or a permissible element used to maintain stability? Braking resistors are somewhat uncommon and could fall under the RAS definition. One special generator feature could be included in the exclusion list – fast valving. Fast valving is a common method used in steam turbines to improve stability and avoid generator tripping. |
| No |
| The effective date for the revised Reliability Standards should be specific for each revised standard, and it should be specified in each revised standard. |

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| Individual |
| Gary Kruempel |
| MidAmerican Energy Company |
| Yes |
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| No |
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| No |
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| No |
| Exception "e" could be read to only include schemes that take the action of removing an element from service. If an action does something other than removing an element from service but its objective is to protect the element it should be included in this exception. Suggest removing the words "by removing it from service" be deleted from this exception. |
| Yes |
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| Individual |
| Jonathan Meyer |
| Idaho Power |
| Yes |
| |
| No |
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| No |
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| Yes |
| We would like to see Protection System operations and fault clearing included as an exception. We feel this will better separate RAS actions from Protection System operations, e.g. fault clearing or generator loss of field tripping. |
| Yes |
| The initial 12 month period to identify new RAS appears to be adequate. However, the 24 month calendar should start once a new RAS is identified rather than the effective date of the definition. |
| Individual |
| Chris Scanlon |
| Exelon Companies |
| Yes |
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| No |
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| No |
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| No |
| Exception "c" of the proposed definition of RAS excludes "UVLS Programs". The background information provided in the FAQ document suggests that the intent of using the term "UVLS Program" in this exclusion was to exclude UVLS schemes that are not centrally controlled. The Project 2008-02 Undervoltage Load Shedding drafting team states in their June 24, 2014 FAQ that UVLS schemes owned by Transmission Owners, Distribution Providers, or Transmission Operators but not required by the planners do not meet the attributes of the proposed defined term "UVLS Program" and are therefore not subject to the requirements of PRC-010-1. This raises uncertainty as to whether such schemes, even if not centrally-controlled, are RAS, UVLS Programs, or neither. Please clarify whether exception "c" of the proposed definition of RAS would include a non-centrally- |

controlled UVLS scheme owned by a Transmission Owner, Distribution Provider, or Transmission Operator but not required by the Planning Coordinator or Transmission Planner, which is therefore not covered by the Project 2008-02 revisions to PRC-010. Exelon contends that such a scheme should not be considered a RAS.

Yes

Individual

Thomas Foltz

American Electric Power

Yes

AEP agrees with the concept of using a single term, and believes the project team is off to a good start in its development. AEP offers the following comments for continued improvement... It is unclear from the proposed definition and associated exclusions list whether automatic load rejection (ALR) of a generating unit is considered to be a Remedial Action Scheme. Our negative vote is driven solely on the lack of certainty surrounding this applicability of the definition. The qualifier "BES" should be incorporated into the definition as follows... Maintain *BES* System stability; Maintain acceptable *BES* System voltages; Maintain acceptable *BES* power flows; Limit the impact of *BES* Cascading; or

No

Once again, AEP believes the drafting team has done well in developing their exclusions list. As stated previously however, AEP believes it is unclear from the proposed definition and associated exclusions list whether automatic load rejection (ALR) of a generating unit is considered to be a Remedial Action Scheme. AEP believes that ALR is not an RAS and should be explicitly excluded in definition to avoid confusion.

Individual

Jamison Cawley

Nebraska Public Power District

Yes

No

No

Yes

No

Also, see SPP group comments The FAQ document states: "The classification of a RAS is not necessary for defining whether or not a scheme qualifies as a RAS. Informal feedback from many stakeholders indicated uncertainty about the classification types. Therefore, the SDT decided not to include RAS classification types within the definition. The classifications are more appropriately addressed concurrently with revisions to the RAS-related Reliability Standards." It appears the RAS classification types that are to be included in the RAS reliability standards will be a significant change that needs to be clarified before a full identification of RAS schemes and subsequent design requirements can be accurately completed if they are to be used. If other NERC standards must be updated or rewritten such as PRC or TPL standards in conjunction with this definition to clarify classification changes it is recommended the implementation plan specify that the proposed definition implementation not become effective until or following the most critically related RAS standards that would be updated in order to avoid confusion how the definition relates to existing or as yet un-revised standards. The FAQ document states "The Implementation Plan also provides owners of newly identified RAS twenty-four (24) calendar months beyond the date of approval by a

governmental authority to be fully compliant with all standards applicable to the revised definition of Remedial Action Scheme. The drafting team contends that twenty-four (24) calendar months provides the RAS owner sufficient time to become compliant with the revised standards proposed in the implementation Plan." If it is possible the RAS definition may include new schemes or require complete redundancy modifications near large generating plants that have long outage schedules due to any classification changes it seems the 2 year implementation time frame could be too short. It seems a minimum of 4 to 6 years for an implementation time frame would be more logical for modification changes based on the possible classification types. This would reduce the risk of unplanned or additional generation outages in order to meet this standard.

Group

SERC DRS

Robbie Bottoms

Individual

Anthony Jablonski

ReliabilityFirst

Yes

Yes

ReliabilityFirst submits the following comments for consideration: 1. Item k. "Automatic sequences that proceed when manually initiated solely by an operator" a. ReliabilityFirst is aware of a current RAS for a large generation plant in which the RAS can be armed/de-armed by a system operator. In the cases where this RAS is armed, we would consider this to be a RAS, applicable to any associated NERC Reliability Standards. ReliabilityFirst questions whether it is the intent of item "K" to exclude these types of schemes as a RAS. If so, what is the technical justification/basis for such exclusion? b. The term "operator" is undefined and may be left to interpretation. ReliabilityFirst recommends using the NERC Glossary of Terms definition of "System Operator" to further clarify the term "operator".

Individual

Michael Moltane

ITC

Yes

No

No

What purpose does the objectives list serve? Would any scheme be not considered RAS due to its objective? The term "other BES reliability concerns" seems to be all-inclusive so there's no point to the list.

Yes

Group

FirstEnergy Corp.

Richard Hoag

Yes

No

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| No |
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| Yes |
| Exclusion "e", Schemes applied on an Element for non-Fault conditions, such as, but not limited to, generator loss-of-field, transformer top-oil temperature, high voltage, or overload to protect the Element against damage by removing it from service. Please provide clarification on this exclusion. |
| Yes |
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| Individual |
| Mahmood Safi |
| Omaha Public Power District |
| Yes |
| |
| No |
| |
| Yes |
| An objective of this project is to create a RAS definition and to eliminate the need for an SPS definition. Somewhere, that should be clarified. |
| No |
| The Omaha Public Power District (OPPD) believes that the exclusion list needs to be further clarified to state that the EMS/SCADA related schemes are not part of the RAS. Currently, this concern is addressed in the associated FAQ document; however, this document is not going to be part of the RAS Definition going forward. OPPD is concerned that lack of this clarity in the definition may cause inadvertent inclusion of schemes/systems that traditionally are not identified as RAS or SPS. |
| Yes |
| |
| Group |
| National Grid |
| Michael Jones |
| Yes |
| While we agree with the desire to have a single term, both the proposed name "Remedial Action Scheme" (RAS) as well as the alternative term "Special Protection System" (SPS) seems to have issues. The definition does not say anything about how the action is accomplished. A problem we have is that, of the two names, "Remedial Action Scheme" seems to be worse, because a scheme usually mitigates a condition, but it does not usually remedy it. Strictly speaking, it performs a trade-off by substituting one abnormality, such as an open line or severed interconnection, for another, such as a thermally overloaded line. We are not arguing for one term or the other, but it is critical that the various terms be applied correctly and consistently. Further, the term "Special Protection System" at least implied that it took automatic action, whereas the term "Remedial Action Scheme" does not. A system operator operating a circuit breaker by remote control is a remedial scheme, but we do not think it falls under the scope of what is intended. Although the provision that it be automatic is included within the definition, it might be helpful to include it in the title as is done with underfrequency load shedding. |
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| Yes |
| RE: "RAS accomplish one or more of the following objectives: Maintain System Stability" Can a RAS/SPS maintain system stability or does it prevent (or at least lessen the odds of) system instability? |
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| Group |
| Operational Compliance |

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| Dianne Gordon |
| Yes |
| |
| No |
| |
| No |
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| No |
| Part c. of Exclusions lists "Undervoltage Load Shedding Programs (UVLS Programs)". The definition of "UVLS Programs" needs to be clarified up front in the same space as the RAS definition. 1. The distinction between "centrally controlled UVLS" being included as part of the RAS definition and "locally controlled UVLS" not included in RAS Definition should be reclarified here. 2. The distinction between UVLS Program schemes and UVLS schemes that are not part of the entity "UVLS Program" also needs to be spelled out. For one intimately familiar with NERC standards, the information is available, but items 1. and 2. should be clear for a reader with somewhat limited knowledge of other standards. For example, engineers need to follow the NERC standards in their work, but may not be intimately familiar with other NERC standards, guidelines and definitions. |
| Yes |
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| Individual |
| Rich Salgo |
| NV Energy |
| Yes |
| |
| Yes |
| The list of corrective actions taken by a RAS is comprehensive; however, we feel it would be a valuable improvement to clarify that each of the second through fifth bulleted items is applicable only to the BES. For instance, the second bullet would read "Maintain Bulk Electric System stability"; third bullet would read "Maintain acceptable BES voltages"; fourth bullet "Maintain acceptable BES power flows"; and fifth bullet "Limit the impact of Cascading throughout the BES". |
| No |
| |
| Yes |
| |
| Yes |
| |
| Individual |
| Patti Metro |
| NRECA |
| Yes |
| Although NRECA agrees that using the single term RAS can provide clarity in the forty-three (43) standards utilizing the term, the proposed RAS definition creates a conflict with the applicability sections in the PRC-005-2 and PRC-005-3 standards. In these standards, the applicability 4.2.4 states "Protection Systems installed as a Special Protection System ...", but the proposed definition of a RAS explains that a RAS is no longer a "Protection System". With the proposed definition, PRC-005-2 and PRC-005-3 will not be applicable to a RAS. If these standards are meant to be applicable to the a RAS, then the applicability and possibly the associated requirements and tables included in PRC-005-2 and PRC-005-3 will require further revision rather than simply replacing SPS with RAS. NRECA recommends that the drafting team revisit the intent of designating that a RAS is not a "Protection System" which will require a thorough review of the standards to determine if a substitution creates a reliability gap by changing the intent of the modified standards. |
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| No |
| Although NRECA does not believe that Automatic Generation Control (AGC) is a Remedial Action Scheme (RAS), the definition of AGC includes "automatically adjusts generation" which for some NRECA members is implied in the "curtailing generation" language included in the RAS definition. For clarity, consider including AGC in the list of exclusions. |
| Individual |
| David Jendras |
| Ameren |
| No |
| The last bullet point in the definition of a Remedial Action Scheme "Address other Bulk Electric System (BES) reliability concerns." appears too broad, and we request the drafting team removed this from the definition. |
| No |
| No |
| Yes |
| Editorial: add semi-colon after each lettered item in the exclusion list. |
| No |
| (1) Direct substitution of RAS for SPS works in almost all cases, except for PRC-005-2, and - 3 section 4 Applicability 4.2.4 where it contradicts part of your proposed RAS definition "These schemes are not Protection Systems; however, they may share components with Protection Systems." We request the drafting team reword PRC-005-2 and -3 section 4.2.4 by adding 'Components' and 'part of' to yield the following: "Protection System Components installed as part of a Remedial Action Scheme (RAS) for BES reliability." (2) We request the drafting team to drop the word 'other' that's in front of 'protection systems' in PRC-012, PRC-013, PRC-014, PRC-015, and PRC-016 because it can be read to imply that a RAS is a protection system, which contradicts with part of your proposed RAS definition "These schemes are not Protection Systems; however, they may share components with Protection Systems." |
| Individual |
| Martyn Turner |
| LCRA Transmission Services Corporation |
| Yes |
| The following statement, "These schemes are not Protection Systems; however, they may share components with Protection Systems." is misleading and confusing. This statement should be deleted. |
| No |
| LCRA TSC recommends an additional example be included under the heading "The following do not individually constitute a RAS:" stated, "Protection systems installed to clear faults." |
| No |
| No |
| LCRA TSC recommends an additional example be included under the heading "The following do not individually constitute a RAS:" stated, "Protection systems installed to clear faults." It appears that items F and G of the proposed definition are in conflict. Item G creates an exclusion that is taken away in item F for FACTS devices but leaves in place the limitation for switched shunts. LCRA TSC recommends revising items f. and g. as follows: f. Controllers that switch or regulate series or shunt reactive devices, flexible alternating current transmission system (FACTS) devices, phase-shifting transformers, variable-frequency transformers, tap-changing transformers, or generation excitation. |
| Yes |

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| Group |
| Tennessee Valley Authority |
| Brandy Spraker |
| No |
| We agree that using a single term should help bring the industry toward a common understanding/usage of the term. However, we believe the revised draft definition fails to add the desired clarity. We suggest the following modification: "A control scheme designed and installed to detect pre-analyzed System conditions and automatically perform corrective actions that may include, but are not limited to, curtailing or tripping generation or other sources, curtailing or tripping load, or reconfiguring a System(s). RAS accomplish one or more of the following objectives: <ul style="list-style-type: none"> • Meet requirements identified in the NERC Reliability Standards; • Maintain System stability, as related to the NERC Reliability Standards; • Maintain acceptable System voltages, as related to the NERC Reliability Standards; • Maintain acceptable power flows, as related to the NERC Reliability Standards; or • Limit the impact of Cascading, as related to the NERC Reliability Standards.; or DELETED: Address other Bulk Electric System (BES) reliability concerns. |
| No |
| |
| Yes |
| The bulleted list of objectives fails to enhance clarity, and could in fact increase the uncertainty around RAS. Bullets 2-6 can be interpreted to cover objectives beyond NERC Reliability Standards, when taken in context with the first bullet. The scope of the definition should be limited to applications that are relevant to the NERC Reliability Standards in which the term is used. See proposed modifications under question 1 response. |
| Yes |
| We think it's appropriate to address exclusions, however when the exclusion list is this long (and perhaps growing) it highlights the challenge in developing a good base definition for what constitutes a RAS NERC-wide. An alternative would be to "catalog" the RAS exclusions in a separate NERC reference document that could be revised without revising the base RAS definition. |
| Three years seems like a reasonable implementation period (a 1 year period for the definition to go into effect and a 2 year period for any existing scheme pulled into the definition to be brought into compliance). However, with 38 additional standards to be revised, this could entail more work than anticipated to ensure full compliance with each one under the new definition. |
| Individual |
| Richard Pienkos |
| Consumers Energy Company |
| No |
| In general, we are encouraged with the redefinition of this scheme especially with the added clarity and emphasis on identifying that they are not Protection schemes but may share components. However, it is a little unclear if the intent of this definition was to define a term specifically for schemes applicable only to the BES or is the intent to have a broader definition and then restrict its applicability when used in each standard. To illustrate this point, in the first paragraph, the term "System" is used which in itself does not refer only to the BES. Yet in the list the objectives the RAS is to accomplish, the first item (Meet requirements identified in the NERC Standards) and the last item (address other BES reliability concerns) specifically refer to the applicability on the BES. |
| Yes |
| If the intent was indeed to have this definition apply only to the BES, then we suggest the additional clarifications since many companies may have similar schemes on non-applicable systems: A scheme designed to detect predetermined System conditions on the BES and automatically take corrective actions that may include, but are not limited to, curtailing or tripping generation or other sources, curtailing or tripping load, or reconfiguring a System(s). RAS accomplish one or more of the following objectives: <ul style="list-style-type: none"> • Meet requirements identified in the NERC Reliability Standards; • Maintain BES System stability; • Maintain acceptable BES System voltages; • Maintain acceptable BES power flows; • Limit the impact of Cascading on the BES; or • Address other Bulk Electric System (BES) reliability concerns. |

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| Yes |
| If the intent was indeed to have a broader definition and then restrict its applicability when used in each standard, then we suggest the following clarifications: A scheme designed to detect predetermined System conditions and automatically take corrective actions that may include, but are not limited to, curtailing or tripping generation or other sources, curtailing or tripping load, or reconfiguring a System(s). RAS accomplish one or more of the following objectives: • Meet requirements identified in the NERC Reliability Standards; • Maintain System stability; • Maintain acceptable System voltages; • Maintain acceptable power flows; • Limit the impact of Cascading; or • Address other Bulk Electric System (BES) reliability concerns. Then each standard using this term would state something like "...an RAS used to address BES reliability..." to help define applicability in each standard. |
| No |
| We recommend that the first more restrictive definition that applies only to the BES be adopted. If this were done, then we would vote affirmative for this definition. |
| Yes |
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| Group |
| Duke Energy |
| Colby Bellville |
| Yes |
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| No |
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| No |
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| Yes |
| Duke Energy does agree with the exclusion list, however, we request clarification on exclusion "a. Out of step tripping and power swing blocking." Does the exclusion apply when transfer trips and supervisory signals are used as an integral part of the Out of step tripping (OST) and power swing blocking (PSB) functions? It is possible to have an OST or a PSB and transfer a trip to many locations as part of that signal. It is also possible to have supervisory signals such as Voltage to enable the OST and PSB functions. A combination of signals and the transfer of signals are present, and we ask the standard drafting team if the intent was to exclude all of the possible functionalities/associated signals capable from an OST and PSB. |
| Yes |
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| Individual |
| Michael Shaw |
| LCRA |
| Group |
| Florida Municipal Power Agency |
| Frank Gaffney |
| No |
| FMPA is casting a Negative ballot for the RAS definition. FMPA is concerned with the following statement in the Remedial Action Schemes (RAS) definition: "These schemes are not Protection Systems; however, they may share components with Protection Systems." This sentence is confusing. RAS is a scheme and stating that it may share components with Protection Systems and at the same time terminating the use of the SPS reference is confusing. FMPA supports the intent of creating a RAS definition and believes the referenced statement should be deleted. Further, an additional example should be included under the heading, "The following do not individually constitute a RAS:" The addition may be worded something like, "Protection systems installed to clear faults are not RAS." FMPA suggests that a thorough look at all the uses of Protection System in the standards to determine if it was intended to include SPS/RAS as part of the requirement. (One |

example is PRC-005; the proposed definition specifically states that SPS/RAS is not a Protection System. Applicability of PRC-005-2 at 4.2.4 states: "Protection Systems installed as a Special Protection System ..." Since RAS/SPS is proposed to no longer be Protection Systems, this is a null set, removing RAS/SPS from PRC-005 creating an illogical statement of applicability. Note: some other instances where Protection System is used, that may be intended to include RAS, are: EOP-010, NUC-001, PER-005, PRC001, TPL-00x-0, the Glossary definition for Planning Authority, the definition for Protection System Maintenance Program.)

No

No

No

The RAS definition is too broad as drafted and should specifically exclude control systems such as AGC, AVR, governor controls, etc. Suggested language is provided under number 1.

No

A thorough review of all the standards and their use of Protection Systems should be factored into the implementation plan.

Group

SERC Protection and Controls Subcommittee

David Greene

Yes

No

No

Yes

Yes

The comments expressed herein represent a consensus of the views of the above-named members of the SERC EC Protection and Control Subcommittee only and should not be construed as the position of SERC Reliability Corporation, its board, or its officers.

Group

Associated Electric Cooperative, Inc. - JRO00088

Phillip Hart

Individual

Catherine Wesley

PJM Interconnection

Yes

No

No

Yes

Yes

Group

IRC Standards Review Committee

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| Greg Campoli |
| Yes |
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| Yes |
| Reverse Power Sensing Relays should be added to the list of RAS. |
| No |
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| Yes |
| Exclusion "m." should be limited to SSR protection schemes that act solely at the same station. It should read: "Sub-synchronous resonance that was tripped as a result of fault clearing which is not restoring load should be excluded Do you agree with the time frames in the proposed Implementation Plan associated with the onus resonance (SSR) protection schemes that directly detect and act solely at the same station depending on sub-synchronous quantities (e.g. currents or torsional oscillations)." Another exclusion ("n.") should be added to exclude schemes that are specifically designed to restore load (often called load throw-over schemes) so that they are not considered RAS. An example of this is a 115-kV line that has load tapped off the middle. After a fault on the line, switches automatically open up at the tapped station and each end of the 115 kV line tries to pick up the load. The unfaulted end of the line will restore the load, and the faulted end will trip out and remain open. However, we do not believe that schemes which are taking actions such as automatic network reconfiguration to reenergize equip |
| Yes |
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| Individual |
| Mark Wilson |
| Independent Electricity System Operator |
| Yes |
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| No |
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| No |
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| Yes |
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| Yes |
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| Group |
| Bonneville Power Administration |
| Andrea Jessup |
| Yes |
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| No |
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| No |
| |
| Yes |
| |
| Yes |
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| Individual |
| David Kiguel |

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| N/A |
| Group |
| Southern Company: Southern Company Services, Inc.; Alabama Power Company; Georgia Power Company; Gulf Power Company; Mississippi Power Company; Southern Company Generation; Southern Company Generation and Energy Marketing |
| Wayne Johnson |
| Yes |
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| No |
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| No |
| The objective "Address other Bulk Electric System (BES) reliability concerns" is too broad. This encompasses every scheme on the system and makes the other objectives irrelevant. This objective should be deleted. |
| No |
| Additional words should be added to Exclusion e as follows: "Schemes applied on an Element for non-Fault conditions, such as, but not limited to, generator loss-of-field, transformer top-oil temperature, high voltage, or overload to protect the Element against damage by 1) removing it from service or 2) performing switching in the same substation as the Element to relieve the condition. |
| Yes |
| |
| Individual |
| Thomas Standifur |
| Austin Energy |
| No |
| AE is casting a Negative ballot for the RAS definition. AE is concerned with the following statement in the Remedial Action Schemes (RAS) definition: "These schemes are not Protection Systems; however, they may share components with Protection Systems." This sentence is confusing. RAS is a scheme and stating that it may share components with Protection Systems and at the same time terminating the use of the SPS reference is confusing. AE supports the intent of creating a RAS definition and believes the referenced statement should be deleted. Further, an additional example should be included under the heading, "The following do not individually constitute a RAS:" The addition may be worded something like, "Protection systems installed to clear faults are not RAS." AE suggests that a thorough look at all the uses of Protection System in the standards to determine if it was intended to include SPS/RAS as part of the requirement. |
| No |
| |
| No |
| |
| No |
| The RAS definition is too broad as drafted and should specifically exclude control systems such as AGC, AVR, governor controls, etc. Suggested language is provided under number 1. |
| No |
| A thorough review of all the standards and their use of Protection Systems should be factored into the implementation plan. |
| Group |
| SPP Standards Review Group |
| Shannon V. Mickens |
| Yes |
| The single term 'RAS' reduces the confusion and ambiguities that the current interchangeable terms 'SPS/RAS' have created for the industry. |

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| Yes |
| We have a concern in reference to the term 'curtailed' being used in the revised definition. Our thought process associates 'curtailed' with the tagging process. The group suggests the term 'reduce' for it seems more fitting with the terms 'tripping of generation or load'. |
| No |
| We would suggest the removal of the first bullet 'Meet requirements identified in the NERC Reliability Standards' from the definition because the RAS shouldn't be implemented in reference to a particular Standard but for the operational needs of the system. Also, we recommend the removal of the last bullet 'Address other Bulk Electric System (BES) reliability concerns' to avoid the lack of clarity that was an issue with the original 'SPS/RAS' definition including it leaves the definition too open to interpretation. |
| No |
| The distinction between distributed and central controlled UVLS systems is not clear in the definition. The clarification is contained in the supporting documentation for the definition but requires extensive efforts to dig it out. We suggest the drafting team revise exclusion C in the proposed definition to provide more clarity. |
| No |
| We suggest extending the time frame from twenty-four (24) months to thirty-six (36) months. There are many elements that have to be considered when establishing a new RAS. For example, identifying new facilities/equipment, budgeting, outage coordination and receiving necessary approvals will require large amounts of time. We would like to commend the SPS SDT on the quality of the documents in this posting. We did not find a single typo/grammatical error that are so typically present in these postings. Well done and thank you. |
| Group |
| ACES Standards Collaborators |
| Jason Marshall |
| Yes |
| (1) We agree with the need to modify the existing definition of SPS and RAS and that use of a single term will result in more consistent application of the standards. Furthermore, we are supportive of moving away from the SPS term to the RAS term to avoid confusion with Protection Systems and to more accurately reflect the intended purpose. The current definition lacks specificity, which leads to inconsistent application among the various NERC regions. We also note that the proposed changes have improved the RAS definition by removing some ambiguity. However, we believe there continues to remain to significant items of ambiguity that need to be addressed. Those are discussed below. (2) Use of the term "meet requirements identified in the NERC Reliability Standards" is ambiguous which will lead to inconsistent enforcement. Would this clause apply to any standard or is it intended primarily to apply to TPL standards? Does this require the owner of the RAS to document for which standards the RAS is installed? For a newly installed RAS, this might be easy but there could be disagreement over the purpose of the installation of existing RAS especially those that have been installed for a decade or more. We recommend removing the phrase from the definition. If the phrase persists, please identify specific standards and requirements in the technical guideline section for clarity. (3) Use of the term "address other Bulk Electric System (BES) reliability concern" is vague and ambiguous which will only lead to inconsistent enforcement. What other reliability concerns could there be besides system stability, system voltages, power flows, and Cascading that would not be excluded. Protecting equipment from damage would be one reliability concern that does not specifically fit into one of the categories but any schemes associated with protecting equipment from damage would be excluded by exclusion e. or excluded because they are Protection Systems. We simply cannot come up with any additional examples that warrant inclusion of such an ambiguity. We suggest the drafting team remove this phrase to remove the ambiguity. If there are other reliability concerns for which a RAS may be installed that do not fit into one of the five other buckets, then additional specific buckets should be added to avoid ambiguity. (4) "Relay" or "control" should be inserted just before scheme in the definition to provide additional clarity over what type of scheme is involved. (5) PRC-005-2 and PRC-005-3 will require further revision to the applicability section 4.2.4 other than simply replacing SPS with RAS to avoid ambiguity. The proposed definition of RAS specifically states that "these schemes are not Protection Systems." However, applicability section 4.2.4 states that it is applicable to "Protection Systems installed as a |

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| Remedial Action Scheme (RAS)" which directly conflicts with the definition. One could argue that PRC-005-2 and PRC-005-3 are then never applicable to a RAS once the new definition is approved since it is very specific that they are not Protection Systems. |
| No |
| We cannot identify any. |
| No |
| (1) We do not believe any additional objectives are necessary and believe that two objectives should be removed as discussed below. (2) Use of the term "meet requirements identified in the NERC Reliability Standards" is ambiguous which will lead to inconsistent enforcement. Would this clause apply to any standard or is it intended primarily to apply to TPL standards? Does this require the owner of the RAS to document for which standards the RAS is installed? For a newly installed RAS, this might be easy but there could be disagreement over the purpose of the installation of existing RAS especially those that have been installed for a decade or more. We recommend removing the phrase from the definition. If the phrase persists, please identify specific standards and requirements in the technical guideline section for clarity. (3) Use of the term "address other Bulk Electric System (BES) reliability concern" is vague and ambiguous which will only lead to inconsistent enforcement. What other reliability concerns could there be besides system stability, system voltages, power flows, and Cascading that would not be excluded. Protecting equipment from damage would be one reliability concern that does not specifically fit into one of the categories but any schemes associated with protecting equipment from damage would be excluded by exclusion e. or excluded because they are Protection Systems. We simply cannot come up with any additional examples that warrant inclusion of such an ambiguity. We suggest the drafting team remove this phrase to remove the ambiguity. If there are other reliability concerns for which a RAS may be installed that do not fit into one of the five other buckets, then additional specific buckets should be added to avoid ambiguity. (4) Because schemes could be interpreted to include AGC and excitation systems, the objectives could also inadvertently result in AGC or excitation systems being classified as RAS. AGC ultimately is required to meet several requirements in the BAL standards and excitation systems are used to control a generator's reactive power output to maintain an acceptable voltage schedule. Thus, both AGC and excitation systems support at least one of the objectives of the RAS definition. These objectives should ultimately be evaluated more closely. At the very least, AGC and excitation systems should be included in the exclusions list. |
| Yes |
| We agree that the exclusion list is very detailed and helpful. |
| Yes |
| We agree with the time frame of 12 months after regulatory approval for the effective date of the standard. We also agree with the time frame for application of standards to newly identified RAS which is 24 months after the revised definition for newly identified RAS. |
| Individual |
| Gul Khan |
| Oncor Electric Delivery LLC |
| No |
| Oncor disagrees with using RAS as a replacement for SPS. A SPS is used within ERCOT as an automatic system designed to detect abnormal or pre-determined ERCOT System conditions and take pre-planned corrective action. This term applies to and is referenced in numerous guides, procedures and protocols. Additionally the RAP (Remedial action plan) term is used in ERCOT and includes "controllable load shedding by dispatcher or ERCOT action." ERCOT's RAP's are predefined but not automatic and are used frequently within the system to maintain reliability under various operating conditions. Updating the various processes and procedures and training all the ERCOT TOPs on the new term will be a challenge and could cause significant confusion. The term SPS should not be based upon normal operational schemes like a RAS. These are "special" systems designed to maintain reliability until solutions can be added to remove or "exit" their changes. We also anticipate other reliability coordinators having to go through a similar effort in regards to the SPS terminology change. |
| No |

The SPS definition should be implemented as soon as possible the way it was originally developed by the NERC System Analysis and Modeling Subcommittee (SAMS) and approved by NERC OC PC. SAMS took several years developing the definition and getting approvals.

No

Yes

Yes

The RAP and SPS definition are already being used within ERCOT and apply to and are referenced in numerous guides, procedures and protocols. Many of ERCOT's RAP's are not automatic and are used frequently within the system to maintain reliability under various operating conditions. Updating SPS to the new term RAS through ERCOT's process of revising their documents will not only be a significant challenge but could also cause confusion with the RAP term.

Group

PacifiCorp

Sandra Shaffer

Yes

No

Yes

To clarify the intent of the proposed definition of Remedial Action Scheme, PacifiCorp recommends inserting Bulk Electric System into the first sentence as follows: "A scheme designed to detect predetermined Bulk Electric System conditions and automatically take corrective actions that may include, but are not limited to, curtailing or tripping generation or other sources, curtailing or tripping load, or reconfiguring a System(s)."

No

The proposed RAS definition will result in a significant expansion of the number of schemes that meet the criteria for classification as a RAS. In many instances, this expansion will not result in an improvement in Bulk Electric System reliability, and will unnecessarily complicate analysis of transmission system reliability. PacifiCorp recommends that the drafting team consider expansion of the exclusion list to include transfer- or cross-trip schemes that are located within a single substation. This exclusion would encompass schemes that operate from relays contained within substation apparatus to trip additional system elements other than those that are directly monitored by the relays with no additional logic or communications. As these schemes may be modeled with simple contingency definitions, PacifiCorp does not believe that their inclusion in the definition of RAS will provide any additional benefit for system reliability purposes. As stated in previous comments submitted to the drafting team by PacifiCorp on April 9, 2014, many common protection schemes that utilize breaker status contacts or lockout contacts to transfer trip multiple elements within a substation will meet the new SPS definition, despite limited potential impacts to the Bulk Electric System. For example, consider a scheme that utilizes a status contact on a line breaker to transfer-trip a shunt capacitor within the substation in conjunction with line tripping. In this example, the scheme is contained within the substation, and does not utilize any arming logic. The intent of the example scheme is to provide fast shunt device tripping and to provide additional redundancy for the shunt device voltage control. Under the draft definition, this scheme would meet the RAS criteria, as the shunt capacitor control is not based on locally-sensed voltage and system elements are tripped for a reason other than facilitation of fault clearing. Tripping of the capacitor could easily be modeled with a single line of code in a contingency definition, with the same results for system analysis and reliability purposes as inclusion in RAS databases. As such, this scheme and similar schemes that cross-trip various system elements within a single substation should have a specific exclusion in the proposed RAS definition. In addition, PacifiCorp recommends one specific change to the list of RAS exclusions. Exclusion "e" should include an Element in series as follows: "Schemes applied on an Element for non-Fault conditions, such as, but not limited to, generator loss-of-field, transformer top-oil temperature, high voltage, or overload to protect the Element or

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| series Element against damage by removing it from service." It may be simpler and less costly to remove an Element in series with the overloaded Element rather than the overloaded Element itself. |
| Yes |
| Individual |
| Sergio Banuelos |
| Tri-State Generation and Transmission Association, Inc. |
| Yes |
| Although Tri-State agrees that using the single term RAS can provide clarity in the forty-three (43) standards utilizing the term, the proposed RAS definition creates a conflict with the applicability sections in the PRC-005-2 and PRC-005-3 standards. In these standards, the applicability 4.2.4 states "Protection Systems installed as a Special Protection System ...", but the proposed definition of a RAS explains that a RAS is no longer a "Protection System". With the proposed definition, PRC-005-2 and PRC-005-3 will not be applicable to a RAS. If these standards are meant to be applicable to the a RAS, then the applicability and possibly the associated requirements and tables included in PRC-005-2 and PRC-005-3 will require further revision rather than simply replacing SPS with RAS. Tri-State recommends that the drafting team revisit the intent of designating that a RAS is not a "Protection System" which will require a thorough review of the standards to determine if a substitution creates a reliability gap by changing the intent of the modified standards |
| No |
| No |
| No |
| Although Tri-State does not believe that Automatic Generation Control (AGC) is a Remedial Action Scheme (RAS), the definition of AGC includes "automatically adjusts generation" which for some may be implied in the "curtailing generation" language included in the RAS definition. For clarity, consider including AGC in the list of exclusions |
| Yes |