Name (18 Responses)
Organization (18 Responses)
Group Name (13 Responses)
Lead Contact (13 Responses)
Question 1 (30 Responses)
Question 1 Comments (31 Responses)
Question 2 (30 Responses)
Question 2 Comments (31 Responses)

Individual
Aaron Staley
Orlando Utilities Commision
Yes
Yes
I recommend adding an example. If by "protection system components" you mean more then just the protective relay itself, an example that lists other components essential to the operation of the protective relay itself. For example "Protection system components including DC systems, fuses, auxiliary relays, PTs, CT,s and other equipment that could fail and is crucial to the proper operation of one or more protective system."
Individual
Chris Mattson
Tacoma Power
Yes
Yes
Group
Northeast Power Coordinating Council
Guy Zito
Yes
Yes
Group
Southwest Power Pool NERC Reliability Standards Development Team
Jonathan Hayes
Yes
Yes
Individual
Thad Ness
American Electric Power
Yes
Yes
Individual

Michael Falvo
Independent Electricity System Operator
Yes
Yes
Group
PacifiCorp
Sandra Shaffer
Yes
Yes
Individual
Kasia Mihalchuk
Manitoba Hydro
Yes
MH agrees with the response. In order to determine the more severe result due to delayed clearing of a fault (as defined in footnote (e)), the planner will have to consider the stuck breaker fault and the protection system failure.
Individual
Jay
Campbell
Yes
Yes
Individual
John Pearson
ISO New England
Yes
Yes
While we generally agree with the response, we would like to request further clarification from NERC relating to the distinction (if any) between what is termed a “protection system failure” and a “DC supply or battery system failure”. Part of the PG&E clarification request (page 2) mentions that “…clarification is needed about the comprehensive study of system performance relating to Table 1’s, Category C and D contingency of a “protection system failure” and specifically the impact of failed components (i.e., “Single Point of Failure”). It is not entirely clear whether a valid assessment of a protection system failure includes evaluation of shared or non-redundant protection system components.” The NERC Response 1 (page 5-6) indicates “…the transmission planner must consider the situation that produces the more severe system results or impacts due to a delayed clearing condition regardless whether the condition resulted from either a stuck breaker or protection system failure.” So it seems clear from this response that the most limiting failure condition must be tested, however, does NERC make a distinction between a “protection system failure” and a “DC supply or battery system failure” or is a battery system inherently considered a component of protection system? At many single battery stations the answer to this question could significantly affect stability studies. For example, some stations may have full protection redundancy except for the battery system which means that a failed battery condition would be the most limiting single point failure in that it would disable all local fault clearing protection. The result would be significantly longer fault

clearing times than would occur for any other individual protection component failure at that same station including a stuck breaker condition. Please clarify if the intent is to include the effects of a failed DC Supply system.
Group
Arizona Public Service Company
Janet Smith
Yes
Yes
Group
Hydro One
Sasa Maljukan
Yes
Yes
Individual
Brett Holland
KCP&L/ KCP&L-GMO
Yes
Yes
Individual
Anthony Jablonski
ReliabilityFirst
Yes
ReliabilityFirst fundamentally agrees with the drafted interpretation for Question 1, but offers the following additional language for added clarity: Response 1 - TPL-003-0a (Category C contingencies 6-9) and TPL-004-0 (Category D contingencies 1-4) involve an assessment of the effects of either a stuck breaker or a protection system failure. Evaluation of a SLG (TPL-003-0a, Category C) and Three-phase (TPL-004-0, Category D) Fault with delayed clearing is required and further defined by footnote (e) and the parenthetical phrase “stuck breaker or protection system failure.” Footnote (e) explains that “Delayed clearing of a Fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer, and not because of an intentional design delay.” The parenthetical further emphasizes that the failure may be a “stuck breaker or protection system failure” that causes the delayed clearing of the fault. The ordered reading of the text in Table 1 explains that delayed clearing caused by a failure of a protection system or circuit breaker is evaluated to examine its impact on BES performance. Therefore, the transmission planner considers the situation that produces the more severe system results or impacts due to a delayed clearing condition regardless whether the condition resulted from either a stuck breaker or protection system failure. The standard specifically states that not all possible Category C and D events are required to be simulated. All events are to be considered (TPL-003-0a R1.5 and TPL-004-0 R1.4) and with supporting rationale and RRO agreement, only those that would produce the more sever system results or impacts are required to be simulated (TPL-003-0a R1.3.1 and TPL-004-0 R1.3.1).
Yes
ReliabilityFirst fundamentally agrees with the drafted interpretation for Question 2, but offers the following additional language for added clarity: Response 2 - The term “Delayed Clearing” that is described in Table 1, footnote (e) refers to fault clearing that results from a failure to achieve the protection system’s normally expected clearing time. The Transmission Planner and Planning Authority is required to simulate the full impact on the Bulk Electric System performance of a failure

of a protection system that increases clearing times of one or more protection systems. The standard specifically states that not all possible Category C and D events are required to be simulated. All events are to be considered (TPL-003-0a R1.5 and TPL-004-0 R1.4) and with supporting rationale and RRO agreement, only those that would produce the more sever system results or impacts are required to be simulated (TPL-003-0a R1.3.1 and TPL-004-0 R1.3.1).
Individual
Kirit Shah
Ameren
Yes
We agree with the SDT that the more severe system results or impacts due to a delayed clearing condition should be evaluated.
No
We do not believe that it is necessary to evaluate every possible delayed clearing time due to system component failures. As we have stated in question 1 above, the goal should be to evaluate the more severe system results or impacts which usually correlates with the longest clearing time.
Individual
Milorad Papic
Idaho Power Company
Yes
We support the following response from SPCS to a Question No. 1 TPL-003-0a (Category C contingencies 6-9) and TPL-004-0 (Category D contingencies 1-4) involve an assessment of the effects of either a stuck breaker or a protection system failure. Evaluation of a SLG (TPL-003-0a, Category C) and Three-phase (TPL-004-0, Category D) Fault with delayed clearing is required and further defined by footnote (e) and the parenthetical phrase “stuck breaker or protection system failure.” Footnote (e) explains that “Delayed clearing of a Fault is due to failure of any protection system component such as a relay, circuit breaker, or current transformer, and not because of an intentional design delay.” The parenthetical further emphasizes that the failure may be a “stuck breaker or protection system failure” that causes the delayed clearing of the fault. The ordered reading of the text in Table 1 explains that delayed clearing caused by a failure of a protection system or circuit breaker must be evaluated to examine its impact on BES performance. Therefore, the transmission planner must consider the situation that produces the more severe system results or impacts due to a delayed clearing condition regardless whether the condition resulted from either a stuck breaker or protection system failure.
Yes
We support the following response from SPCS to Question No. 2. The term “Delayed Clearing” that is described in Table 1, footnote (e) refers to fault clearing that results from a failure to achieve the protection system’s normally expected clearing time. Any failure of a protection system component that increases clearing times of one or more protection systems requires the Transmission Planner and Planning Authority to simulate the full impact on the Bulk Electric System performance.
Group
Pepco Holdings Inc. & Affiliates
David Thorne
No
1)TPL-001-2 was designed to be a single, comprehensive, and coordinated standard that merges the requirements of four existing standards: TPL-001-1; TPL-002-1b; TPL-003-1a; TPL-004-1 and also results in the retirement of TPL-005 and TPL-006. TPL-001-2 went through the industry vetting process and was approved by the NERC Board of Trustees on August 4, 2011. The language in TPL-001-2 was debated extensively within the industry, including the reference to “protection system failures”. It was a balloted consensus to replace that phrase with the term “failure of a non-redundant relay”, which was clarified in footnote 13 of Table 1. As such, it would appear that the language in TPL-001-2, if approved, would preclude the need for this interpretation of TPL-003-0a and TPL-004-0. Although TPL-001-2 has not yet been FERC approved, the perceived objection centered around footnote 12 (consequential load loss) and not footnote 13 and the elimination of the term “protection system failure”. 2)In addition, there is presently a data request on Order 754 to ascertain the

significance of protection system single points of failure. In that data request it provides a method for identifying single points of failure. However, dynamic simulations involving faults coupled with the failure of a single battery system are not required, even though it could render all protection systems at a station inoperable, requiring remote clearing. Neither the existing sets of TPL standards that use the term "protection system failure", nor this interpretation, makes any attempt to define what single points of failure need to be evaluated, or whether a failure of a single battery system needs to studied. 3)Considering the uncertainty of how to address certain single points of failure, coupled with the numerous industry comments supporting the language change in TPL-001-2, it would seem prudent at this time to delay a response to this interpretation in order to allow the standards development process to play out, and FERC review of TPL-001-2 to proceed. The Order 754 data request should proceed as planned and FERC approval of TPL-001-2 should be pursued. The outcome of both could significantly impact this proposed interpretation response, or render it unnecessary.
No
See #1
Group
NERC System Protection and Control Subcommittee (SPCS)
Bill Miller
Yes
No
The SPCS generally agrees with the proposed interpretation. However, we believe the reference to a failure that “increases clearing time” is too narrow and implies it is not necessary to consider failures that disable a protection system, therefore affecting both the clearing time and the number of elements that may be tripped by remote protection systems. The SPCS proposes revising the interpretation to address “failure of a protection system component that affects the operation (disables or increases clearing times) of one or more protection systems,” and recommends adding an example for clarification. The full text would then be as proposed below. Note: Added text is identified by square brackets. The term “Delayed Clearing” that is described in Table 1, footnote (e) refers to fault clearing that results from a failure to achieve the protection system’s normally expected clearing time. Any failure of a protection system component that [affects the operation (disables or] increases clearing times[)] of one or more protection systems requires the Transmission Planner and Planning Authority to simulate the full impact on the Bulk Electric System performance. [For example, if a single current transformer provides AC current input to both a local primary and secondary protection system, then simulating failure of the current transformer must include the effect of disabling both local protection systems. This may require modeling clearing from remote terminals to expose the full impact on BES performance.]
Individual
J. S. Stonecipher, PE
City of Jacksonville Beach dba/Beaches Energy Services
Yes
Yes
Consider deleting the word “full” in the phrase “full impact”. The word seems to add ambiguity to the phrase, e.g., what is the difference between “impact” and “full impact”?
Individual
RoLynda Shumpert
South Carolina Electric and Gas
Yes
Yes
Group
Western Electricity Coordinating Council

Steve Rueckert
Yes
That would be my understanding
Yes
That would be my understanding
Group
MRO NSRF
WILL SMITH
Yes
This interpretation is reasonable and obvious. The system assessment impact should be minor if Transmission Planners and Planning Coordinators are allowed to continue to use their present interpretation of appropriate “protection system components”. However, if Interpreation Response 2 expands the interpretation of appropriate protection system components, then the system assessment impact of Response 1 may be of major significance.
No
The interpretation does not address the key issue that is implied by Question 2, namely whether “any protection system component” in the TPL-003 and TPL-004 must be interpreted to include “single point of failure components”. Several thoughts to consider with regard to this issue are: 1. The term, “protection system component” in footnote ‘e’ of TPL-003 and TPL-004 is not a defined term (i.e. is not capitalized) and was not a defined term when the TPL standards were written and became mandatory. 2. There is no definitive Regulatory body document or electric industry document that stipulates (lists) which protection system components are required by TPL-003 and TPL-004. If fact all efforts by regulatory entities and industry groups so far have failed to reach agreement on what types and what granularity of system protection components should be subject to “single point of failure” assessment and establish written list of all components that must be taken into account.. 3. There is a list of components in the latest NERC Glossary of Terms under Protection System that could be used in the TPL standards to more explicitly stipulate the component that must be considered to be fully compliance, if the TPL standards were revised to “any Protection System component”, then the components to be considered would at least include “ protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuits”. We suggest that Response 2 be revised to acknowledge say that the wording, “any protection system component”, in Footnote “e” is not defined. Therefore, each Transmission Planner and Planning Coordinator must include relays, circuit breakers, and current transformers and are at liberty to judge what additional components are appropriate to be assessed. Transmission Planners and Planning Coordinators may also include associated communication systems, voltage and current sensing devices, station batteries, DC control circuits, and any other shared protection system components, but they are not obliged to assess these components based on the present wording of footnote ‘e’.
Group
ISO/RTO Council Standards Review Committee
Al DiCaprio
Yes
The SRC Standards Review Committee agrees that Response 1 duly addresses Question 1 within the scope of the requirement, the contingency type and its footnote.
Yes
The SRC Standards Review Committee agrees that Response 2 duly addresses Question 2 within the scope of the requirement, the contingency type and its footnote.
Group
Southwest Power Pool Regional Entity
Emily Pennel
Yes
Yes

Group
Bonneville Power Administration
Chris Higgins
Yes
Yes
BPA thanks you for the opportunity to comment on Project 2012-INT-02 - Interpretation of TPL-003 and TPL-004 for System Protection and Control Subcommittee. BPA stands in support of the Interpretation of TPL-003-0a and TPL-004-0 and has no further comments or concerns at this time.
Individual
Andrew Z. Pusztai
American Transmission Company
Yes
This interpretation is reasonable and obvious. The system assessment impact should be minor if Transmission Planners and Planning Coordinators are allowed to continue to use their present interpretation of appropriate “protection system components.” However, if Interpretation Response 2 expands the interpretation of appropriate protection system components, then the system assessment impact of Response 1 may be of major significance.
No
The interpretation does not address the key issue that is implied by Question 2, namely whether “any protection system component” in the TPL-003 and TPL-004 must be interpreted to include “single point of failure components.” ATC recommends the following comments be considered by the SDT regarding this issue: a. The term, “protection system component” in footnote ‘e’ of TPL-003 and TPL-004 is not a defined term (i.e., is not capitalized) and was not a defined term when the TPL standards were written and became mandatory. b. There is no definitive Regulatory body document or electric industry document that stipulates (lists) which protection system components are required by TPL-003 and TPL-004. If fact, all efforts by regulatory entities and industry groups so far have failed to reach agreement on what types and what granularity of system protection components should be subject to “single point of failure” assessment and establish a written list of all components that must be taken into account. c. There is a list of components in the latest NERC Glossary of Terms under Protection System that could be used in the TPL standards to more explicitly specify the component that must be considered to be fully compliant if the TPL standards are revised to apply to “any Protection System component.” Incorporating this list would ensure the components to be considered would include, at a minimum, “protective relays, associated communication systems, voltage and current sensing devices, station batteries and DC control circuits.” d. ATC recommends that Response 2 be revised to acknowledge that the wording, “any protection system component,” if Footnote “e” is not defined. Therefore, each Transmission Planner and Planning Coordinator must include relays, circuit breakers, and current transformers in their assessment. However, Transmission Planners and Planning Coordinators may decide, in their discretion, whether additional components not covered by the current wording of footnote ‘e’ are appropriate to be assessed, such as associated communication systems, voltage and current sensing devices, station batteries, DC control circuits, and any other shared protection system components.
Individual
Oliver Burke
Entergy Serivces, Inc.
Yes
Yes
Individual
Greg Rowland
Duke Energy
Yes
The interpretation appears to expand upon historical industry practices implying that more detailed

evaluation and complex analysis will be required. The change in practices would require definition of an implementation plan to achieve compliance with the interpretation's requirements.
Yes
Group
ACES Power Marketing Standards Collaborators
Jason Marshall
No
Conceptually, we think the first response largely captures the intent and language of the standard. However, we think additional clarity is needed. What does the drafting team mean by evaluate? If the intention is simply that the TP or PC must consider these stuck breaker or failed protection system contingencies, we agree. If the intention is that the TP or PC must simulate each of these stuck breaker or failed protection system contingencies, then we disagree. R1.3.1 compels the PC and TP to perform or evaluate Category C contingencies "that would produce the more severe system results or impacts" while R1.5 requires the TP and PC to consider all Category C contingencies in their studies. Thus, if the stuck breaker or failed protection systems are not expected to be among the "more severe system results or impacts", the PC and TP do not have to perform simulations for them. The standard does not specify how the TP or PC makes this determination but there are a myriad of ways (i.e. experience, previous studies) that they could arrive at the conclusion that a contingency will not produce "more severe system results or impacts". Either way, the single points of failure are considered and studied if needed. One simple modification that would address our concern would be to state explicitly that the PC or TP would only have to perform simulations if the contingencies are expected to produce "more severe system results or impacts". Otherwise, simulations are not required.
No
Response 2 is inconsistent with the plain meaning of the standards and actually modifies both standards. Nowhere in TPL-003-0a or TPL-004-0 does it say that the TP or PC have to perform full simulations for "any failure of a protection system component that increases clearing times of one or more protection systems ". Both standards say that a study or simulation is required only for the contingencies "that would produce the more severe system results or impacts" R1.3.1. TPL-003-0a R1.5 and TPL-004-0 R1.4 only require that the TP and PC consider all Category C and D contingencies respectively. Thus, if a protection system failure that would increase clearing times and would produce "more severe system results and impacts", it would be required to be studied and simulated. However, if it did not produce the "more severe system results and impacts", it would not be required to be studied and simulated. The manner in which the PC or TP determines which contingencies would produce "more severe system results and impacts" is not addressed in the standard. However, we offer that there are many ways that a PC or TP could reasonably determine the need to fully simulate a contingency and, thus, ensure that single points of failure are addressed. For instance, the TP or PC could rely on actual system experience or past studies. They could also rely on steady state screening studies. If there are not problems in the steady state and the contingency is electrically far from any generators, it is not likely there will be any transient or dynamic stability problems either.
Individual
Patrick Brown
Essential Power, LLC
Yes
Yes
Individual
Keira Kazmerski
Xcel Energy
No
We agree with the underlying intent in the proposed interpretation; however, the response verbiage

needs some improvements. The phrase “normally expected clearing time” in the first sentence is ambiguous since it is not standard terminology used by system protection or planning engineers. The more widely accepted and better understood term in protection engineering jargon is “maximum expected clearing time” of a protection scheme – but this term is equally applicable to both normal and delayed clearing by a protection scheme. Since both Normal Clearing and Delayed Clearing are terms extensively employed in Table I (and are defined in footnote e), we suggest using these existing terms rather than introducing any new term in the interpretation. One way to achieve this is to omit the first sentence in the interpretation – it appears unnecessary to explain the term Delayed Clearing in the interpretation when it is already described in footnote e. Recommend deleting the first sentence and modifying the second sentence as follows: “The Transmission Planner and Planning Authority is required to simulate the Delayed Clearing resulting from the failure of any protection system component (as described in footnote e) that impacts the maximum expected clearing time of one or more protection systems based on as-built design.”