

Consideration of Comments

Interpretation of TPL-003-0a and TPL-004-0 for SPCS Project 2012-INT-02

The Project 2012-INT-02 Interpretation Drafting Team (IDT) thanks all commenters who submitted comments on the Interpretation of TPL-003-0a (R1.3.1, R1.3.10, and R1.5) and TPL-004-0 (R1.3.1, R1.3.7, and R1.4), for System Protection and Control Subcommittee (SPCS). This interpretation was posted for a 30-day public comment period from June 20, 2012 through July 19, 2012. Stakeholders were asked to provide feedback on the standards and associated documents through a special electronic comment form. There were 31 sets of comments, including comments from approximately 102 different people from approximately 69 companies representing 9 of the 10 industry segments as shown in the table on the following pages.

Summary Consideration

The IDT received overwhelmingly supportive comments regarding the interpretation for both questions posed by the SPCS. Revisions made to the interpretation are summarized in the following sections by question.

Question 1

The IDT made clarifying edits to the interpretation response. The quotes and parentheses around the parenthetical for “stuck breaker and protection system failure” were swapped to more accurately reflect the information referenced by the IDT. The phrase “in either standard” was added to clarify that the Table I reference pertains to both standards identified in the interpretation. The last sentence was improved for readability and clarity. The word “either” was removed as it was not necessary for clarity. The actual answer to the question was moved to the first part of the IDT’s response for clarity. The IDT added the Planning Authority to the interpretation to remove confusion that both registered entities applicable to the standard are both identified in the interpretation. The parenthetical “(i.e., TPL-003-0a, R1.2.1 and TPL-004-0, R1.3.1)” was added to provide greater clarity to the specific requirement being identified by the IDT. Last, the IDT added “of” between “regardless of whether” to improve readability.

Question 2

The IDT received the most comments on the interpretation concerning question 2. The revision provides additional clarity about the failure of a protection system component that impacts one or more protection systems where the total fault clearing time increases. This clarification was made to address the confusion about the phrase “Delayed Clearing” used in footnote (e) of both standards. In response to commenters, the IDT made several revisions and added substantively more language to provide further clarity to industry stakeholders about what protection system components are to be evaluated within the standards.

The additional text discusses the IDT's conclusion about the use of the lowercase phrase "protection system" rather than the defined NERC glossary phrase. Furthermore, the IDT notes that the applicable entities are permitted the use of engineering judgment in their evaluation of Category C and D assessments in regard to those components that would produce the more severe system results or impacts. Last, the actual answer to the question was moved to the first part of the IDT's response for clarity.

Additional Information

All comments submitted may be reviewed in their original format on the standard's [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 Vice President of Standards, Mark Lauby, at 404-446-9723 or at mark.lauby@nerc.net. In addition, there is a NERC Reliability Standards Appeals Process.¹

¹ The appeals process is in the Standard Processes Manual: http://www.nerc.com/files/Appendix_3A_StandardsProcessesManual_20120131.pdf

Index to Questions, Comments, and Responses

1. Do you agree with Response 1 of this interpretation? If not, what, specifically, do you disagree with? Please provide specific suggestions or proposals for any alternative language..... 9
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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

Group/Individual		Commenter	Organization	Registered Ballot Body Segment											
				1	2	3	4	5	6	7	8	9	10		
1.	Group	Guy Zito	Northeast Power Coordinating Council												X
	Additional Member	Additional Organization	Region	Segment Selection											
1.	Alan Adamson	New York State Reliability Council, LLC	NPCC	10											
2.	Carmen Agavriloi	Independent Electricity System Operator	NPCC	2											
3.	Greg Campoli	New York Independent System Operator	NPCC	2											
4.	Sylvain Clermont	Hydro-Quebec TransEnergie	NPCC	1											
5.	Chris de Graffenried	Consolidated Edison Co. of New York, Inc.	NPCC	1											
6.	Gerry Dunbar	Northeast Power Coordinating Council	NPCC	10											
7.	Mike Garton	Dominion Resources Services		5											
8.	Kathleen Goodman	ISO - New England	NPCC	2											
9.	Michael Jones	National Grid	NPCC	1											
10.	David Kiguel	Hydro One Networks Inc.	NPCC	1											

Group/Individual	Commenter	Organization	Registered Ballot Body Segment																	
			1	2	3	4	5	6	7	8	9	10								
11. Michael R. Lombardi	Northeast Utilities	NPCC	1																	
12. Randy MacDonald	New Brunswick Power Transmission	NPCC	9																	
13. Bruce Metruck	New York Power Authority	NPCC	6																	
14. Silvia Parada Mitchell	NextEra Energy, LLC	NPCC	5																	
15. Lee Pedowicz	Northeast Power Coordinating Council	NPCC	10																	
16. Robert Pellegrini	The United Illuminating Company	NPCC	1																	
17. Si-Truc Phan	Hydro-Quebec TransEnergie	NPCC	1																	
18. David Ramkalawan	Ontario Power Generation, Inc.	NPCC	5																	
19. Brian Robinson	Utility Services	NPCC	8																	
20. Michael Schiavone	National Grid	NPCC	1																	
21. Wayne Sipperly	National Grid	NPCC	5																	
22. Donald Weaver	New Brunswick System Operator		2																	
23. Ben Wu	Orange and Rockland Utilities	NPCC	1																	
24. Peter Yost	Consolidated Edison Co. of New York, Inc.	NPCC	3																	
2.	Group	Jonathan Hayes	Southwest Power Pool NERC Reliability Standards Development Team	X		X	X	X	X											
	Additional Member	Additional Organization	Region	Segment	Selection															
1.	Jonathan Hayes	Southwest Power Pool	SPP	NA																
2.	Robert Rhodes	Southwest Power Pool	SPP	NA																
3.	Don Taylor	WESTAR	SPP	1, 3, 5, 6																
4.	Tiffany Lake	WESTAR	SPP	1, 3, 5, 6																
5.	Mo Awad	WESTAR	SPP	1, 3, 5, 6																
6.	John Allen	City Utilities of Springfield	SPP	1, 4																
7.	Mohsen Ghavami	Xcel Energy	SPP	1, 3, 5, 6																
8.	Helal Islam	Xcel Energy	SPP	1, 3, 5, 6																
9.	Buyanni	Xcel Energy	SPP	1, 3, 5, 6																
10.	Mark Hamilton	Oklahoma Gas and Electric	SPP	1, 3, 5																
11.	Stephen McGie	City of Coffeyville	SPP	NA																
12.	Valerie Pinamonti	American Electric Power	SPP	1, 3, 5																
13.	Terri Pyle	Oklahoma Gas and Electric	SPP	1, 3, 5																
14.	Lynn Schroeder	WESTAR	SPP	1, 3, 5, 6																
3.	Group	Sasa Maljukan	Hydro One		X															

Group/Individual	Commenter	Organization	Registered Ballot Body Segment											
			1	2	3	4	5	6	7	8	9	10		
Additional Member Additional Organization Region Segment Selection 1. David Kiguel Hydro One NETworks Inc. NPCC 1 2. Hamid HAMADANIZADEH Hydro One NETworks Inc. NPCC 1														
4.	Group	David Thorne	Pepco Holdings Inc. & Affiliates	X		X								
Additional Member Additional Organization Region Segment Selection 1. Carl Kinsley Delmarva Power & Light RFC 1														
5.	Group	Bill Miller	NERC System Protection and Control Subcommittee (SPCS)	X			X	X					X	X
No additional members listed.														
6.	Group	Steve Rueckert	Western Electricity Coordinating Council											X
No additional members listed.														
7.	Group	WILL SMITH	MRO NSRF	X	X	X	X	X	X					
Additional Member Additional Organization Region Segment Selection 1. MAHMOOD SAFI OPPD MRO 1, 3, 5, 6 2. CHUCK LAWRENCE ATC MRO 1 3. TOM WEBB WPS MRO 3, 4, 5, 6 4. JODI JENSON WAPA MRO 1, 6 5. KEN GOLDSMITH ALTW MRO 4 6. ALICE IRELAND XCEL MRO 1, 3, 5, 6 7. DAVE RUDOLPH BEPC MRO 1, 3, 5, 6 8. ERIC RUSKAMP LES MRO 1, 3, 5, 6 9. JOE DEPOORTER MGE MRO 3, 4, 5, 6 10. SCOTT NICKELS RPU MRO 4 11. TERRY HARBOUR MEC MRO 5, 6, 1, 3 12. MARIE KNOX MISO MRO 2 13. LEE KITTELSON OTP MRO 1, 3, 5, 6 14. SCOTT BOS MPW MRO 1, 3, 5, 6 15. TONY EDDLEMAN NPPD MRO 1, 3, 5 16. MIKE BRYTOWSKI GRE MRO 1, 3, 5, 6 17. DAN INMAN MPC MRO 1, 3, 5, 6														

Group/Individual		Commenter	Organization	Registered Ballot Body Segment									
				1	2	3	4	5	6	7	8	9	10
8.	Group	Al DiCaprio	ISO/RTO Council Standards Review Committee		X								
Additional Member Additional Organization Region Segment Selection													
1.		Terry Bilke	MISO MRO	2									
2.		Greg Campoli	NYISO NPCC	2									
3.		Gary DeShazo	CAISO WECC	2									
4.		Kathleen Goodman	ISO-NE NPCC	2									
5.		Ben Li	IESO NPCC	2									
6.		Ken Gardner	AESO WECC	2									
7.		Charles Yeung	SPP SPP	2									
8.		Don Weaver	NBSO NPCC	2									
9.	Group	Emily Pennel	Southwest Power Pool Regional Entity										X
No additional members listed.													
10.	Group	Chris Higgins	Bonneville Power Administration	X		X		X	X				
Additional Member Additional Organization Region Segment Selection													
1.		Berhanu	Tesema WECC	1									
11.	Group	Jason Marshall	ACES Power Marketing Standards Collaborators						X				
Additional Member Additional Organization Region Segment Selection													
1.		John Shaver	Southwest Transmission Cooperative	WECC	1								
2.		Chris Bradley	Big Rivers Electric Corporation	SERC	1								
3.		Bob Solomon	Hoosier Energy Rural Electric Cooperative, Inc.	RFC	1								
4.		Patrick Woods	East Kentucky Power Cooperative	SERC	1, 3, 5								
12.	Individual	Sandra Shaffer	PacifiCorp	X		X		X	X				
13.	Individual	Janet Smith	Arizona Public Service Company	X		X		X	X				
14.	Individual	Aaron Staley	Orlando Utilities Commission	X									
15.	Individual	Chris Mattson	Tacoma Power	X		X	X	X	X				
16.	Individual	Thad Ness	American Electric Power	X		X		X	X				
17.	Individual	Michael Falvo	Independent Electricity System Operator		X								

Group/Individual		Commenter	Organization	Registered Ballot Body Segment										
				1	2	3	4	5	6	7	8	9	10	
18.	Individual	Kasia Mihalchuk	Manitoba Hydro	X		X		X	X					
19.	Individual	Jay	Campbell	X		X	X	X						
20.	Individual	John Pearson	ISO New England		X									
21.	Individual	Brett Holland	KCP&L/ KCP&L-GMO	X		X		X	X					
22.	Individual	Anthony Jablonski	ReliabilityFirst											X
23.	Individual	Kirit Shah	Ameren	X		X		X	X					
24.	Individual	Milorad Pasic	Idaho Power Company	X		X								
25.	Individual	J. S. Stonecipher, PE	City of Jacksonville Beach dba/Beaches Energy Services	X									X	
26.	Individual	RoLynda Shumpert	South Carolina Electric and Gas	X		X		X	X					
27.	Individual	Andrew Z. Puztai	American Transmission Company	X										
28.	Individual	Oliver Burke	Entergy Services, Inc.	X		X		X	X					
29.	Individual	Greg Rowland	Duke Energy	X		X		X	X					
30.	Individual	Patrick Brown	Essential Power, LLC					X						
31.	Individual	Keira Kazmerski	Xcel Energy	X		X		X	X					

1. Do you agree with Response 1 of this interpretation? If not, what, specifically, do you disagree with? Please provide specific suggestions or proposals for any alternative language.

Summary Consideration:

Industry comments vastly support the Interpretation Drafting Team’s (IDT) interpretation to Question 1. The IDT made minor clarifications to support the interpretation including a reference to TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1.

A stakeholder questioned the need for the interpretation based on parallel initiatives such as the development of TPL-001-2 and the Order No. 754 Request for Data or Information (“data request”). The Federal Energy Regulatory Commission (FERC) Order No. 754² (i.e., approval of the interpretation of TPL-002-0) addresses the concern about the non-operation of non-redundant protection systems. The Request for Interpretation along with the data request both support approaches that were formed at the October 24-25, 2011 FERC Technical Conference concerning Order No. 754. The IDT has provided clarification requested through the interpretation approach.

A stakeholder raised a concern that an implementation plan may be needed if the Planning Authority and Transmission Planner might have only been studying one or the other (i.e., stuck breaker or protection system failure) for TPL-003-0a, Category C, SLG Fault, with Delayed Clearing,^e Elements C6, C7, C8, and C9. The IDT believes that when the Planning Authority and Transmission Planner’s consideration of the situation(s) that produce the more severe system results or impacts of stuck breaker or protection system failure indicates an inability of the system to meet the performance requirements of the standard (i.e., TPL-003-0a), that the implementation plan associated with achieving the desired performance is addressed by TPL-003-0, Requirement R2 and its sub-requirements.

Organization	Yes or No	Question 1 Comment
Pepco Holdings Inc. & Affiliates	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

² Order No. 754, *Interpretation of Transmission Planning Reliability Standard*, 136 FERC ¶ 61,186 (http://www.nerc.com/filez/standards/order_754.html)

Organization	Yes or No	Question 1 Comment
		<p>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”.</p> <p>Response: The IDT thanks you for your comment and believes that the NERC Board of Trustees-adopted and not yet FERC-approved TPL-001-2 standard aims to resolve and improve certain aspects of the TPL standards, including protection system failures. The NERC Board of Trustees-adopted TPL-001-2 (8/2011) preceded subsequent milestone events such as the Order No. 754 (9/2011) and FERC Technical Conference (10/2011), which provided further direction on the Commission’s concern regarding “...the study of the non-operation of non-redundant primary protection systems; e.g., the study of a single point of failure on protection systems.”³ NERC’s Order No. 754 Informational Filing⁴ describes how this interpretation along with the Order No. 754 Data Request is part an overall approach formed at the October 24-25, 2011 FERC Technical Conference to address FERC’s concern. The comment provided has not addressed the IDT’s question. No change made.</p> <p>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.</p>

³ Interpretation of Transmission Planning Reliability Standard, 136 FERC ¶ 61,186 (http://www.nerc.com/filez/standards/order_754.html)

⁴ http://www.nerc.com/files/Final_Order_754_Informational_Filing_3-15-12_complete.pdf

Organization	Yes or No	Question 1 Comment
		<p>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 be studied.</p> <p>Response: The IDT thanks you for your comment; however, the comment provided has not addressed the IDT's question. The interpretation is responsive to the System Protection and Control Subcommittee's question raised and clarifies that the parenthetical (i.e., "stuck breaker or protection system failure") portion of the Table I, Category C6-C9, contingencies applicable to TPL-003-0a does not establish other or optional approaches for addressing a delayed clearing mode for a SLG Fault. No change made.</p> <p>The IDT clarifies the interpretation in response to the System Protection and Control Subcommittee's Question #2 comment that the use of "protection system" in the existing TPL standards does not explicitly use the defined NERC glossary term "Protection System." The IDT believes that an entity is not precluded from evaluating a DC supply component failure and revised the interpretation to indicate engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.2.1 and TPL-004-0, R1.3.1).</p> <p>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</p>

Organization	Yes or No	Question 1 Comment
		<p>should be pursued. The outcome of both could significantly impact this proposed interpretation response, or render it unnecessary.</p> <p>Response: The IDT thanks you for your comment. This interpretation is one approach, in addition to the Order No. 754 Request for Data or Information, to address FERC’s concern raised in paragraphs 19 and 20 of the Order No. 754.⁵ The interpretation clarifies that the existing TPL standards (i.e., TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) require both stuck breaker and protection system failure must be considered within a Planning Authority and Transmission Planner system assessment. The comment provided has not addressed the IDT’s question. No change made.</p>
<p>Response: Please see the responses above.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>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?</p> <p>Response: The IDT thanks you for your comment and clarifies the interpretation by adding the parenthetical for “(i.e., TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1)” to note the reference to “evaluate[d],” see R1.3.1 below. Clarification made.</p> <p><i>R1.3.1. Be performed and evaluated only for those Category C contingencies that would produce the more severe system results or impacts. The rationale for the contingencies selected for evaluation shall be available as supporting information. An explanation of why the remaining simulations would produce less severe system results shall be available as supporting information.</i></p> <p>If the intention is simply that the TP or PC must consider these stuck breaker</p>

⁵ Interpretation of Transmission Planning Reliability Standard, 136 FERC ¶ 61,186 (http://www.nerc.com/filez/standards/order_754.html)

Organization	Yes or No	Question 1 Comment
		<p>or failed protection system contingencies, we agree.</p> <p>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.</p> <p>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”.</p> <p>Response: The IDT thanks you for your comment. The interpretation does not imply that the Planning Authority and Transmission Planner must simulate each stuck breaker or protection system failure contingency. The interpretation states that the Planning Authority and Transmission Planner must consider the situation that produces the more severe system results or impacts (i.e., TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) due to a delayed clearing condition regardless of whether the condition resulted from a stuck breaker or protection system failure. No change made.</p>
<p>Response: See responses above.</p>		
Western Electricity Coordinating Council	Yes	That would be my understanding
<p>Response: The IDT thanks you for your support. No change made.</p>		

Organization	Yes or No	Question 1 Comment
MRO NSRF	Yes	<p>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”.</p> <p>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.</p>
<p>Response: The IDT thanks you for your support. No change made.</p>		
ISO/RTO Council Standards Review Committee	Yes	<p>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.</p>
<p>Response: The IDT thanks you for your support. No change made.</p>		
ReliabilityFirst	Yes	<p>ReliabilityFirst fundamentally agrees with the drafted interpretation for Question 1, but offers the following additional language for added clarity:</p> <p>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</p>

Organization	Yes or No	Question 1 Comment
		<p>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.</p> <p>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).</p>
<p>Note: The IDT has applied formatting (<u>proposing</u>/deleting) to bring attention to ReliabilityFirst’s proposed suggestion above:</p> <p>ReliabilityFirst (from above): “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 <u>is must-be</u> evaluated to examine its impact on BES performance. Therefore, the transmission planner <u>considers must-consider</u> 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.”</p> <p>Response: This IDT thanks you for your comment and decided not to incorporate the two modifications in the interpretation as proposed because it is important to be clear that the Planning Authority and Transmission Planner must consider the situation that produces the more severe system results or impacts. No change made.</p>		
Ameren	Yes	We agree with the SDT that the more severe system results or impacts due to a delayed clearing condition should be evaluated.

Organization	Yes or No	Question 1 Comment
<p>Response: The IDT thanks you for your support. No change made.</p>		
<p>Idaho Power Company</p>	<p>Yes</p>	<p>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.</p>
<p>Response: The IDT thanks you for your support. No change made.</p>		
<p>American Transmission Company</p>	<p>Yes</p>	<p>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.”</p> <p>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.</p>

Organization	Yes or No	Question 1 Comment
<p>Response: The IDT thanks you for your support, please see response for American Transmission Company in Question 2 below. No change made.</p>		
<p>Duke Energy</p>	<p>Yes</p>	<p>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.</p>
<p>Response: The IDT recognizes there may be cases where a Planning Authority and Transmission Planner may have only been studying one or the other (i.e., stuck breaker or protection system failure) for TPL-003-0a, Category C, SLG Fault, with Delayed Clearing,^e Elements 6, 7, 8, and 9. The IDT believes that when the Planning Authority and Transmission Planner’s consideration of the situation(s) that produce the more severe system results or impacts of stuck breaker or protection system failure indicate an inability of the system to meet the performance requirements of the standard (i.e., TPL-003-0a), that the implementation plan associated with achieving the desired performance is addressed by TPL-003-0a, Requirement R2 and its sub-requirements. No change made.</p> <p>TPL-003-0a, R2:</p> <p><i>R2. When system simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-003-0_R1, the Planning Authority and Transmission Planner shall each:</i></p> <p style="padding-left: 40px;"><i>R2.1. Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:</i></p> <p style="padding-left: 80px;"><i>R2.1.1. Including a schedule for implementation.</i></p> <p style="padding-left: 80px;"><i>R2.1.2. Including a discussion of expected required in-service dates of facilities.</i></p> <p style="padding-left: 80px;"><i>R2.1.3. Consider lead times necessary to implement plans.</i></p> <p style="padding-left: 40px;"><i>R2.2. Review, in subsequent annual assessments, (where sufficient lead time exists), the continuing need for identified system facilities. Detailed implementation plans are not needed.</i></p> <p>The Reliability Standard, TPL-004-0, only requires the documented results of three-phase faults for stuck breaker or protection</p>		

Organization	Yes or No	Question 1 Comment
system failure and does not require corrective action implementation plans.		
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.
Response: The IDT thanks you for your support. No change made.		
Northeast Power Coordinating Council	Yes	
Southwest Power Pool NERC Reliability Standards Development Team	Yes	
Hydro One	Yes	
NERC System Protection and Control Subcommittee (SPCS)	Yes	
Southwest Power Pool Regional Entity	Yes	
Bonneville Power Administration	Yes	
PacifiCorp	Yes	
Arizona Public Service Company	Yes	
Orlando Utilities Commission	Yes	

Organization	Yes or No	Question 1 Comment
Tacoma Power	Yes	
American Electric Power	Yes	
Independent Electricity System Operator	Yes	
Campbell	Yes	
ISO New England	Yes	
KCP&L/ KCP&L-GMO	Yes	
City of Jacksonville Beach dba/Beaches Energy Services	Yes	
South Carolina Electric and Gas	Yes	
Entergy Services, Inc.	Yes	
Essential Power, LLC	Yes	

2. Do you agree with Response 2 of this interpretation? If not, what, specifically, do you disagree with? Please provide specific suggestions or proposals for any alternative language.

Summary Consideration: Several industry stakeholders provided comments that the IDT’s interpretation did not adequately address the underlying key issue implied by the request for interpretation, Question 2, namely whether “any protection system component” in the TPL-003-0a and TPL-004-0 must include “single point of failure components”. Other commenters felt the reference to “full impact” was vague and subjective. The IDT clarified the interpretation based on these industry stakeholder comments.

The System Protection and Control Subcommittee raised a valid comment and the IDT has modified the interpretation. The IDT’s revised interpretation clarifies that the term, “Delay Clearing,” as used in footnote (e) refers to a protection system failure that “increases the fault total clearing time” rather than “increases the times of one or more protection systems.” Additionally, the IDT now indicates that simulating the “full impact” covers both the clearing time and the facilities removed.

Several commenters raised concerns the interpretation did not provide adequate clarity regarding the components the Planning Authority and Transmission Planner must consider. The IDT concurs with these comments and has revised the interpretation to indicate engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component.

A commenter raised a concern about the evaluation of batteries. The IDT believes that an entity is not precluded from evaluating a DC supply component failure. The potential risk of batteries with regard to single component failure is currently being assessed through the Order No. 754 data request which became effective September 1, 2012. The IDT’s revised the interpretation to clarify the performance expectations with regard to components for the current version of these two standards.

Organization	Yes or No	Question 2 Comment
Pepco Holdings Inc. & Affiliates	No	See #1
Response: The IDT refers the commenter to the response in Question 1. No change made.		
NERC System Protection and Control Subcommittee (SPCS)	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

Organization	Yes or No	Question 2 Comment
<p>*This IDT has highlighted the SPCS proposed text to the right to make their suggestion more identifiable.</p>		<p>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.</p> <p>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.</p> <p>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.]</p>
<p>Response: The IDT thanks you for using the brackets for emphasis and clarity to note the suggested changes. The System Protection and Control Subcommittee have a valid comment and the IDT has modified the interpretation. The IDT revised the interpretation to clarify that the term, “Delayed Clearing,” as used in footnote (e) refers to a protection system failure that “increases the fault total clearing time” rather than “increases the times of one or more protection systems.” Additionally, the IDT now indicates that simulating the “full impact” covers both the clearing time and the facilities removed. Clarification made.</p>		
MRO NSRF	No	<p>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:</p>

Organization	Yes or No	Question 2 Comment
		<p>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.</p> <p>Response: The IDT concurs with the comment and has revised the interpretation to clarify the scope of “any component” found in footnote (e). Clarification made.</p> <p>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. In 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.</p> <p>Response: The comment provided has not addressed the IDT’s question. No change made.</p> <p>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”.</p> <p>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</p>

Organization	Yes or No	Question 2 Comment
		<p>present wording of footnote ‘e’.</p> <p>Response: The IDT concurs with the comments and has revised the interpretation to indicate engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.2.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>
<p>Response: Please see the responses above.</p>		
<p>ACES Power Marketing Standards Collaborators</p>	<p>No</p>	<p>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.</p> <p>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.</p> <p>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</p>

Organization	Yes or No	Question 2 Comment
		problems either.
<p>Response: The IDT thanks you for your comments. In consideration of ACES’ suggestions, along with other industry stakeholders, the IDT made adjustments to the interpretation. The revised interpretation clarifies that the two standards do not explicitly identify the single component failures that must be evaluated for a given protection system. The interpretation now indicates engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>		
Ameren	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.
<p>Response: The IDT thanks you for your comment and concurs in general with Ameren’s view; however, the IDT does not believe that the two standards as written mandate the determination of the “longest clearing time.” The IDT is not interpreting the two standards to require review (or evaluation) of all clearing time impacts for a given component failure. The interpretation now clarifies that, “Delayed Clearing,” as used in footnote (e) refers to a protection system failure that “increases the fault total clearing time” rather than “increases the times of one or more protection systems.” Clarification made.</p>		
American Transmission Company	No	<p>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:</p> <ul style="list-style-type: none"> 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

Organization	Yes or No	Question 2 Comment
		<p>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.</p> <p>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.”</p> <p>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.</p>
<p>Response: The IDT thanks you for your comments and has revised the interpretation in consideration of this comment and other stakeholder comments. The revised interpretation clarifies that these two standards do not explicitly identify the single component failures that must be evaluated for a given protection system. The interpretation now indicates engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.2.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>		
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

Organization	Yes or No	Question 2 Comment
		<p>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.</p> <p>Recommend deleting the first sentence and modifying the second sentence as follows:</p> <p style="padding-left: 40px;">“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.”</p>
<p>Response: The IDT thanks you for your comments. The two standards do not specify that that the “maximum” clearing time be assessed or the “most” severe system result determined throughout its system. The IDT believes the interpretation describes what defines this condition and now emphasizes that the term, “Delayed Clearing,” as used in footnote (e) refers to a protection system failure that “increases the fault total clearing time” rather than “increases the times of one or more protection systems.” The revised interpretation clarifies that these two standards do not explicitly identify the single component failures that must be evaluated for a given protection system. The interpretation now indicates engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>		
ReliabilityFirst	Yes	<p>ReliabilityFirst fundamentally agrees with the drafted interpretation for Question 2, but offers the following additional language for added clarity:</p> <p>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</p>

Organization	Yes or No	Question 2 Comment
		<p>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.</p> <p>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 severe system results or impacts are required to be simulated (TPL-003-0a R1.3.1 and TPL-004-0 R1.3.1).</p>
<p>Response: The IDT thanks you for your comments and has revised the interpretation in consideration of this comment and other stakeholder comments. Although RFC’s suggestions were not specifically incorporated, the IDT believes the revised interpretation addresses the points raised by RFC. The interpretation now indicates engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>		
Idaho Power Company	Yes	<p>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.</p>
<p>Response: The IDT thanks you for your support. Although this comment supports the IDT’s initial interpretation, the System Protection and Control Subcommittee raised a valid comment that led to the IDT modifying the interpretation. The IDT’s revised interpretation clarifies that the term, “Delayed Clearing,” as used in footnote (e) refers to a protection system failure that “increases the fault total clearing time” rather than “increases the times of one or more protection systems”. Additionally, the IDT has further clarified the phrase “full impact” with the parenthetical text “(clearing time and facilities removed).”. Clarification made.</p>		

Organization	Yes or No	Question 2 Comment
City of Jacksonville Beach dba/Beaches Energy Services	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”?
<p>Response: The IDT thanks you for your comments. The IDT has further clarified the phrase “full impact” with the parenthetical text “(clearing time and facilities removed).” Clarification made.</p>		
Western Electricity Coordinating Council	Yes	That would be my understanding
<p>Response: The IDT thanks you for your support. The IDT revised the interpretation based on other stakeholder comments.</p>		
ISO/RTO Council Standards Review Committee	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.
<p>Response: The IDT thanks you for your support. The IDT revised the interpretation based on other stakeholder comments.</p>		
Bonneville Power Administration	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.
<p>Response: The IDT thanks you for your support. The IDT revised the interpretation based on other stakeholder comments.</p>		
Orlando Utilities Commission	Yes	I recommend adding an example. If by “protection system components” you mean more than 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.”

Organization	Yes or No	Question 2 Comment
<p>Response: The IDT thanks you for your support. The interpretation now indicates engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. Clarification made.</p>		
<p>ISO New England</p>	<p>Yes</p>	<p>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”.</p> <p>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.”</p> <p>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.”</p> <p>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.</p> <p>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</p>

Organization	Yes or No	Question 2 Comment
		breaker condition. Please clarify if the intent is to include the effects of a failed DC Supply system.
<p>Response: The IDT thanks you for your comments. Concerning the request for clarification in the above comments, the interpretation now indicates that engineering judgment is permitted when considering a protection system component failure for evaluation that would produce the more severe system results or impact (TPL-003-0a, R1.3.1 and TPL-004-0, R1.3.1) and would include addressing all protection systems affected by the selected component. An entity is not precluded from evaluating a DC supply component failure. The potential risk of batteries with regard to single component failure is currently being assessed through the Order No. 754 data request which became effective September 1, 2012. The IDT’s revised interpretation clarifies the performance expectations with regard to components for the current version of these two standards. Clarification made.</p>		
Northeast Power Coordinating Council	Yes	
Southwest Power Pool NERC Reliability Standards Development Team	Yes	
Hydro One	Yes	
Southwest Power Pool Regional Entity	Yes	
PacifiCorp	Yes	
Arizona Public Service Company	Yes	
Tacoma Power	Yes	
American Electric Power	Yes	

Organization	Yes or No	Question 2 Comment
Independent Electricity System Operator	Yes	
Campbell	Yes	
KCP&L/ KCP&L-GMO	Yes	
South Carolina Electric and Gas	Yes	
Entergy Services, Inc.	Yes	
Duke Energy	Yes	
Essential Power, LLC	Yes	

END OF REPORT