Comment Report

Project Name:	2016-04 Modifications to PRC-025-1 SAR
Comment Period Start Date:	9/16/2016
Comment Period End Date:	10/18/2016
Associated Ballots:	

There were 14 sets of responses, including comments from approximately 14 different people from approximately 13 companies representing 7 of the Industry Segments as shown in the table on the following pages.

Questions

1. Do you agree with the scope and objectives of the four items raised in the SAR? If not, please explain why you do not agree and provide specific detail referencing the applicable SAR item that would make it acceptable to you. Please identify additional scoping items in the next question.

2. Do you have any additional items not scoped in this SAR? If so, please explain the technical rationale for the additional items.

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here.

Organization Name	Name	Segment(s)	Region	Group Name	Group Member Name	Group Member Organization	Group Member Segment(s)	Group Member Region
ACES Power Marketing	Brian Van Gheem	6	NA - Not Applicable	ACES Standards Collaborators	Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	1	RF
					Karl Kohlrus	Prairie Power, Inc.	1,3	SERC
					Shari Heino	Brazos Electric Power Cooperative, Inc.	1,5	Texas RE
					Mark Ringhausen	Old Dominion Electric Cooperative	3,4	SERC
					Tara Lightner	Sunflower Electric Power Corporation	1	SPP RE
					Scott Brame	North Carolina Electric Membership Corporation	3,4,5	SERC
					Bill Hutchison	Southern Illinois Power Cooperative	1	SERC
					John Shaver	Arizona Electric Power Cooperative, Inc.	1	WECC
Southwest Power Pool, Inc. (RTO)	Charles Yeung	2	SPP RE	IRC Standards Review Committee	Charles Yeung	SPP	2	SPP RE
					Ben Li	IESO	2	NPCC
					Greg Campoli	NYISO	2	NPCC
					Mark Holman	PJM	2	RF
					Matt Goldberg	ISONE	2	NPCC
					Lori Spence	MISO	2	MRO
					Christina Bigelow	ERCOT	2	Texas RE
					Ali Miremadi	CAISO	2	WECC
Duke Energy	Colby Bellville	1,3,5,6	FRCC,RF,SERC	Duke Energy	Doug Hils	Duke Energy	1	RF
					Lee Schuster	Duke Energy	3	FRCC

					Dale Goodwine	Duke Energy	5	SERC
					Greg Cecil	Duke Energy	6	RF
Southwest Power Pool, Inc. (RTO)	Shannon Mickens	2	SPP RE	SPP Standards Review Group	Shannon Mickens	Southwest Power Pool Inc.	2	SPP RE
					Tara Lightner	Sunflower Electric Power Corporation	1	SPP RE
					Stephanie Johnson	Westar Energy	1,3,5,6	SPP RE

1. Do you agree with the scope and objectives of the four items raised in the SAR? If not, please explain why you do not agree and provide specific detail referencing the applicable SAR item that would make it acceptable to you. Please identify additional scoping items in the next question.

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name IRC Standards Review Committee

Answer	No
Document Name	

Comment

The SRC agrees there is a technical need for protection systems to accommodate configurations for Distributed Generation. However, the proposed solution to modify certain parts of Table 1 may be challenging to audit and to enforce due to the variations in loadability that needs to be considered for different feeder configurations. We recommend that other alternatives instead of a change to PRC-0025 be pursued first. A Guideline may be just as effective to address the problem. Furthermore, additional requiremements in Table 1 intended to specify how 50 element relays should be set to accommodate DGR on feeders may only lead to subsequent interpretation requests or further SARs when there is a configuration not foreseen by the SDT.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

Need to limit the scope of the SAR such that change will only apply to DGR type resources. In our interpretation, we feel that the expansion of the scope may open up the opportunity to include other types of resources which could change the original intents for the DGR Resource.

Likes 0	
Dislikes 0	

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5

Answer	Yes
Document Name	

Comment

The four considerations proposed in the Request are reasonable. It addressees flexibility provision requests for distributed generation resources and addresses potential gaps initiated by new technologies

Likes 0	
Dislikes 0	

Response

Andrew Gallo - Austin Energy - 1,3,4,5,6

Answer	Yes
Document Name	

Comment

Austin Energy (AE) agrees generally with the scope and objectives. With respect to Item #2, AE makes the following suggestion:

When addressing the 50 element (i.e., instantaneous overcurrent) PRC-025 should provide clarity regarding how to set the time dial settings. Specifically, either: (1) include a requirement regarding how to set the time dial settings (e.g. instantaneous or delayed) or (2) if time dial settings are irrelevant, ensure PRC-025 makes it clear Registered Entities may set the time dials however they wish.

Likes 0	
Dislikes 0	

Response

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	Yes
Document Name	

Comment

We agree that a SAR is necessary to address the issues identified with PRC-025-1. However, we believe portions of the proposed scope and objectives are too restrictive. We list these concerns in response to your next question.

Likes 0	
Dislikes 0	

Response

Karen Yoder - FirstEnergy - FirstEnergy Corporation - NA - Not Applicable - RF

Answer	Yes
Document Name	

Comment	
FirstEnergy has reviewed the SAR and agrees with the scope of the project.	
Likes 0	
Dislikes 0	
Response	
Thomas Foltz - AEP - 3,5	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	

Response	
Brian Evans-Mongeon - Utility Services, Inc. - 4	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chris Gowder - Florida Municipal Power Agency - 3,4,5,6 - FRCC	
Answer	Yes
Document Name	

Comment	
Likes 0	
Dislikes 0	
Response	
Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6	
Answer	Yes
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	

2. Do you have any additional items not scoped in this SAR? If so, please explain the technical rationale for the additional items.

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	No
Document Name	

Comment

It's inappropriate to solict additional items to add to the SAR Scope. There is no clarity on what the drafting is looking for as well as the issues of compliance if additional items are added to the SAR.

Likes 0	
Dislikes 0	

Response

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5

Answer	No
Document Name	

Comment

No,

Likes 0	
Dislikes 0	

Response

Jeri Freimuth - APS - Arizona Public Service Co. - 1,3,5,6

Answer	No
Document Name	

Comment

Likes 0	
Dislikes 0	

Response

Karen Yoder - FirstEnergy - FirstEnergy Corporation - NA - Not Applicable - RF

Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Andrew Gallo - Austin Energy - 1,3,4,5,6	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Rachel Coyne - Texas Reliability Entity, Inc. - 10	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Cain Braveheart - Bonneville Power Administration - 1,3,5,6 - WECC	
Answer	No
Document Name	
Comment	
Likes 0	

Dislikes 0	
Response	
Thomas Foltz - AEP - 3,5	
Answer	No
Document Name	
Comment	
Likes 0	
Dislikes 0	
Response	
Chris Gowder - Florida Municipal Power Agency - 3,4,5,6 - FRCC	
Answer	Yes
Document Name	
Comment	
PRC-025-1, Table 1 specifies certain relay settings shall be set relative to 115% of the Real Power output capability “reported to the Transmission Planner”. This value is reported in a variety of ways and using a variety of methodologies, which can differ between entities and the needs or desires of a given TP’s MOD-032 documentation. Transmission Planners use generator capability values for different purposes than relay engineers, which could result in a conflict between the goal of PRC-025-1 and the data it requires to be used. The Transmission Planner should use values that can represent a generator’s expected maximum output over an entire (future) season, whereas the relays should be set considering the absolute maximum physical capabilities of the equipment, which may be values that occur for only a few hours and are highly dependent on ambient conditions that the TP may not assume are present for a “seasonal” case. Although the standard allows the user to set relays more conservatively (e.g. use a greater margin than 115% minimum), the implication of this recommendation being included in Table 1 is that it is a safe minimum, when in fact, by instructing GOs to use the values supplied to the TP, the standard could be giving them an unsafe value. One easy example is that many combustion turbine generators, when operated in temperature control, can have a much wider variation between peak output and maximum output during peak system conditions than the 115% margin the standard is calling for (for example, the TP needs a maximum capability that it can rely upon being available at 4pm on a hot summer day, while the same CT output could be 20% greater on a cool evening). The standard should be revised such that 115% of the value supplied to the TP is the bar for compliance (because that ensures transmission planning model conditions are upheld) but that it is clearly stated that the protection engineer may desire to use the actual maximum peak capability of the machine considering all expected ambient conditions through the year.	
Likes 0	
Dislikes 0	
Response	
Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators	

Answer	Yes
Document Name	

Comment

(1) We believe objective #1 should be expanded to include “dispersed power producing resources,” which better aligns with the BES Definition and the standard’s applicable facilities.

(2) Objective #4 fails to incorporate the use of several NERC Glossary of Terms like Transmission, Element, and Reactive Power. We believe the introduction of these defined terms would better clarify the intent of this objective. We propose rewording Scope #4 to “provide alternative or additional Table 1 Options specific to relay applications that are directional towards the Transmission system where Elements’ impedances may factor in determining the Reactive Output of dispersed power producing resources and associated relay settings.”

(3) We recommend references to “50 element” should cite IEEE Standard C37.2-2008.

(4) We believe the example provided under Objective 3 is limited. The concern presented is the use of “or” in the application column for options 4, 5, and 6 of Table 1. We believe that the Table should clarify which options an entity should use for “Elements utilized in the aggregation of dispersed power producing resources,” as currently any options between 1-6, depending on the relay type, can be used.

Likes 0	
Dislikes 0	

Response

Colby Bellville - Duke Energy - 1,3,5,6 - FRCC,SERC,RF, Group Name Duke Energy

Answer	Yes
Document Name	

Comment

Duke Energy recommends that the drafting team consider adding in the SAR, or amending the PRC-025-1 standard to include and Option 13 C (see below) utilizing Low side protective device (overcurrent) on a Unit Auxiliary Transformer. Currently, the standards includes high side device options, but does not include one for the low side device. Duke believes that this exclusion is improper, and recommends that a Low side protective device alternative be included in the standard as describe below. For further technical rationale as to this inclusion, we recommend the review of a document drafted by the NERC System Protection and Control Subcommittee titled *Unit Auxiliary Transformer Overcurrent Relay Loadability During a Transmission Depressed Voltage Condition- NERC System Protection and Control Subcommittee March 2016*.

Option 13c-Coordinate UAT high-side protection based on a UAT low-side overcurrent setting recommendation.

Set load-responsive relay applied on the low side of the UAT set with a minimum pickup value of 135% of the transformer nameplate.(In some situations it may be desirable to set this low-side relay lower than 135% of the transformer nameplate. This could be to protect equipment or because the load on the transformer may be much less than the nameplate rating of the transformer. If this approach is used, then it is recommended that the settings must be 135% of the maximum load on the UAT.)

Likes 0	
Dislikes 0	

Response

Charles Yeung - Southwest Power Pool, Inc. (RTO) - 2, Group Name IRC Standards Review Committee	
Answer	Yes
Document Name	
Comment	
It appears the SAR is taking an approach to Table 1 to make it an all inclusive list for every possible generator interface requiring a different loadability setting. If the SAR team believes this is necessary for PRC-025 so entities can abide by relay manufacturer specifications and also meet NERC standards compliance, it should reconsider how much detail is appropriate for Table 1. There is always a need to allow entities an appropriate level of engineering judgment for seting relays because of the numerous configurations of assets on the system. Can Table 1 feasibly be revised to capture all needs?	
Likes 0	
Dislikes 0	
Response	
Hien Ho - Tacoma Public Utilities (Tacoma, WA) - 1,3,4,5,6	
Answer	Yes
Document Name	
Comment	
Additional clarification is requested in PRC-025-1 - Attachment 1: Relay Settings under Multiple Lines. Specifically, the final sentence states that "[t]hese topologies [e.g., multiple lines that connect the GSU transformer(s) to the Transmission system] can result in complex power flows, and it may require simulation to avoid overly conservative assumptions to simplify the calculations. Entities with these topologies should set their relays in such a way that they do not operate for the conditions being addressed in this standard." If multiple lines are substantially parallel in nature, is it permissable for entities to apply the most appropriate Option 14a, 15a, 16a, 17, 18, or 19 and divide the current by the number of substantially parallel lines?	
Likes 0	
Dislikes 0	
Response	
Brian Evans-Mongeon - Utility Services, Inc. - 4	
Answer	Yes
Document Name	
Comment	
1. Are relay assessments required both at the turbine level and the aggregate generation level or both? The current Standard does not make this clear as other recently developed PRC Standards (e.g. PRC-024) do.	

2. All wind turbines on a feeder don't always act the same. Does that mean a wind farm has to evaluate the Protection Systems at each individual turbine? This question was raised during the original PRC-025 Standard Development in 2010 but the SDT was not consistent in addressing this line of questioning during the Consideration of Comments. Our opinion is that this level of assessment is not necessary and that only the Protection Systems at the point of aggregation (> 75 MVA) need to be evaluated. We question the value of checking each individual relay especially in light of the recent Project: Cost Effective Pilot.

3. The Standard does not make it clear if wind turbines of various Types (I through IV) should be considered asynchronous or synchronous generation and therefore which Option to choose for the relay assessment is unclear.

4. There should be Requirement language in PRC-025 that speaks to coordination with TOP and how changes may affect other relay settings at the Facility before changes are made to relay settings. There should also be an exemption due to technical limitations of equipment such as in the Requirement language of PRC-024.

5. There should be an evaluation by a SDT (this team or another separate one) on how all recent PRC-developed Standards that are requiring relay setting changes are interacting or possibly causing conflicts with each other.

6. A simplified guidebook or process diagram is needed to explain the steps of the process to perform the relay assessment.

Likes 0	
Dislikes 0	

Response

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here.

Karie Barczak - DTE Energy - Detroit Edison Company - 3,4,5

Answer	
Document Name	

Comment

No.

Likes 0	
Dislikes 0	

Response

Brian Van Gheem - ACES Power Marketing - 6 - NA - Not Applicable, Group Name ACES Standards Collaborators

Answer	
Document Name	

Comment

(1) We thank the individuals listed and others who supported the issuance of this SAR. We agree the concerns listed regarding PRC-025-1 are pressing. Moreover, we believe revising the implementation plan should be included, as the 60-month or 84-month 100% compliance window identified within the current implementation plan has already proceeded. We believe the window should be reset or a phased-in compliance approach used instead.

(2) We believe the SDT should be allowed to consider Paragraph 81 criteria where possible in this standard. We also recommend the SDT be given direction to consolidate where appropriate within this standard. The Technical and Applications Guidelines section of this document is over 70 pages long and would be better served in a Reliability Guideline or supporting white paper.

(3) We believe Reliability Principles #4, pertaining to Facilities provided for monitoring and control, should be checked for this SAR, as it pertains to protection relays.

(4) We believe the SDT should seek input from appropriate NERC technical task forces, such as the Distributed Energy Resources Task Force. The purpose of this task force is to examine potential reliability implications caused by operational and planning Distributed Energy Resource impacts.

(5) We thank you for this opportunity to provide these comments.

Likes 0	
Dislikes 0	

Response

Shannon Mickens - Southwest Power Pool, Inc. (RTO) - 2 - SPP RE, Group Name SPP Standards Review Group

Answer	
Document Name	
Comment	
N/A	
Likes 0	
Dislikes 0	
Response	
Karen Yoder - FirstEnergy - FirstEnergy Corporation - NA - Not Applicable - RF	
Answer	
Document Name	
Comment	
None.	
Likes 0	
Dislikes 0	
Response	

Additional comments received from Ruida Shu – NPCC

1. Do you agree with the scope and objectives of the four items raised in the SAR? If not, please explain why you do not agree and provide specific detail referencing the applicable SAR item that would make it acceptable to you. Please identify additional scoping items in the next question.

   ☒ Yes

   ☐ No

   Comments:

2. Do you have any additional items not scoped in this SAR? If so, please explain the technical rationale for the additional items.

☒ Yes

☐ No

Comments:

3. If you have any other comments on this SAR that you haven't already mentioned above, please provide them here:

Comments:

RSC supports the SAR for Project 2016-04 Modifications to PRC-025-1 (Generator Relay Loadability).