NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Consideration of Comments

Project Name: 2007-06.2 Phase 2 of System Protection Coordination | TOP-009-1 & PRC-001-1.1 (ii)

Comment Period Start Date: 10/6/2015

Comment Period End Date: 11/19/2015

Associated Ballot: 2007-06.2 Phase 2 of System Protection Coordination TOP-009-1 & PRC-001-1.1(ii) AB 2 ST

There were 41 responses, including comments from approximately 114 different people from approximately 79 different companies representing 8 of the 10 Industry Segments as shown on the following pages.

All comments submitted can be reviewed in their original format on the project page.

If you feel that your comment has been overlooked, please let us know immediately. Our goal is to give every comment serious consideration in this process. If you feel there has been an error or omission, you can contact the Director of Standards, Howard Gugel (via email) or at (404) 446-9693.

Summary Responses to Comments

The standard drafting team is summarily responding to comments due to the significant changes being proposed under the Project 2007-06.2 concerning PRC-001-1.1(ii). The following summary will address majority comments and then minority comments.

Majority Comments

About one half of the comments raised concerns that TOP-009-1 is duplicative of PER-005 or that PER-005 covers the reliability objectives of the proposed TOP-009-1. The standard drafting team considered these comments and intends to move the reliability objectives from TOP-009-1 and propose revisions to PER-005-2 (*Operations Personnel Training*). The enforceable version is PER-005-1 and PER-005-2 will become effective July 1, 2016. The PER-005-2 standard does address or require training (i.e., knowledge) of Protection Systems schemes due to the PRC-001-1.1(ii), Requirement R1 addressing this reliability objective. Although entities may be complying with PRC-001-1.1(ii) by using their PER-005 training program(s), PRC-001-1.1(ii), Requirement R1 is specific, and not redundant. The standard drafting team concluded that the knowledge portion of the phrase "knowledge and effects" used in TOP-009-1 may be obtained through training, and is more suited to the PER-005 standard based upon industry comment. Additionally, the standard drafting team proposes to replace the current phrase "purpose and limitation" in PRC-001-1.1(ii), Requirement R1 with "operational functionality" in Requirements R7 and R8 of PER-005-3.

Minority Comments

Minority comments ranged from one to seven comments among 41 comments received in the draft 2 posting of the TOP-009-1. There were about six comments arguing that TOP-009-1 is overly broad. The standard drafting team addressed this concern by revising PER-005-2, and thus maintaining a results-based standard approach. Also, the terms "Operational Planning Analysis" and "Real-time Assessment" as defined by the *Glossary of Terms Used in NERC Reliability Standards* ("Glossary") were eliminated due to stakeholder concern over how these terms interact with TOP-009-1.

About seven comments questioned whether draft 2 of TOP-009-1 is applicable to plant operators and/or centrally-located dispatch personnel of the Generator Operator. The standard drafting team clarified this in the Applicability section of the proposed PER-005-3 by separating the plant personnel exception from the dispatch personnel in Applicability section 4.1.5.1. Both centrally located dispatch personnel and plant operator personnel located at a generator plant site that are responsible for the Real-time control of a generator are proposed to have training in the operational functionality of Protection Systems and Remedial Action Schemes. Separating the Applicability section the revision of PER-005-2 to maintain the intent of Requirement R6 for centrally-located dispatch personnel. Plant personnel proposed in Requirement R7 is now addressed by the Applicability section 4.1.5.2.

There were approximately four comments recommending the Reliability Coordinator (RC) to be included in TOP-009-1 for reliability reasons. The standard drafting team assessed this concern and agreed with comments. As a result of revising the PER-005-2 standard, which is applicable to the RC, the standard drafting team addressed the reliability concern.

Approximately four comments raised concerns about the use of terms defined by the Glossary. In moving development to PER-005-3, the standard drafting team concluded that the defined term "Reliable Operation" proposed in TOP-009-1 was not an ideal term and instead proposes to use the Glossary terms "System Operator" and "Operations Support Personnel" that are in PER-005-2 to provide improved clarity over TOP-009-1. To eliminate concerns about the use of the Glossary defined term "Composite Protection System," the standard drafting team reverted back to the Glossary term "Protection System" to be clear on the expectations and to be responsive to FERC Order 693 at P 1418-1449 on what "relay or equipment failures" means in PRC-001-1.1(ii).

Concerns about Violation Severity Levels (VSL) being inequitable for small entities have been addressed by the proposed VSLs in PER-005-3. The proposed VSLs for Requirements R7 and R8 are consistent with the structures used in PER-005-2, Requirements R1 through R6. The VSLs in the proposed PER-005-3 addresses the lack of VSLs (i.e., Levels of Non-Compliance) in PRC-001-1.1(ii) as discussed in Order No. 693 at P 1420. Measures discussed at P 1420 have also been addressed by the proposed PER-005-3.

Two comments suggested the inclusion of undervoltage load shedding (UVLS) and underfrequency load shedding (UFLS). These were not a part of the PRC-001-1.1(ii), Requirement R1, therefore, are out of scope. Entities may submit a Standards Authorization Request to NERC staff through sarcomm@nerc.net for consideration of UVLS and UFLS.

Two concerns were noted about the Generator Operator being included in a "Transmission Operations" or "TOP" family of standards. This issue has been eliminated with the development transition from TOP-009-1 to PER-005-3 in the "Personnel Performance, Training, and Qualifications" or "PER" family of standards.

One comment noted that the TOP-009-1 standard seems to be addressing coordination of Protection Systems. The reliability objective of TOP-009-1 is to require the Reliability Coordinator, Balancing Authority, Generator Operator, and Transmission Operator to have knowledge of Protection Systems and RASs. This has been addressed by moving this reliability objective of being familiar in PRC-001-1.1(ii) to have knowledge in TOP-009-1 to obtaining knowledge through training under PER-005-3. Coordination of Protection Systems

and communication of Protection System information by owners (i.e., Generator Owner, Transmission Owner, and Distribution Provider) is addressed by the industry approved PRC-027-1 (*Coordination of Protection Systems for Performance During Faults*).

Finally, one comment about the Application Guidelines and one about the TOP-009-1 Reliability Standards Audit Worksheet (RSAW) were not addressed due to the standard drafting team moving development from TOP-009-1 to PER-005-3. The PER-005-3 standard will have a supporting narrative in its Application Guidelines and a proposed PER-005-3 RSAW will be posted within two weeks of posting the standard for industry comment.

Questions

1. **The initial draft of TOP-009-1 was well received with most questions arising from issues covered in several industry webinars prior to and during the initial posting. The drafting team believes it has addressed the comments within its purview and within the scope of the project. If you have additional comments about the standard not addressed by drafting team responses to the initial posting, please provide them below.**

The Industry Segments are:

1 — Transmission Owners
2 — RTOs, ISOs
3 — Load-serving Entities
4 — Transmission-dependent Utilities
5 — Electric Generators
6 — Electricity Brokers, Aggregators, and Marketers
7 — Large Electricity End Users
8 — Small Electricity End Users
9 — Federal, State, Provincial Regulatory or other Government Entities
10 — Regional Reliability Organizations, Regional Entities

1. The initial draft of TOP-009-1 was well received with most questions arising from issues covered in several industry webinars prior to and during the initial posting. The drafting team believes it has addressed the comments within its purview and within the scope of the project. If you have additional comments about the standard not addressed by drafting team responses to the initial posting, please provide them below.

John Fontenot - Bryan Texas Utilities - 1 -

Answer Comment: n/a

Oliver Burke - Entergy - Entergy Services, Inc. - 1 -

Answer Comment: Entergy is requesting the Standard Drafting Team (SDT) to clarify the bulleted list on page 13 in Requirement R1 of the TOP-009-1 redlined document. The sentance leading to the bulleted list is unusal. It is not clear of the intent of the wording used in the list. Please clarify if possible.

Response: See summary at the top of the document.

Jeff Wells - Grand River Dam Authority - 3 -

Answer Comment: na

Richard Malloy - Idaho Falls Power - 3 - WECC

Answer Comment:

Idaho Falls Power has two breif comments:

First we feel this standard is redundant to PER-005 and only increases compliance documentation burden without any incremental increase in reliability to the BES. We cannot see that we would change or add to our training program with the implentation of TOP-009 in addition to the PER-005 standard.

Second, we believe that implementation of standards that increase burdens to smaller entities is counter to the parellel track of the RBR initiative. We are a small 26MVA non dispatchable hydro.

Thank you.

Response: See summary at the top of the document.

Likes: 1 Portland General Electric Co., 1,3,5,6, Gaines Angela

Dislikes: 0

Angela Gaines - Portland General Electric Co. - 1,3,5,6 - WECC

Answer Comment: This Standard is unnecessary if a Systematic Approach to Training is properly implemented per PER-005. In addition, PGE supports BPA's more thorough discussion of the reason for a No vote on this standard.

Response: See summary at the top of the document.

Mary Cooper - Public Utility District No. 1 of Lewis County - 5 - WECC

Answer Comment: We desire a change to violation risk factors for generator owners and operators. We feel using a percentage is not realistic given many generators only have a few personnel, in some cases 5 or less.

We recommend the following:

Lower VSL

The Generator Operator failed to ensure its personnel described in Requirement R3 have knowledge of Composite Protection Systems and Remedial Action **Schemes equal to the greatest of 1 personnel at a single Facility or** 5% or less of its personnel.

Moderate VSL

The Generator Operator failed to ensure its personnel described in Requirement R3 have knowledge of Composite Protection Systems and Remedial Action Schemes for **the greatest of 2 personnel at a single Facility or** more than 5%

and less than or equal to 10% of its personnel.

High VSL

The Generator Operator failed to ensure its personnel described in Requirement R3 have knowledge of Composite Protection Systems and Remedial Action Schemes for **the greatest of 3 personnel at a single Facility or** more than 10% and less than or equal 15% of its personnel.

Severe VSL

The Generator Operator failed to ensure tis personnel described in Requirement R3 have knowledge of Composite Protection Systems and Remedial Action Schemes **for the greatest of 5 personnel at a single Facility or** more than 15% of its personnel.

Response: See summary at the top of the document.

Likes:	1	Gowder Chris On Behalf of: Carol Chinn, Florida Municipal Power Agency, 5, 6, 4, 3, David Schuman
Dislikes:	0	

Jamison Dye - Bonneville Power Administration - 1,3,5,6 - WECC

Answer Comment:	BPA continues to support comments submitted on 9/11/15 with concerns over the overlap between this proposed standard and PER-005-2 and the alignment of terms between PER-005-2, COM-002-4, and this standard. Additionally, BPA believes that due to the ambiguity of the term "personnel (responsible for Reliable Operations of its TOP/BA Area)" there could be significant cost increases if it is determined the scope is larger than System Operators and Operations Support Personnel. This lack of consistency in the methodology used by different entities to implement this standard could also result in confusion and misunderstanding. BPA believes that the requirement to have knowledge of RAS and Composite Protection Systems should extend to the Reliability Coordinator (RC) due to the RAS responsibilities assigned to the RCs in the proposed PRC-012-2.

Response: See summary at the top of the document.

Likes:	1	Puget Sound Energy, Inc., 1, Rakowsky Theresa
Dislikes:	0	

Joe O'Brien - NiSource - Northern Indiana Public Service Co. - 6 -

Answer Comment:	In R3 it is still not clear to us if this applies to folks in the gen station control room or operators at a control center. The explanation given during webinars provides clarification however we would like to see it formalized in the

Application Guidlines. It appeared that others on the webinars had similar concerns.

Also, a comment was made regarding 15% for a Severe VSL. With a group of 6, 1 person lacking the knowledge would make the violation severe.

Response: See summary at the top of the document.

Leonard Kula - Independent Electricity System Operator - 2 -

Answer Comment:

We commented on the last posting to suggest moving this standard and its proposed requirements into a PER standard, and to include RC in the applicable entity. We thank the SDT for responding to our comments, but are disappointed that the SDT decided to continue stipulating such requirements for TOP, BA and GOP only, and in the TOP-009 standard instead of a PER standard.

We find it interesting that on the one hand, the SDT holds the view that:

"Even though there are no "GOP" family of standards, the "TOP" standards provide the most suitable place to address the knowledge required by the BA, GOP, and TOP. The TOP standards include applicable entities other than the BA and TOP."

This argument seems inconsistent with the SDT's other argument for not moving these requirements into a PER standard since the latter are "…about

personnel training and the proposed TOP-009-1 standard requires a specific knowledge that is not addressed by fundamental protection and control training." We are unable to understand why a PER standard cannot accommodate training on protection systems and RASs, especially in view of the fact that having such knowledge is essential for performing the BES company-specific Real-time reliability-related tasks, which the purpose of TOP-009 implies (via "…in order to operate and maintain the reliability of the Bulk Electric System (BES)."

We also disagree with the SDT's view that "….the PER standards are about personnel training and the proposed TOP-009-1 standard requires a specific knowledge that is not addressed by fundamental protection and control training. Training is one method of demonstrating that knowledge, as well as, other methods listed in the TOP-009-1 standard."

In our view, the proposed requirements stipulate that the responsible entities "ensure that its personnel (responsible for Reliable Operation of its Transmission Operator Area) have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that are necessary to perform its [functions]…."

A responsible entity cannot ensure that its operating personnel have such knowledge. The responsible entity can only ensure the development and delivery of a training program that is intended to provide operating personnel with this knowledge. Through periodic testing, the responsible entity can assess the operating personnel's level of understanding, and decide if they can be put into a position to perform the reliability tasks. Training is the means to ensure; and hence given the applicability (not to mention the inclusion of RC

as indicated below) and the intent of the proposed requirements, they are best suited for inclusion in the PER standard. For example, PER-005 stipulates the requirements for developing and implementing a training program for its System Operators on Bulk Electric System (BES) company-specific Real-time reliability-related tasks (or how their job function(s) impact the reliable operations of the BES). This requirement can be expanded to specifically mention Composite Protection System and RAS, or they be included in an Attachment, or they be included in the certification requirements.

One can argue that given the requirements in PER-005-2, the inclusion of protection system and RAS can be construed to have been implicitly included in the training program for BES company-specific Real-time reliability-related tasks. If this argument holds true, then there is no such need for a TOP-009 standard.

With respect to our concern over the omission of Reliability Coordinator (RC) in the standard, we disagree with the SDT's view that:

"…. the Reliability Coordinator responsibilities listed under the NERC Functional Model are not consistent with the reliability objective of TOP-009-1. This is because the information needed by the Reliability Coordinator is inferred in other standards. For example, IRO-002-4 (Reliability Coordination — Monitoring and Analysis) and IRO-010-2 (Reliability Coordinator Data Specification and Collection) both pending FERC approval require the Reliability Coordinator obtain the data it needs to ensure reliability, and PRC-012-2 (Remedial Action Schemes) currently under development requires the Reliability Coordinator to conduct a RAS review; therefore, the SDT does not believe there is a gap in reliability by not including the Reliability

Coordinator."

We do not agree that RC obtaining the necessary information and data, which may include Composite Protection Systems and RASs, equates to RC's operating personnel having the knowledge and understanding of the functionality and effects of Composite Protection Systems and RASs on its operating area and the BES as a whole. Having the data/information and understanding the functionality and operational effects of Composite Protection Systems and RASs on the BES, the latter being the purpose of the proposed TOP-009 standard, are total different topics requiring totally different approaches altogether.

The functional model (FM) and current industry practice clear indicate that the basic skill, knowledge and understanding of the BES for an RC are about the same as for a TOP, except the RC has a wider scope and serve as the last line of defense to safeguard reliability. To argue that there needs to be a standard for the TOP operating personnel to acquire the knowledge of the operational functionality and effects of Composite Protection Systems and RASs but not for the RC operating personnel is inconsistent with the FM and current operating practice, and sets double standards between the two operating functions. Either there is an explicit set of requirements for both the TOP and RC, or there need not to be one for either given the "implicit" requirements in PER. Either way can work, but they need to be consistent across all operating entities that need to understand the functionality and effects of Composite Protection Systems and RASs to perform their tasks.

Finally, the proposed PRC-012 requires the RC to review and provide feedback on proposed RASs and provide approval obtain approval from each reviewing

Reliability Coordinator prior to an RAS entity placing a new or functionally modified RAS in service or retiring an existing RAS. This requires the RC to have the knowledge and understanding of how RASs work and their functionality and effects of operation on the BES. If such knowledge is "inferred", the one can argue that this knowledge is also "inferred" in a number of TOP standards' requirements, for example, the TOP's obligation to conduct operational planning analysis and real-time assessment.

Whatever the SDT chooses, the approach needs to be consistent. We urge the SDT to reconsider the treatment to the RC to avoid creating double standards.

Response: See summary at the top of the document.

Likes: 1 Puget Sound Energy, Inc., 1, Rakowsky Theresa

Dislikes: 0

Tyson Archie - Platte River Power Authority - 5 -

Answer Comment:

Platte River thanks the drafting team for their efforts and allowing us the opportunity to provide feedback on the proposed standard TOP-009-1. PRPA initially had concern with the first version of the standard due to its placement in the TOP family and not PER. The drafting team has done a good job of explaining their rationale for this decision during their industry outreach.

We understand that the drafting team has left a significant amount of flexibility

to the entities on how to show compliance with this standard, but in our opinion this also allows the auditors an exorbitant amount of flexibility in determining what they deem to be a "requisite knowledge" of composite protection systems in their area. While we don't disagree with the intent of the standard, we feel there should be more prescriptive measures to meet compliance, such as minimum requirements, periodicity, what to do if an operator fails to show competence, etc. While everyone may not like greater restrictions on ways to meet compliance, we feel this ensures consistency across regions, and a more even audit approach.

Response: See summary at the top of the document.

Amy Casuscelli - Xcel Energy, Inc. - 1,3,5,6 - MRO,WECC,SPP

Answer Comment:

While the proposed TOP-009-1 is an improvement over PRC-001-1.1(ii) R1, the proposed language in R3 does not specifically qualify the GOP as a control center generator operator or a power plant control room operator. It was not until the NERC webinar on the TOP-009-1 standard that a question was raised about this specificity that they defined who actually was the GOP. It was their opinion, that the registered entity was to define who that was and who needed that operational knowledge and they had to be generic enough in the language to not exclude those entities that had either one or the other or both. It is obvious that the power plant control room operator definitely needs to have the operational knowledge of any Composite Protection System that would affect his unit and an argument could be made for a combined control center generator operator would need this knowledge but the standard should define

either one or the other or both. Leaving the language in its generic form leads to too much ambiguity and raises more questions than it answers.

Response: See summary at the top of the document.

John Seelke - Public Service Enterprise Group - 1,3,5,6 - NPCC,RFC

Group Name: PSEG

Group Member Name	Entity	Region	Segments
Joseph Smith	Public Service Electric and Gas	RFC	1
Jeffrey Mueller	Public Service Electric and Gas Co.	RFC	3
Tim Kucey	PSEG Fossil LLC	RFC	5
Karla Jara	PSEG Energy Resources & Trade LLC	RFC	6

Answer Comment: 1.

i. The Purpose statement is "To ensure operating entities have the requisite knowledge of Composite Protection Systems and Remedial Action Schemes (RAS), and their effects, in order to operate and maintain the reliability of the Bulk Electric System (BES)." This statement is reflected in each of the standard's requirements. The requirement to have "knowledge of operational functionality and *effects* of Composite Protection Systems and Remedial Action Schemes (RASs)" in the proposed standard is very broad and indicates that TOP,

BA and GOP personnel that are identified in the standard would be required to have additional knowledge (in excess of such knowledge that is required in the existing PRC-001-1.1(ii) R1.) that is not necessary in order to maintain the reliability of the BES. For example, the *effects* can vary depending upon whether or not all systems/schemes operated properly. Also, the combination of *effects* when Misoperations are factored into the equation is very large. From an operational perspective, as it pertains to maintaining reliability of the BES, a system operator should be more concerned with how to respond to a trip and restoration, and not be distracted with trying to interrogate microprocessor relays to determine the cause of the trip.

ii. We agree with the US Bureau of Reclamation's comments that the topics and the applicability of TOP-009-1 would be better addressed by modifying PER-005-2 – Operations Personnel Training. PER-005-2 is applicable to Reliability Coordinator, a function which is not included in TOP-009-1 but should be included. Furthermore, PER-005-2 is only applicable to Generator Operators at a central dispatch center who develop dispatch instructions for plant operators under their control. Plant operators are correctly excluded from "Generator Operators" in PER-005-2 because they do not have a wide-area view.

iii. If the team elects to continue the development of TOP-009-1, PSEG suggests these changes:

a. Change the applicability section to include "Reliability Coordinator" that are not also registered as a TOP and a BA and "Generator Operator" as GOP is defined by the applicability section of PER-005-2.

b. Add new requirements for an RC that depends upon whether it is

registered as a TOP or BA.

1. For RCs that are not registered as a TOP or a BA, they would comply with R1 (TOP) and R2 (BA).

2. For an RC that is registered as a TOP but not a BA, they would comply with R2 (BA).

3. For an RC that is registered as a BA but not a TOP, they would comply with R1 (TOP).

For an RC that is registered as both a TOP and a BA, they would have no compliance obligations under TOP-009-1.

Response: See summary at the top of the document.

Likes:	3	PSEG - Public Service Electric and Gas Co., 1, Smith Joseph PSEG - Public Service Electric and Gas Co., 3, Mueller Jeffrey PSEG - PSEG Fossil LLC, 5, Kucey Tim
Dislikes:	0	

Thomas Foltz - AEP - 5 -

Answer Comment: It is clear that the proposed Requirements themselves emphasize Real Time operational knowledge, however, neither the Title nor the Purpose of the

proposed standard include the phrase “Real Time”. AEP recommends incorporating the text “Real Time” into the Purpose, and perhaps the Title as well, to make the Standard’s focus and intent more readily apparent.

Response: See summary at the top of the document.

Terry BIlke - Midcontinent ISO, Inc. - 2 -

Answer Comment: While we are OK with the standard, we believe the VSLs are flawed. A typical BA or TOP may have only 6-10 operators. The way the VSLs are structured, a single operator that misses training will likely result in a Severe violation.

Response: See summary at the top of the document.

Marc Donaldson - Tacoma Public Utilities (Tacoma, WA) - 3 -

Answer Comment: TOP-009 Ballot

The measures of these requirements as well as the rationale discussions strongly imply a training requirement. Training requirements should reside within PER-005. PER-005 stands on using a “Systematic Approach to Training” and has resulted in the removal of training requirements from non-PER standards and the removal of specific training topics from standards (such as EOP training). Adding a new specific topic training requirement in a non-PER

standard sends a very mixed message. There are no equipment performance or configuration requirements in this standard and is entirely about training and familiarization of staff. While the drafting team has attempted to provide a compelling argument that this should reside in a TOP standard and not a PER standard, Tacoma is not convinced.

Additionally, the proposed standard requires personnel to "have knowledge" and does not require "attend training" or be "given training". It then measures this requirement on the entity by demonstration of the methods used to ensure the personnel have knowledge, and not on the actual knowledge level of the personnel. If training is the true intent of this standard, then Tacoma requests the standard directly state that as the requirement vice "have knowledge".

TOP-009 Non-Binding Poll

The violation severity is measured on the percentage of personnel who do not "have knowledge". Knowledge verification is attained through testing and not by class attendance. This standard requires neither and therefore does not establish a valid threshold for demonstrating sufficient knowledge which will lead to subjectivity in the application of the severity level.

Response: See summary at the top of the document.

Jonathan Appelbaum - United Illuminating Co. - 1 -

Answer Comment:

This standard is too ambiguous to be approved. The Standards should not explain "how" to accomplish an objective, but it needs to define the "what" is being accomplished. The Standard cannot be too ambiguous; otherwise there is no way to measure if the objective was achieved.

The problem is the scope of knowledge is undefined. Just stating that an operator requires the knowledge "in order to operate and maintain the reliability of the Bulk Electric System" is too broad. R1 does not scope the requirement because it is very broad in identifying "knowledge of operational functionality and effects … necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES." With such a broad requirement it is no wonder that some commenters think this is a PER-005 topic, or a TOP-003 topic, or some other hybrid. Knowledge necessary to plan the operation of the BES would include fundamental relay knowledge, such as impedance relay, ground relay, power swing relay, transfer trip schemes, communication, RAS definitions; then knowledge specific to each BES Element since an Element Composite Protection System may have included a specific property such as a non-standard time delay or load encroachment blinders; then there is the operational specific impacts due to Elements removed from service ; lastly there is situational awareness in real-time.

The SDT needs to put this knowledge into buckets and determine which aspects are covered by other standards, and if TOP-009 is needed then the requirements should be specific to each bucket of knowledge.

Another suggestion is rather than using the term "ensure its personnel have knowledge of.." use the phrase "have access to information that describes the

operational functionality and effects of…". From a measurement perspective there is a difference between having "knowledge" versus "access to knowledge". For example, if I want to know what is in a Reliability Standard, I review the Standard on NERC website. I can confidently state I have access to knowledge, I can not state "I have knowledge".

Response: See summary at the top of the document.

Nick Braden - Nick Braden On Behalf of: Jack Savage, Modesto Irrigation District, 3, 6, 4
James McFall, Modesto Irrigation District, 3, 6, 4

Answer Comment: TOP-009 requires operators have a knowledge of protection systems, which requires training. This standard sould be in the PER family and require a systematic approach to training of protection systems, rather than a knowledge of the same.

Response: See summary at the top of the document.

Ginette Lacasse - Seattle City Light - 1,3,4,5,6 - WECC

Group Name: Seattle City Light Ballot Body

Group Member Name	Entity	Region	Segments

Pawel Krupa	Seattle City Light	WECC	1
Dana Wheelock	Seattle City Light	WECC	3
Hao Li	Seattle City Light	WECC	4
Bud (Charles) Freeman	Seattle City Light	WECC	6
Mike haynes	Seattle City Light	WECC	5
Michael Watkins	Seattle City Light	WECC	1,3,4
Faz Kasraie	Seattle City Light	WECC	5
John Clark	Seattle City Light	WECC	6

Answer Comment:

We are still concerned with the word "knowledge" being in this standard and still feel any training requirements belong in a PER standard (existing or possibly a new PER standard. Below are the recommented changes to the TOP - City SMEs have added comments to what SMUD proposed as a change to the standard.

R1. Each Transmission Operator shall ~~ensure that~~ make available to its personnel (responsible for Reliable Operation of its Transmission Operator Area) ~~have knowledge of~~ the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that are necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES.

M1. Each Transmission Operator shall provide evidence to demonstrate the method(s) used to ~~ensure its personnel have knowledge according to Requirement R1~~ make the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes available to its personnel

according to Requirement R1. Evidence may include, but is not limited to, the following: training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of analyses, monitoring, and assessments that identify the impacts on the BES.

R2. Each Balancing Authority shall ~~ensure~~ make available to its personnel (responsible for Reliable Operation of its Balancing Authority Area) have ~~knowledge of~~ the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that are necessary to perform its Real-time monitoring in order to maintain generation, Load, and Interchange balance.

M2. Each Balancing Authority shall provide evidence to demonstrate the method(s) used to ~~ensure its personnel have the knowledge according to Requirement R2~~ make the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes available to its personnel according to Requirement R2. Evidence may include, but is not limited to, the following: training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of Real-time analysis, monitoring, and assessments that identify the impacts on the BES.

R3. Each Generator Operator shall ~~ensure~~ make available to its personnel responsible for Real-time control of ~~a~~ its generating Facility ~~have knowledge of~~ the operational functionality and effects of BES Composite Protection Systems; and Remedial Action Schemes that affect output of ~~the~~ its generating Facility.

M3. Each Generator Operator shall provide evidence to demonstrate the method(s) used to ~~ensure its personnel have the knowledge according to Requirement R3~~ make the operational functionality and effects of BES Composite Protection Systems and Remedial Action Schemes available to its personnel according to Requirement R3. Evidence may include, but is not limited to, the following: training (including the effects on the generating Facilities), operating guides, manuals, procedures, interconnection agreements or studies, or access to third-party documentation.

In Summary: City Light does not feel that our orignal concerns were addressed and would appreciate the DT take a closer look at possible alternatives. For your covenience I have attached the original comments:

• A utility cannot measure or demonstrate that anyone has "requisite knowledge". All we can do is provide training and other technical information. That should be the performance we are judged on. As an example of our concern, what happens if an operator forgets some details of a RAS's operation and we have an event as a result? In this case, there might be an automatic violation of the standard, no matter how much training or technical information we provide. For this reason, "have requisite knowledge" is no better than "be familiar with" (the current language). At least the industry understands what the auditors are looking for under the current language (training records).

Related to the above point, the proposed measure is disconnected from the requirement language. We can provide all of those things to our operators (training, operating guides, manuals, etc.), but none of them can prove that the personnel have "requisite knowledge".

• Additionally, a TOP standard that has GOP requirements seems to be a mismatch.

Response: See summary at the top of the document. Note: The above comments lost the track changes formatting when submitting to NERC. NERC staff confirmed with the commenter the above redlining.

William Temple - William Temple On Behalf of: Mark Holman, PJM Interconnection, L.L.C., 2

Answer Comment:

Upon a deeper review and close review of PER-005-01, as well as discussions with industry counterparts, PJM believes that TOP-009-1 is unnecessary. The proposed requirements in TOP-009-1, as well as the current PRC-001-1 Req.1, are already covered by NERC Standards PER-005-1 and TOP-006-2 Req. 3.

• PER-005-1 requires responsible entities to develop a training program for their operating personnel to perform "Bulk Electric System (BES) company-specific Real-time reliability-related tasks." The PJM operator training program includes Composite Protection Systems and Remedial Action Schemes (RASs) as these systems/devices have an impact on operating reliability and are related to the Real-time reliability-related tasks.

• TOP-006-2 Req. 3 requires each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide appropriate technical information concerning protective relays to their operating personnel.

Additionally, the proposed language in TOP-009-1 Req. 1 states: "Each Transmission Operator shall ensure that *its personnel responsible for Reliable*

Operation of its Transmission Operator Area…" is somewhat ambiguous. Is this intended to include a broader scope of personnel than that of PRC-001? We recommend that NERC better define the scope so it is not left open for interpretation.

The addition of TOP-009-1 will increase compliance burdens while not increasing the reliability of the bulk electric system.

PJM supports the comments submitted by the ISO/RTO Council Standards Review Committee.

Response: See summary at the top of the document.

Michelle Amarantos - APS - Arizona Public Service Co. - 1 -

Answer Comment:

As currently written, Requirement R1 is not performance-based and lacks measurability. This is particularly evident in the proposed Measurement, which is only measuring whether the entity has produced a method. Having a method and having the knowledge are two disassociated things. APS proposes the following language as an alternative:

R1. Each Transmission Operator shall provide training to its personnel (responsible for Reliable Operation of its Transmission Operator Area) on the operational functionality and effects of Composite Protection Systems and Remedial Action schemes that are necessary to performs its Operational Planning Analysis, Real-time monitoring and Real-Time Assessments in order to

maintain the reliability of the BES.

M1. Each Transmission Operator shall provide evidence that its personnel successfully completed the training provided in Requirement R1.

This proposed wording would also require a slight modification to the VSLs, as proposed below:

Lower VSL The Transmission Operator failed to provide training to 5% or less of its personnel.
Moderate VSL The Transmission Operator failed to provide training to >5% but <10% of its personnel.
High VSL The Transmission Operator failed to provide training to >10% but <15% of its personnel.
Severe VSL The Transmission Operator failed to provide training to >15% of its personnel.

Response: See summary at the top of the document.

Erika Doot - U.S. Bureau of Reclamation - 5 -

Answer Comment:

Reclamation appreciates the drafting team's clarification in R3 that "[e]ach Generator Operator shall ensure personnel responsible for Real-time control of a Facility have knowledge of operational functionality of BES Composite Protection Systems… that affect output of the facility." However, Reclamation suggests that the drafting team should update the applicability section and R3

to mirror the Generator Operator applicability section of PER-005. Reclamation believes that R3 should not apply to all facility operators, but instead should apply only to Generator Operator Control Center personnel.

Reclamation continues to believe that the drafting team should propose to incorporate these requirements in the PER-005 training standard. One purpose of the PRC-001 revision project is to ensure that requirements are categorized in the proper NERC standards family. Training materials are cited in M1, M2, and M3 as examples of how to demonstrate that operators have knowledge of composite protection systems. Reclamation believes that it is necessary to demonstrate operator familiarity with protection system operations through training. Therefore, these requirements should be incorporated into a Personnel Performance, Qualifications, and Training (PER) standard. Reclamation also believes that the reliability objective of this proposed standard is covered by PER-005 because protection system operation will be identified as a company-specific Bulk Electric System (BES) reliability-related task and incorporated into Balancing Authority, Transmission Operator, and Generator Operator training programs.

Response: See summary at the top of the document.

Emily Rousseau - MRO - 1,2,3,4,5,6 - MRO

Group Name: MRO-NERC Standards Review Forum (NSRF)

Group Member Name	Entity	Region	Segments
Joe Depoorter	Madison Gas & Electric	MRO	3,4,5,6
Chuck Lawrence	American Transmission Company	MRO	1
Chuck Wicklund	Otter Tail Power Company	MRO	1,3,5
Theresa Allard	Minnkota Power Cooperative, Inc	MRO	1,3,5,6
Dave Rudolph	Basin Electric Power Cooperative	MRO	1,3,5,6
Kayleigh Wilkerson	Lincoln Electric System	MRO	1,3,5,6
Jodi Jenson	Western Area Power Administration	MRO	1,6
Larry Heckert	Alliant Energy	MRO	4
Mahmood Safi	Omaha Public Utility District	MRO	1,3,5,6
Shannon Weaver	Midwest ISO Inc.	MRO	2
Mike Brytowski	Great River Energy	MRO	1,3,5,6
Brad Perrett	Minnesota Power	MRO	1,5
Scott Nickels	Rochester Public Utilities	MRO	4
Terry Harbour	MidAmerican Energy Company	MRO	1,3,5,6
Tom Breene	Wisconsin Public Service Corporation	MRO	3,4,5,6
Tony Eddleman	Nebraska Public Power District	MRO	1,3,5

Amy Casucelli	Xcel Energy	MRO	1,3,5, 6

Answer Comment:

NSRF is concerned with the level of knowledge Draft #2 of NERC TOP-009-1 implies for the relevant staff of the Transmission Operator. A variety of industry comments expressed similar concern to the SDT for Draft #1 and the SDT provided a reply to these comments in the "Consideration of Comments" document dated Oct. 6, 2015.

Although the SDT explains that the intent is for the identified personnel to have a "high level" understanding of "Composite Protection Systems", the entirety of the SDT's explanation in paragraph 2 on page 2 as well as the requirement language in TOP-009-1 force a more specific knowledge for these personnel than what is required by existing NERC PRC-001-1.1(ii). The key phrase of concern is the requirement that the relevant personnel must "have the knowledge of operational functionality and effects" and, within that phrase, the "**effects**" is the most ambiguous portion.

Unfortunately, the explanation by the SDT does not address NSRF's concerns. Rather, NSRF's concerns are amplified by the SDT's reference to the new Standards TOP-001, TOP-002 and TOP-003 and the new definitions for Real-time Assessment and Operational Planning Analysis in support of these standards. By referring to these new terms, the SDT pulls in, albeit unintentionally, the portions of the definition that deal with assessing and/or analyzing the specific consequences of known protection system status for particular system conditions. This implies a level of knowledge that few, if any, system operators or even operations support personnel will be able to provide.

Besides its reference to the new TOP standards, the SDT also calls for a greater level of knowledge in its write-up in the Application Guidelines section of the proposed standard. Specifically, the SDT notes:

"The Composite Protection System definition is based on the principle that an Element's multiple layers of protection are intended to function collectively. The use of this term clarifies that the operational functionality of an Element's total complement of protection should be considered."

The SDT then goes on to state:

"Elements in an abnormal or temporary state due to some issue may be inputs into the Operational Planning Analyses, Real-time monitoring, and Real-time Assessments that are used in Real-time operations by Transmission Operator personnel. The Transmission Operator ***is required*** *to have the knowledge of operational functionality and effects of Composite Protection Systems or RASs for these applicable Elements."*

The above statement of "is required" is outside the scope (and wording) of R1, whereby, the "…TOP is to ensure its personnel have knowledge…". The SDT should keep in mind the written words of the Requirement so they don't add any ambiguity to the proposed Standard.

Because the protection of a system Element is often a complex, layered system itself, the impact of a single change within this complex system is not readily apparent to the system operator performing the real-time operation function. On occasion, the impact is obvious to the system operator and the rules can be well defined (e.g., protection for a capacitor bank fails, remove the capacitor

bank from service). However, for most Elements, the system operator will need to work with the system protection engineer to understand the impact to the protection system.

For example, a system operator can understand that a Composite Protection System for a transformer is intended to remove that transformer from service if a fault occurs in the transformer. In addition, a system operator should understand that changing the status of this Composite Protection System may result in a fault not being cleared or being cleared with a different zone of protection. This may be all the SDT intends to communicate but, again, this is not the natural reading of the standard or explanation. By referencing the Operational Planning Analysis (OPA) and Real-time Assessment (RA) definitions associated with TOP-001,-002 & -003, the SDT has pulled in needing to know the **effect** of the Composite Protection System not working *because* that is exactly what the new definitions are focused on assessing.

As noted above, the system operator will need the assistance of the system protection engineer to understand the impact of a change to the Composite Protection System on the protection system itself. However, the SDT goes even further to state that the relevant personnel for TOP-009-1 must also understand the **effect** of this change on system reliability. This impact of this protection system change could be a change in the zone of tripping, which may be able to be assessed by the system operator with the available tools, but it also could just as easily be a circumstance where system faults will now be cleared in a slower period of time. In reality, even a different zone of tripping may introduce stability concerns because this typically involves slower clearing due to protection coordination needs. In the end, these circumstances require another layer of personnel, e.g., the operations engineer, to perform need analysis using

specialized tools to understand the effect on the reliability of the system.

Overall, the Transmission Operator, as an entity, has the requisite understanding of function and effect intended by Requirement 1 but it is a divided responsibility across multiple personnel. This is a very different situation than saying that the "personnel responsible for Reliable Operation" will have the requisite knowledge individually.

Again, it may not be the intention of the SDT to require such knowledge at the individual level but that is the natural implication of the language chosen for the draft standard, its application guide and the SDT's response to the industry's comments.

Looking back to language of PRC-001-1.1(ii), NSRF recommends that the phrase "have the knowledge of operational functionality and effects" be modified by removing "**and effects**" from the requirement. NSRF believes this would be the most straight-forward means of addressing our concerns and the concerns of the industry. Alternatively, if the SDT will reject the NSRF's proposal to remove the words "and the effects" from Requirement 1, we recommend that the SDT rewrite Requirement 1 to match the existing wording of PRC-001-1.1(ii) Requirement 1, which is successfully used within the industry today.

Additionally, TOPs that operate RAS/SPS individually or jointly will identify the RAS/SPS as a Reliability-Related Task required by PER-005. Per PER-005, the TOP operators will receive specific training on all RAS/SPS related knowledge, impact, and mitigation. With TOP-009, having this knowledge falls under 2 requirements of 2 different standards. NSRF's concern is when an event is caused by lack of knowledge of RAS/SPS, this violation will fall under which

standard PER-005 or TOP-009? The STD should provide guidance to the industry specifically stating which requirement of which standard lack of this knowledge will fall under. So, there is no confusion in the future and there will be no double jeopardy if found non-compliant.

The NSRF also appreciates the drafting team's clarification in R3 that "[e]ach Generator Operator shall ensure personnel responsible for Real-time control of a Facility have knowledge of operational functionality of BES Composite Protection Systems… that affect output of the facility." However, we suggest that the drafting team should update the applicability section and R3 to mirror the Generator Operator applicability section of PER-005. We believe that R3 should not apply to all plant operators, but instead should apply to Generator Operator Control Center personnel.

Please note that we continue to believe that the drafting team should propose to incorporate these requirements in the PER-005 training standard. One purpose of the PRC-001 revision project is to ensure that requirements are categorized in the proper NERC standards family. Training materials are cited in M1, M2, and M3 as examples of how to demonstrate that operators have knowledge of composite protection systems. We believe that it is necessary to demonstrate operator familiarity with protection system operations through training. Therefore, these requirements should be incorporated into a Personnel Performance, Qualifications, and Training (PER) standard. We believe that the reliability objective of this proposed standard is covered by PER-005 because protection system operation will be identified as a company-specific Bulk Electric System (BES) reliability-related task and incorporated into Balancing Authority, Transmission Operator, and Generator Operator training programs.

Response: See summary at the top of the document.

Chris Gowder - Chris Gowder On Behalf of: Carol Chinn, Florida Municipal Power Agency, 5, 6, 4, 3
David Schumann, Florida Municipal Power Agency, 5, 6, 4, 3
Joe McKinney, Florida Municipal Power Agency, 5, 6, 4, 3
Richard Montgomery, Florida Municipal Power Agency, 5, 6, 4, 3

Answer Comment: FMPA appreciates the improvements made to the requirements and measures, and agrees with the drafting team with regard to the applicability and inclusion as a TOP standard. Our only remaining concern is with regard to the VSL categories having a disproportionate impact on entities with a small number of personnel subject to the requirements, as articulated by others.

Response: See summary at the top of the document.

Jason Smith - Southwest Power Pool, Inc. (RTO) - 2 - SPP

Group Name: SPP Standards Review Group

Group Member Name	Entity	Region	Segments
Shannon Mickens	Southwest Power Pool	SPP	2

Jason Smith	Southwest Power Pool	SPP	2
Mike Kidwell	Empire District Electric Company	SPP	1,3,5
James Nail	City of Independence, Missouri	SPP	3,5
William (Bill) Shultz	Southern Company Generation	SERC	5
Robert Gray	Board of Public Utilities of Kansas City, KS	SPP	3
Ashley Stringer	Oklahoma Muncipal Power Authority	SPP	4
Robin Hill	EDP Renewables North America	SPP	5
Stephanie Johnson	Westar Energy	SPP	1,3,5, 6
Scott Williams	City Utilities of Springfield Missouri	SPP	1,4

Answer Comment:

While we do not disagree that the proposed TOP-009-1 Standard is well written, results based, and clearly states the objectives of the team, we feel that the existing PER-005-2 requirement already covers the intent of this proposed standard. Each TOP, BA, and RC would already identify the need to be aware of the function and impact of SPS/RAS on their system(s) in order to maintain reliability and accomplish all the other required functions. Creating a second, specific requirement to perform these functions infers that these tasks are "separate" from the PER-005-2 list of tasks. An entity that suffers an event due to lack of understanding or knowledge of a RAS/SPS impact would most surely be found in violation of the proposed TOP-009-1 as well as the PER-005-2. The wording of TOP-009-1 also is similar, and infers the same purpose as PER-005-2, in that it requires an entity to "have knowledge" and the measures state an entity must "ensure its personnel have the knowledge" which sounds an awful lot like the verification of capabilities that must be performed under PER-005-2 – and the means most entities will prove compliance with TOP-009-1. We

would support some compliance guidance or editing of the Application Guidelines of PER-005-2 stating that knowledge and understanding of SPS/RAS impacts are included in the intended set of reliability tasks.

After discussion with representatives of the SDT, it is still unclear to us that entities who feel they are already doing the required knowledge transfer and documenting that via their PER-005-2 documentation, would need to do something different to meet the intent of TOP-009-1. Entities should ensure their training meets the intent of the TOP-009-1 standard by reviewing the Application Guideline section of the document. If another revision of this TOP-009-1 standard is made, we encourage the team to review the requirements for additional opportunities to clarify the level of detail and expectations of timing regarding the knowledge transfer. It seems this standard is needed only to force the transfer of knowledge of "changed" conditions regarding the SPS/RAS. There are already other requirements that require sharing of status and degradation information regarding SPS's.

If the SDT considers the above, and continues to feel that a separate, additional requirement is necessary requiring the information transfer in TOP-009-1, we feel that the RC should also be included as an applicable entity. If there is a need for a specific statement of this knowledge transfer, then the Reliability Coordinator should also have a matching requirement regarding the function and impact of SPS/RAS in its area.

Response: See summary at the top of the document.

Sergio Banuelos - Tri-State G and T Association, Inc. - 1,3,5 - MRO,WECC

Answer Comment:

Tri-State has some concern with the phrase "*personnel (responsible for Reliable Operation)*". There are multiple NERC Reliability Standards that employ different terminology for, seemingly, the same personnel which can lead to confusion. This draft of TOP-009-1 uses "*personnel (responsible for Reliable Operation)*", while COM-002-4 uses "operating personnel" and PER-005 uses "System Operators" and "Operations Support Personnel". We realize the SDT's effort to allow entities to define the personnel that fall under these terms; however, we believe that due to the ambiguity of the term "personnel (responsible for Reliable Operations of its TOP/BA Area)" there could be significant cost increases if it is determined the scope is larger than System Operators and Operations Support Personnel. This lack of consistency in the methodology used by different entities to implement this standard could also result in confusion and misunderstanding. Also it allows it to be up for interpretation which leads to the possibility of differing audit approaches and lack of consistency in audits. We suggest the SDT consider the terms "System Operators" and/or "Operations Support Personnel" and would like to note that PER-005 does allow entity's flexibility in determining who to include in these groups.

Response: See summary at the top of the document.

Joe Tarantino - Joe Tarantino On Behalf of: Diane Clark, Sacramento Municipal Utility District, 3, 4, 6, 5, 1
Kevin Smith, Balancing Authority of Northern California, 1
Michael Ramirez, Sacramento Municipal Utility District, 3, 4, 6, 5, 1
Rachel Moore, Sacramento Municipal Utility District, 3, 4, 6, 5, 1

Susan Gill-Zobitz, Sacramento Municipal Utility District, 3, 4, 6, 5, 1
Tim Kelley, Sacramento Municipal Utility District, 3, 4, 6, 5, 1

Answer Comment:

SMUD/BANC believes changes are required to this standard. We continue to be concerned over the term "knowledge" that has training implications that are more appropriately identified in the PER standard.

Please consider changes to the effect of the following proposal:

TOP-009-1: Knowledge of Composite Protection Systems and Remedial Action Schemes and Their Effects.

R1. Each Transmission Operator shall ~~ensure that~~ make available to its personnel (responsible for Reliable Operation of its Transmission Operator Area) ~~have knowledge of~~ the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that are necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES.

R2. Each Balancing Authority shall ~~ensure~~ make available to its personnel (responsible for Reliable Operation of its Balancing Authority Area) ~~have knowledge of~~ the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that are necessary to perform its Real-time monitoring in order to maintain generation, Load, and Interchange balance.

M2. Each Balancing Authority shall provide evidence to demonstrate the method(s) used to ensure its personnel have the knowledge according to

Requirement R2. Evidence may include, but is not limited to, the following: training (including the effects on the BES), operating guides, manuals, procedures, output of operational tools (e.g., databases or analysis programs), or outcomes of Real-time analysis, monitoring, and assessments that identify the impacts on the BES.

R3. Each Generator Operator shall ~~ensure~~ make available to its personnel responsible for Real-time control of a its generating Facility have knowledge ~~of~~ the operational functionality and effects of BES Composite Protection Systems; and Remedial Action Schemes that affect output of ~~the~~ its generating Facility.

Response: See summary at the top of the document. Note: The above comments lost the track changes formatting when submitting to NERC. NERC staff confirmed with the commenter the above redlining.

Andrew Pusztai - American Transmission Company, LLC - 1 -

Answer Comment:

ATC is concerned with the level of knowledge Draft #2 of NERC TOP-009-1 implies for the relevant staff of the Transmission Operator. A variety of industry comments expressed similar concern to the SDT for Draft #1 and the SDT provided a reply to these comments in the "Consideration of Comments" document dated Oct. 6, 2015.

Although the SDT explains that the intent is for the identified personnel to have a "high level" understanding of "Composite Protection Systems", the entirety of the SDT's explanation in paragraph 2 on page 2 as well as the requirement language in TOP-009-1 force a more specific knowledge for these personnel

than what is required by existing NERC PRC-001-1.1(ii). The key phrase of concern is the requirement that the relevant personnel must "have the knowledge of operational functionality and effects" and, within that phrase, the "effects" is the most ambiguous portion.

Unfortunately, the explanation by the SDT does not address ATC's concerns. Rather, ATC's concerns are amplified by the SDT's reference to the new Standards TOP-001, TOP-002 and TOP-003 and the new definitions for Real-time Assessment and Operational Planning Analysis in support of these standards. By referring to these new terms, the SDT pulls in, albeit unintentionally, the portions of the definition that deal with assessing and/or analyzing the specific consequences of known protection system status for particular system conditions. This implies a level of knowledge that few, if any, system operators or even operations support personnel will be able to provide.

Besides its reference to the new TOP standards, the SDT also calls for a greater level of knowledge in its write-up in the Application Guidelines section of the proposed standard. Specifically, the SDT notes:

"The Composite Protection System definition is based on the principle that an Element's multiple layers of protection are intended to function collectively. The use of this term clarifies that the operational functionality of an Element's total complement of protection should be considered."

The SDT then goes on to state:

"Elements in an abnormal or temporary state due to some issue may be inputs into the Operational Planning Analyses, Real-time monitoring, and Real-time

Assessments that are used in Real-time operations by Transmission Operator personnel. The Transmission Operator is required to have the knowledge of operational functionality and effects of Composite Protection Systems or RASs for these applicable Elements."

Because the protection of a system Element is often a complex, layered system itself, the impact of a single change within this complex system is not readily apparent to the system operator performing the real-time operation function. On occasion, the impact is obvious to the system operator and the rules can be well defined (e.g., protection for a capacitor bank fails, remove the capacitor bank from service). However, for most Elements, the system operator will need to work with the system protection engineer to understand the impact to the protection system.

For example, a system operator can understand that a Composite Protection System for a transformer is intended to remove that transformer from service if a fault occurs in the transformer. In addition, a system operator should understand that changing the status of this Composite Protection System may result in a fault not being cleared or being cleared with a different zone of protection. This may be all the SDT intends to communicate but, again, this is not the natural reading of the standard or explanation. By referencing the Operational Planning Analysis (OPA) and Real-time Assessment (RA) definitions associated with TOP-001,-002 & -003, the SDT has pulled in needing to know the **effect** of the Composite Protection System not working *because* that is exactly what the new definitions are focused on assessing.

As noted above, the system operator will need the assistance of the system protection engineer to understand the impact of a change to the Composite

Protection System on the protection system itself. However, the SDT goes even further to state that the relevant personnel for TOP-009-1 must also understand the effect of this change on system reliability. This impact of this protection system change could be a change in the zone of tripping, which may be able to be assessed by the system operator with the available tools, but it also could just as easily be a circumstance where system faults will now be cleared in a slower period of time. In reality, even a different zone of tripping may introduce stability concerns because this typically involves slower clearing due to protection coordination needs. In the end, these circumstances require another layer of personnel, e.g., the operations engineer, to perform need analysis using specialized tools to understand the effect on the reliability of the system.

Overall, the Transmission Operator, as an entity, has the requisite understanding of function and effect intended by Requirement 1 but it is a divided responsibility across multiple personnel. This is a very different situation than saying that the "personnel responsible for Reliable Operation" will have the requisite knowledge individually.

Again, it may not be the intention of the SDT to require such knowledge at the individual level but that is the natural implication of the language chosen for the draft standard, its application guide and the SDT's response to the industry's comments.

Looking back to language of PRC-001-1.1(ii), ATC recommends that the phrase "have the knowledge of operational functionality and effects" be modified by removing "and effects" from the requirement. ATC believes this would be the most straight-forward means of addressing our concerns and the concerns of the industry. Alternatively, if the SDT will reject ATC's proposal to remove the

words “and the effects” from Requirement 1, we recommend that the SDT rewrite Requirement 1 to match the existing wording of PRC-001-1.1(ii) Requirement 1, which is successfully used within the industry today.

Response: See summary at the top of the document.

Colby Bellville - Colby Bellville On Behalf of: Greg Cecil, Duke Energy , 6, 5, 3, 1

Answer Comment:

Duke Energy requests further insight from the drafting team of their intent on treatment of all applicable functions in this standard. We recognize the flexibility that the draft standard affords an entity in determining the method and periodicity of ensuring its operators have the requisite knowledge, whether it be training, procedures, manuals, etc. We are under the impression that based on the language of the standard, that all functions (TOP, BA, and GOP) will be held to the same “standard” when it comes to demonstrating compliance with this standard. Essentially, that method and periodicity of ensuring that operators from any of the applicable functional entities have the requisite knowledge is viewed equally. Is it the drafting team’s intent that all functions will be treated the same when measuring compliance?

Response: See summary at the top of the document.

Joel Wise - Tennessee Valley Authority - 1,3,5,6 - SERC

Answer Comment:

Even though the measures as revised in Draft 2 are now defined and obtainable, the standard's requirements to "ensure personnel . . . have knowledge . . ." coupled with the RSAW's direction that auditors shall use "professional judgment to determine whether the Generator Operator personnel have the required knowledge" amounts to an indefinite threshold for compliance that will ultimately result in inconsistent outcomes. Instead, language for R1, R2, and R3 should be revised to state: "Each [entity] shall utilize documented methods to ensure personnel . . . have knowledge . . ."

This aligns with the measures as currently written in Draft 2. The RSAW should focus on verifying existence and use of the methods and the information provided to personnel, not an objective determination of the knowledge of individuals.

Measures should also include identification of a training population, training rosters, and the Composite Protection Systems and RAS addressed in the training (to be consistent with the current draft of the RSAW).

The words "the electrical" should be inserted into Requirement R3 so that it reads, "and Remedial Action Schemes that affect the electrical output of the Facility."

The Application Guidelines for R3 need to be clarified. First it states "Generator Operator personnel must have knowledge . . ." then it states that "The intent [of the standard] is to understand the information provided to personnel . . ." As

currently written, this reflects the dichotomy between the Requirements and Measures, and between the standard and the RSAW described above.

Response: See summary at the top of the document.

Kenn Backholm - Snohomish County PUD No. 1 - 6 -

Answer Comment: Public Utility District No. 1 of Snohomish County ("SNPD") supports comments submitted by Joe Tarantino of Sacramento Municipal Utility District ("SMUD").

Response: See summary at the top of the document.

Ruida Shu - Northeast Power Coordinating Council - NA - Not Applicable - NPCC

Answer Comment: In the B. Requirements and Measures, Rationale for Requirement R2 and Rationale for Requirement R3 the last sentence could use some modification.

"Personnel are also expected to understand how RASs are expected to detect predetermined BES conditions and automatically take corrective actions."

Suggest using the following language: "Personnel are also expected to understand the operational functionality of RASs."

Language in R3 needs to capture how BES affects the output of the facility as

well as the facilities output and its affect on the BES.

Suggest using the following language: “Each Generator Operator shall ensure personnel responsible for Real-time control of Facility have knowledge of operational functionality of BES Composite Protection System; and Remedial Action Schemes that affect output of the Facility as well as the Facility’s output and its affect on the BES.

Response: See summary at the top of the document.

Jeremy Voll - Basin Electric Power Cooperative - 3 -

Answer Comment:

NSRF is concerned with the level of knowledge Draft #2 of NERC TOP-009-1 implies for the relevant staff of the Transmission Operator. A variety of industry comments expressed similar concern to the SDT for Draft #1 and the SDT provided a reply to these comments in the “Consideration of Comments” document dated Oct. 6, 2015.

Although the SDT explains that the intent is for the identified personnel to have a “high level” understanding of “Composite Protection Systems”, the entirety of the SDT’s explanation in paragraph 2 on page 2 as well as the requirement language in TOP-009-1 force a more specific knowledge for these personnel than what is required by existing NERC PRC-001-1.1(ii). The key phrase of concern is the requirement that the relevant personnel must “have the knowledge of operational functionality and effects” and, within that phrase, the

"**effects**" is the most ambiguous portion.

Unfortunately, the explanation by the SDT does not address NSRF's concerns. Rather, NSRF's concerns are amplified by the SDT's reference to the new Standards TOP-001, TOP-002 and TOP-003 and the new definitions for Real-time Assessment and Operational Planning Analysis in support of these standards. By referring to these new terms, the SDT pulls in, albeit unintentionally, the portions of the definition that deal with assessing and/or analyzing the specific consequences of known protection system status for particular system conditions. This implies a level of knowledge that few, if any, system operators or even operations support personnel will be able to provide.

Besides its reference to the new TOP standards, the SDT also calls for a greater level of knowledge in its write-up in the Application Guidelines section of the proposed standard. Specifically, the SDT notes:

"The Composite Protection System definition is based on the principle that an Element's multiple layers of protection are intended to function collectively. The use of this term clarifies that the operational functionality of an Element's total complement of protection should be considered."

The SDT then goes on to state:

*"Elements in an abnormal or temporary state due to some issue may be inputs into the Operational Planning Analyses, Real-time monitoring, and Real-time Assessments that are used in Real-time operations by Transmission Operator personnel. The Transmission Operator **is required** to have the knowledge of operational functionality and effects of Composite Protection Systems or RASs*

for these applicable Elements."

The above statement of "is required" is outside the scope (and wording) of R1, whereby, the "…TOP is to ensure its personnel have knowledge…". The SDT should keep in mind the written words of the Requirement so they don't add any ambiguity to the proposed Standard.

Because the protection of a system Element is often a complex, layered system itself, the impact of a single change within this complex system is not readily apparent to the system operator performing the real-time operation function. On occasion, the impact is obvious to the system operator and the rules can be well defined (e.g., protection for a capacitor bank fails, remove the capacitor bank from service). However, for most Elements, the system operator will need to work with the system protection engineer to understand the impact to the protection system.

For example, a system operator can understand that a Composite Protection System for a transformer is intended to remove that transformer from service if a fault occurs in the transformer. In addition, a system operator should understand that changing the status of this Composite Protection System may result in a fault not being cleared or being cleared with a different zone of protection. This may be all the SDT intends to communicate but, again, this is not the natural reading of the standard or explanation. By referencing the Operational Planning Analysis (OPA) and Real-time Assessment (RA) definitions associated with TOP-001,-002 & -003, the SDT has pulled in needing to know the **effect** of the Composite Protection System not working *because* that is exactly what the new definitions are focused on assessing.

As noted above, the system operator will need the assistance of the system protection engineer to understand the impact of a change to the Composite Protection System on the protection system itself. However, the SDT goes even further to state that the relevant personnel for TOP-009-1 must also understand the **effect** of this change on system reliability. This impact of this protection system change could be a change in the zone of tripping, which may be able to be assessed by the system operator with the available tools, but it also could just as easily be a circumstance where system faults will now be cleared in a slower period of time. In reality, even a different zone of tripping may introduce stability concerns because this typically involves slower clearing due to protection coordination needs. In the end, these circumstances require another layer of personnel, e.g., the operations engineer, to perform need analysis using specialized tools to understand the effect on the reliability of the system.

Overall, the Transmission Operator, as an entity, has the requisite understanding of function and effect intended by Requirement 1 but it is a divided responsibility across multiple personnel. This is a very different situation than saying that the "personnel responsible for Reliable Operation" will have the requisite knowledge individually.

Again, it may not be the intention of the SDT to require such knowledge at the individual level but that is the natural implication of the language chosen for the draft standard, its application guide and the SDT's response to the industry's comments.

Looking back to language of PRC-001-1.1(ii), NSRF recommends that the phrase "have the knowledge of operational functionality and effects" be modified by removing "**and effects**" from the requirement. NSRF believes this would be the

most straight-forward means of addressing our concerns and the concerns of the industry. Alternatively, if the SDT will reject the NSRF's proposal to remove the words "and the effects" from Requirement 1, we recommend that the SDT rewrite Requirement 1 to match the existing wording of PRC-001-1.1(ii) Requirement 1, which is successfully used within the industry today.

Additionally, TOPs that operate RAS/SPS individually or jointly will identify the RAS/SPS as a Reliability-Related Task required by PER-005. Per PER-005, the TOP operators will receive specific training on all RAS/SPS related knowledge, impact, and mitigation. With TOP-009, having this knowledge falls under 2 requirements of 2 different standards. NSRF's concern is when an event is caused by lack of knowledge of RAS/SPS, this violation will fall under which standard PER-005 or TOP-009? The STD should provide guidance to the industry specifically stating which requirement of which standard lack of this knowledge will fall under. So, there is no confusion in the future and there will be no double jeopardy if found non-compliant.

The NSRF also appreciates the drafting team's clarification in R3 that "[e]ach Generator Operator shall ensure personnel responsible for Real-time control of a Facility have knowledge of operational functionality of BES Composite Protection Systems… that affect output of the facility." However, we suggest that the drafting team should update the applicability section and R3 to mirror the Generator Operator applicability section of PER-005. We believe that R3 should not apply to all plant operators, but instead should apply to Generator Operator Control Center personnel.

Please note that we continue to believe that the drafting team should propose to incorporate these requirements in the PER-005 training standard. One

purpose of the PRC-001 revision project is to ensure that requirements are categorized in the proper NERC standards family. Training materials are cited in M1, M2, and M3 as examples of how to demonstrate that operators have knowledge of composite protection systems. We believe that it is necessary to demonstrate operator familiarity with protection system operations through training. Therefore, these requirements should be incorporated into a Personnel Performance, Qualifications, and Training (PER) standard. We believe that the reliability objective of this proposed standard is covered by PER-005 because protection system operation will be identified as a company-specific Bulk Electric System (BES) reliability-related task and incorporated into Balancing Authority, Transmission Operator, and Generator Operator training programs.

Response: See summary at the top of the document.

Dixie Wells - Lower Colorado River Authority - 5 -

Group Name: LCRA Compliance

Group Member Name	Entity	Region	Segments
Michael Shaw	LCRA	TRE	6
Teresa Cantwell	LCRA	TRE	1
Dixie Wells	LCRA	TRE	5

Answer Comment: LCRA believes that the requirements addressed in TOP-009-1, being directly related to knowledge which would presumably be gained from its training programs, should be placed within the PER set of standards that already address areas of competencies and training programs required for operating personnel.

Response: See summary at the top of the document.

Rachel Coyne - Texas Reliability Entity, Inc. - 10 -

Answer Comment: Requirements

Texas RE is concerned that the phrase "have knowledge of" does not ensure personnel understand Composite Protection Systems and Remedial Action Schemes and their effects on the Bulk Electric System within their area. Specifically, Texas RE asserts that the "have knowledge of" language poses challenges to an entity attempting to demonstrate compliance with the standard and also to the CEA's ability monitor compliance and enforce the standard. Therefore, Texas RE recommends that the SDT consider adding a standard requirement which obligates entities to deliver specific training on Composite Protection Systems and Remedial Action Schemes which results in personnel having knowledge of the operational functionality and effects of Composite Protection Systems and Remedial Action Schemes.

Measures

Texas RE suggests clarifying the evidentiary requirements for Transmission

Operators (TOPs), Balancing Authorities (BAs) and Generation Operators (GOPs) set forth in Measures 1, 2, and 3 respectively. Specifically, Measures 1, 2, and 3 should make clear that TOPs, BAs, and GOPs may demonstrate that their personnel have the requisite knowledge of Composite Protection Systems and Remedial Action Schemes through providing training to the appropriate personnel or by *documenting* that their personnel have reviewed or have actual knowledge of relevant materials in operating guides, manual, procedures or other materials regarding Composite Protection Systems and Remedial Action Schemes.

As the Measures are currently drafted, it is possible to argue that the existence of operating guides or other materials discussing Composite Protection Systems and Remedial Action Schemes is sufficient evidence to demonstrate compliance with the proposed TOP-009 requirements. Merely possessing such materials, however, does not meet the stated reliability objective of ensuring that an entity's operating personnel understand Composite Protection Systems and Remedial Action Schemes and their effects on the Bulk Electric System within their area.

Texas RE recommends revising proposed Measures 1, 2, and 3 as follows to clarify that TOPs, BAs, and GOPs much demonstrate actual review and knowledge of relevant documentary materials as part of their compliance obligations under the respective TOP-009 requirements for their function:

Evidence may include, but is not limited to, the following (1) training (including the effects on the BES); or (2) documented *review or other documented knowledge* of operating guides, manuals, procedures . . .

Consistent with these changes to Measures 1, 2 and 3, the reference to "access to third-party documentation" in Measure 3 should also be revised to clarify that relevant GOP personnel should have documented, actual knowledge of third-party materials on Composite Protection Systems and/or Remedial Action Schemes. Accordingly in addition to the changes described above, Measure three should also be revised by striking the phrase "access to" and inserting the word "relevant" so that Measure 3 reads, in relevant part:

Evidence may include, but is not limited to, the following (1) training (including the effects on the BES); or (2) *documented review or other documented knowledge* of operating guides, manuals, procedures, interconnection agreements or studies, or access to *relevant* third-party documentation.

VSL Language

Texas RE recommends revising the language in the VSLs for Requirements 1, 2, and 3 to clarify that relevant percentage requirement for each VSL threshold should be based off personnel that are responsible for the Reliable Operation of the Registered Entity's area and not all personnel. For example, the Lower VSL for TOP-009-1, R1 should read as follows:

The Transmission Operator failed to ensure its personnel described in Requirement R1 have knowledge of Composite Protection Systems and Remedial Action Schemes equal to 5% or less of its personnel *responsible for Reliable Operation of its Transmission Operator Area*.

Similar changes should be made to the Moderate, High and Severe VSLs for each requirement. This change is necessary to make the VSL thresholds consistent

with the personnel pool described in the TOP-009 requirements themselves.

As stated previously, Texas RE has determined that the standard includes reliability tasks that are consistent with PRC-001-1.1(ii). Therefore, the proposed implementation plan should not require a 24 month implementation period. This would allow a gap in reliability if personnel are unaware, at this point, of protection systems.

Texas RE recommends considering UVLS and UFLS as they affect reliability, even though they are not included in the original SAR.

Response: See summary at the top of the document.

Elizabeth Axson - Electric Reliability Council of Texas, Inc. - 2 -

Answer Comment:

ERCOT supports the comments submitted by the IRC SRC and provides these additional comments. ERCOT appreciates the standards draft team's attempts to clarify the responsibilities of applicable entities regarding the transfer of knowledge to operators. It reiterates the following comments from its previous submission:

• The proposed requirements, in essence, stipulate training regarding protection systems and RASs and verifying operating personnel's knowledge and understanding of the functionality and effects of protection systems and RAS. Such requirements are much more suited to a PER standard, not only because of the objective behind the requirements (to provide training), but also

because of their applicability. Further, it is important that training correlate with and be included as part of the Systematic Approach to Training developed by each entity to fulfill its training obligations under the Reliability Standards. The prescriptive nature of this standard contradicts the approach to training previously approved by the Industry.

• Additionally, ERCOT respectfully submits that there is no need to identify Transmission Operators in Requirement 1. Should the Standard Drafting Team leave R1 in the scope of this Standard, then ERCOT proposes replacing language regarding knowledge with a more measurable objective, e.g.,:

Each Transmission Operator shall, for its personnel responsible for Reliable Operation of its Transmission Operator Area, provide training of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that it deems necessary to perform its Operational Planning Analyses, Real-time monitoring, and Real-time Assessments in order to maintain the reliability of the BES.

• ERCOT recommends similar language be applied in other requirements, such as R2 regarding Balancing Authority personnel:

Each Balancing Authority shall, for its personnel responsible for Reliable Operation of its Balancing Authority Area, provide training of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that it deems necessary to perform its Real-time monitoring in order to maintain generation-, Load-, and Interchange balance.

Finally, ERCOT also understands that the majority of clarifications were provided in the measures and supporting information. It is always better practice to ensure that expectations conveyed by each requirement are clear and unambiguous and are expressed in the actual requirement language. Thus, while ERCOT understands the need to minimize revisions to requirement language to remain on schedule for approval and filing with the Federal Energy Regulatory Commission, it recommends that each requirement be amended to include at the end the following phrase, "e.g., through training, available displays or real-time tools, etc."

Response: See summary at the top of the document.

Patricia Robertson - BC Hydro and Power Authority - 1 -

Group Name: BC Hydro

Group Member Name	Entity	Region	Segments
Patricia Robertson	BC Hydro and Power Authority	WECC	1
Venkataramakrishnan Vinnakota	BC Hydro and Power Authority	WECC	2
Pat G. Harrington	BC Hydro and Power Authority	WECC	3
Clement Ma	BC Hydro and Power Authority	WECC	5

Answer Comment:	BC Hydro agrees with supporting the fundamental objective of the TOP-009-1 that requires BAs, GOPs and TOPs be knowledgeable on the composite protection schemes and RAS and their effects. However, the knowledge of these protection systems ought to be implicit in the objectives of PER-005 which requires system operators to be competent to perform reliability-related tasks that require the knowledge of these protection schemes. Additionally, BC Hydro supports BPA's (Jamison Dye) comments.

Response: See summary at the top of the document.

Laura Nelson - IDACORP - Idaho Power Company - 1 -

Answer Comment:	The definition of a Composite Protection System seems a little vague. "The total complement of Protection Systems that function collectively to protect an Element" should be better defined as to what knowledge is expected. More industry webinars and training are needed prior to implementing this new standard.

Response: See summary at the top of the document.

Ben Li - Independent Electricity System Operator - 2 - NPCC

Group Name: ISO/RTO Council Standards Review Committee

Group Member Name	Entity	Region	Segments
Charles Yeung	SPP	SPP	2
Greg Campoli	NYISO	NPCC	2
Ali Miremadi	CAISO	WECC	2
Ben Li	IESO	NPCC	2
Kathleen Goodman	ISO-NE	NPCC	2
Mark Holman	PJM	RFC	2
Terry Bilke	MISO	MRO	2

Answer Comment:

1. **We commented on the last posting to suggest moving this standard and its proposed requirements into a PER standard, and to include RC in the applicable entity. We thank the SDT for responding to our comments, and for taking a proactive approach by proposing a SAR to address the RC issue.**

Upon further review of the revised draft TOP-009-1 and the intent of the existing PRC-001-1, R1, the SRC has now come to a realization and conclusion that the existing PRC-001-1, R1, and its proposed transformation to the three requirements in TOP-009-1, are already covered by the existing PER-005-2. Hence, the SRC does not believe there is a need to develop the proposed TOP-009-1 standard. The SRC further believes that PRC-001-1, R1, can be retired.

The SRC interprets PRC-001-1, R1 and the proposed TOP-009-1 to mean providing operating personnel with the basic knowledge of composite

protection systems (and RASs in TOP-009-1) through various means, such as training (as supported by Measure M1 of the proposed TOP-009-1). As such, the SRC proposes that NERC and the SDT consider stopping development of TOP-009-1 since the proposed requirements (and the current PRC-001-1, R1) are construed to have been already covered by PER-005-2 by virtue of the latter standard stipulating the followings:

a. **Its purpose statement clearly indicates that the standard is "To ensure that personnel performing or supporting Real-time operations on the Bulk Electric System are trained using a systematic approach".**

b. Requirements R1 mandates the Reliability Coordinator, Balancing Authority, and Transmission Operator to use a systematic approach to develop and implement a training program for its System Operators to include topics "of Bulk Electric System (BES) company-specific Real-time reliability-related tasks". In our view, the topics related to BES company-specific Real-time reliability-related tasks would include all topics that have an impact on the reliability of Real-time operations including composite protection systems and RASs.

c. Requirements R2 and R6 extend the above training requirement to Transmission Owners and Generator Operators, where applicable.

d. Requirement R5 extends the training requirement in R1 to those "Operations Support Personnel whose job function(s) can impact those BES company-specific Real-time reliability-related tasks". In our view, these personnel would include those who perform Operations Planning Analysis (OPA) and develop SOLs and IROLs.

On the above basis, the SRC concludes that the training program required by the various requirements in PER-005-2 would apply to personnel responsible for Real-time operations as well as those who supporting such operations, and include the topic of composite protection systems and RASs, among other topics that have an impact on BES reliability, as these systems/devices do have an impact on operating reliability and are related to the applicable entities' Real-time reliability-related tasks.

If NERC and the SDT agree with this proposal, then the SRC offers to work with NERC and the SDT to develop detailed rationale to justify the retirement of PRC-001-1 R1 and discontinue the TOP-009-1 project.

However, if the SDT should insist that a separate standard be developed to specifically stipulate the need to have the knowledge of composite protection systems and RASs, then we would appreciate the SDT providing the technical justification as to why these two topics need to be singled out (instead of being covered by PER-005) but not any of the other equally important topics such as UFLS, UVLF, dynamic stability, voltage collapse, phase angle regulator, etc. if the SDT does not believe "company-specific Real-time reliability-related tasks" already cover all these topics.

Furthermore, while the SRC appreciates the SDT's positive response to our previous comments by taking the initiative to develop a SAR to address the RC issue, the SRC will point out that a standard along the line of the proposed TOP-009-1 can and will expose applicable entities to double jeopardy (failing these requirements also fail PER-005-2). If the SDT should decide to continue with developing the TOP-009-1 standard, and/or any other standards to

include the RC, the SDT ought to consider the potential double jeopardy issue and develop the standard language accordingly.

And if the SDT should insist to continue with the TOP-009-1 development path, we would appreciate the SDT consider and address:

(i) Is the proposed standard addressing a newly emerging risk? Have other non-Standard approaches been considered?

(ii) How does the proposed standard improve existing requirements so that the new Standard is "Results-Based"?

2. With respect to "knowledge" of the physical information of the individual composition protection systems and RASs, the existing TOP-006-3, R3, and TOP-002-2.1b, R11, provide adequate coverage to ensure operating personnel in TOP, BA, GOP and RC are provided such information.

TOP-006-3, R3 stipulates that:

R3. Each Reliability Coordinator, Transmission Operator, and Balancing Authority shall provide its operating personnel with appropriate technical information concerning protective relays within the Reliability Coordinator Area, the Transmission Operator Area, and the Balancing Authority Area, respectively.

TOP-002-2.1b, R11, stipulates that:

The Transmission Operator shall perform seasonal, next-day, and current-day

Bulk Electric System studies to determine SOLs. Neighboring Transmission Operators shall utilize identical SOLs for common facilities. The Transmission Operator shall update these Bulk Electric System studies as necessary to reflect current system conditions; and shall make the results of Bulk Electric System studies available to the Transmission Operators, Balancing Authorities (subject confidentiality requirements), and to its Reliability Coordinator.

Collectively, these two requirements (and their successor requirements after TOP-006-3, R3 is mapped into IRO-010-2 and TOP-001-3, and TOP-002-2.1b is mapped into TOP-002-4, TOP-001-3 with reference to coverage by FAC-014-2 and FAC-011-2) ensure that the necessary information on composite protection systems and RASs are provided to those entities that have a need for this information in real-time for the reliable operations of the BES.

3. Notwithstanding the above comment and proposal, the SRC offers the following comments on the SDT's responses to our previous comments.

Wrt our suggestion that the requirements are more suited for a PER standards, we disagree with the SDT's response that "….the PER standards are about personnel training and the proposed TOP-009-1 standard requires a specific knowledge that is not addressed by fundamental protection and control training. Training is one method of demonstrating that knowledge, as well as, other methods listed in the TOP-009-1 standard."

In our view, the proposed requirements stipulate that the responsible entities "ensure that its personnel (responsible for Reliable Operation of its Transmission Operator Area) have knowledge of operational functionality and effects of Composite Protection Systems and Remedial Action Schemes that

are necessary to perform its [functions]….”

A responsible entity cannot ensure that its operating personnel have such knowledge. The responsible entity can only ensure the development and delivery of a training program that is intended to provide operating personnel with this knowledge. Through periodic testing, the responsible entity can assess the operating personnel’s level of understanding, and decide if they can be put into a position to perform the reliability tasks. Training is the means to ensure; and hence given the applicability (not to mention the inclusion of RC as indicated below) and the intent of the proposed requirements, they are best suited for inclusion in the PER standard. For example, PER-005 stipulates the requirements for developing and implementing a training program for its System Operators on Bulk Electric System (BES) company-specific Real-time reliability-related tasks (or how their job function(s) impact the reliable operations of the BES). This requirement, in our view, already covers the intent of the existing PRC-001-1, R1, and the proposed requirements in TOP-009-1.

Lastly, it appears the SDT’s view is aligned with our position in their response by the statement “Training is one method of demonstrating that knowledge…”

Response: See summary at the top of the document.

Joshua Andersen - Salt River Project - 1,3,5,6 - WECC

Answer Comment:

The Components of the SAR applicable to replacement of PRC-001 R1 (which is what TOP-009 is intended to do) seem to include:

- From the purpose statement: "Assure that Protection System application and performance issues are coordinated among all related entities."
- From the NERC SPCTF Assessment of Standard PRC-001-0 regarding R1: "This requirement is a statement of a highly laudable goal, but this is not specific and enforceable. In fact, the drafting team that was providing missing Measures and Compliance Elements was unable to assign either to this requirement. It may be possible to restate this requirement in such a way to be measurable and enforceable. The protective system equipment owners (Transmission Owners, Generator Owners, and Distribution Providers) should be responsible to provide the necessary information to the Transmission Operator and Generator Operator to facilitate their familiarity with the relevant protective systems."

The focus of replacing PRC-001-0 R1 should be on "coordination" as opposed to the SDT's current approach of developing standard based on an entity acquiring "knowledge". Rather than developing an entirely new standard, SRP recommends revise an existing standard (maybe TOP-003-3) that obligates affected TOP/BA/GO's to coordinate, i.e., provide each other with information on the functionality and effects of their Composite Protection Systems and Remedial Action Schemes?

Response: See summary at the top of the document.

Jared Shakespeare - Peak Reliability - 1 -

Answer Comment:

Recently the definition of RAS/SPS was changed to promote consistency (http://www.nerc.com/pa/Stand/Prjct201005_2SpclPrtctnSstmPhs2/FAQ_RAS_Definition_0604_final.pdf) such that the standards only reflected the RAS acronym. This was done to promote consistency between regions and standards. It also reduces confusion between terms like "Special Protection System" and "Protection System". Adding a definition of "Composite Protection Schemes" will most likely reintroduce the confusion. Peak recommends that the SDT consider investigating the RAS definition and the purpose of Composite Protection Schemes to reduce additional semantics confusion.

The SDT should also include some rationale about the inclusion or exclusion of UFLS and UVLS.

Response: See summary at the top of the document.

Shawna Speer - Colorado Springs Utilities - 1 -

Group Name: Colorado Springs Utilities

Group Member Name	Entity	Region	Segments
Shawna Speer	Colorado Springs Utilities	WECC	1
Shannon Fair	Colorado Springs Utilities	WECC	6
Charles Morgan	Colorado Springs Utilities	WECC	3

Kaleb Brimhall	Colorado Springs Utilities	WECC	5

Answer Comment:

If the goal is understanding (knowledge = “facts, information, and skills acquired by a person through experience or education; the theoretical or practical understanding of a subject”), then this is accomplished by the SAT process required by PER-005-2 (and, shouldn’t RCs have this “knowledge” as well?). If the goal is data for performing OPA & Real-time monitoring/assessments, then this will be accomplished by the requirements of TOP-003-3 (if approved).

CSU also objects to Requirement R3. This will apply to personnel at the power plants. Personnel besides just those in the plant control room could be considered “responsible for Real-time control of a Facility.” A plant auxiliary operator starting auxiliary equipment (e.g., a demineralizer string) out in plant is doing “Real-time control.” Does that employee really need “knowledge” of the GSU differentials to do that job? R3 is also overly broad in its requirement and has vague, undefined terms. For instance, how much “affect” is necessary to “affect <the> output of the Facility” and what exactly would satisfy “knowing” “operational functionality”?

Response: See summary at the top of the document.

End of report