

**Compliance Questionnaire and**

**Reliability Standard Audit Worksheet**

**TPL-002-0b — System Performance Following Loss of a Single Bulk Electric System Element**

**(Category B)**

**Registered Entity:** *(Must be completed by the Compliance Enforcement Authority)*

**NCR Number:** *(Must be completed by the Compliance Enforcement Authority)*

**Applicable Function(s): PA, TP**

**Auditors:**

**Disclaimer**

NERC developed this Reliability Standard Audit Worksheet (RSAW) language in order to facilitate NERC’s and the Regional Entities’ assessment of a registered entity’s compliance with this Reliability Standard. The NERC RSAW language is written to specific versions of each NERC Reliability Standard. Entities using this RSAW should choose the version of the RSAW applicable to the Reliability Standard being assessed. While the information included in this RSAW provides some of the methodology that NERC has elected to use to assess compliance with the requirements of the Reliability Standard, this document should not be treated as a substitute for the Reliability Standard or viewed as additional Reliability Standard requirements. In all cases, the Regional Entity should rely on the language contained in the Reliability Standard itself, and not on the language contained in this RSAW, to determine compliance with the Reliability Standard. NERC’s Reliability Standards can be found on NERC’s website. Additionally, NERC Reliability Standards are updated frequently, and this RSAW may not necessarily be updated with the same frequency. Therefore, it is imperative that entities treat this RSAW as a reference document only, and not as a substitute or replacement for the Reliability Standard. It is the responsibility of the registered entity to verify its compliance with the latest approved version of the Reliability Standards, by the applicable governmental authority, relevant to its registration status.

The NERC RSAW language contained within this document provides a non‑exclusive list, for informational purposes only, of examples of the types of evidence a registered entity may produce or may be asked to produce to demonstrate compliance with the Reliability Standard. A registered entity’s adherence to the examples contained within this RSAW does not necessarily constitute compliance with the applicable Reliability Standard, and NERC and the Regional Entity using this RSAW reserves the right to request additional evidence from the registered entity that is not included in this RSAW. Additionally, this RSAW includes excerpts from FERC Orders and other regulatory references. The FERC Order cites are provided for ease of reference only, and this document does not necessarily include all applicable Order provisions. In the event of a discrepancy between FERC Orders, and the language included in this document, FERC Orders shall prevail.

# Subject Matter Experts

Identify your company’s subject matter expert(s) responsible for this Reliability Standard. Include the person's title, organization and the requirement(s) for which they are responsible. Insert additional lines if necessary.

**Response: *(Registered Entity Response Required)***

|  |  |  |  |
| --- | --- | --- | --- |
| **SME Name** | **Title** | **Organization** | **Requirement** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# Supporting Evidence and Documentation

**Response: *(Registered Entity Response Required)***

|  |  |
| --- | --- |
|  | **Provide the following:**  **Document Title and/or File Name, Page & Section, Date & Version** |
| **R1** |  |
| **R2** |  |
| **R3** |  |

# Reliability Standard Language

**TPL-002-0b — System Performance Following Loss of a Single Bulk Electric System Element**

**(Category B)**

**Purpose:**

System simulations and associated assessments are needed periodically to ensure that reliable systems are developed that meet specified performance requirements with sufficient lead time, and continue to be modified or upgraded as necessary to meet present and future system needs.

**Applicability:**

Planning Authority

Transmission Planner

**NERC BOT Approval Date: 7/30/2008**

**FERC Approval Date: 04/23/2010**

**Reliability Standard Enforcement Date in the United States: 04/23/2010**

**Requirements:**

**R1.** The Planning Authority and Transmission Plannershall each demonstrate through a valid assessment that its portion of the interconnected transmission system is planned such that the Network can be operated to supply projected customer demands and projected Firm (non-recallable reserved) Transmission Services, at all demand levels over the range of forecast system demands, under the contingency conditions as defined in Category B of Table I. To be valid, the Planning Authority and Transmission Planner assessments shall:

**R1.1.** Be made annually.

**R1.2.** Be conducted for near-term (years one through five) and longer-term (years six through ten) planning horizons.

**R1.3.** Be supported by a current or past study and/or system simulation testing that addresses each of the following categories,, showing system performance following Category B of Table 1 (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).

**R1.3.1.** Be performed and evaluated only for those Category B 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.

**R1.3.2.** Cover critical system conditions and study years as deemed appropriate by the responsible entity.

**R1.3.3.** Be conducted annually unless changes to system conditions do not warrant such analyses.

**R1.3.4.** Be conducted beyond the five-year horizon only as needed to address identified marginal conditions that may have longer lead-time solutions.

**R1.3.5.** Have all projected firm transfers modeled.

**R1.3.6.** Be performed and evaluated for selected demand levels over the range of forecast system Demands.

**R1.3.7.** Demonstrate that system performance meets Category B contingencies.

**R1.3.8.** Include existing and planned facilities.

**R1.3.9.** Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.

**R1.3.10.** Include the effects of existing and planned protection systems, including any backup or redundant systems.

**R1.3.11.** Include the effects of existing and planned control devices.

**R1.3.12.** Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed.

**R1.4.** Address any planned upgrades needed to meet the performance requirements of Category B of Table I.

**R1.5.** Consider all contingencies applicable to Category B.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

**Registered Entity Evidence (Required):**

|  |
| --- |
| Registered Entity to provide the following:  File name, file extension, document title, revision, date, page(s), section, section title, description |
|  |

|  |
| --- |
| **Audit Team Evidence Reviewed** **(Completed by the Compliance Enforcement Authority):** |
|  |

**This section must be completed by the Compliance Enforcement Authority.**

**Compliance Assessment Approach Specific to TPL-002-0b R1.**

**\_\_\_** Determine if entity has completed an Assessment that studies if its portion of the interconnected transmission system is planned to meet the requirements of R1.

**\_\_\_ (R1.1)** Confirm that the above Assessment is conducted annually.

**\_\_\_ (R1.2)** Confirm that the Assessment is both for the:

**\_\_\_** 1‑5 year planning horizon range.

**\_\_\_** 6‑10 year planning horizon range.

**\_\_\_ (R1.3)** Confirm that the Assessment is supported by one or more current Study(ies) or past Studies and/or system simulations testing that address(es) the following categories showing system performance following Category B of Table (single contingencies).

**\_\_\_ (R1.3.1)** Be performed and evaluated only for those Category B 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.

**\_\_\_ (R1.3.2)** Cover critical system conditions and study years as deemed appropriate by the responsible entity.

**\_\_\_\_(R1.3.3)** Be conducted annually unless changes to system conditions do not warrant such analyses.

**\_\_\_ (R1.3.4)** Be conducted beyond the five‑year horizon only as needed to address identified marginal conditions that may have longer lead‑time solutions.

\_\_\_**\_(R1.3.5)** Have all projected firm transfers modeled.

**\_\_\_ (R1.3.6)** Be performed and evaluated for selected demand levels over the range of forecast system Demands.

**\_\_\_ (R1.3.7)** Demonstrate that system performance meets Category B contingencies.

**\_\_\_ (R1.3.8)** Include existing and planned facilities.

**\_\_\_** (R1.3.9) Include Reactive Power resources to ensure that adequate reactive resources are available to meet system performance.

**\_\_\_** (R1.3.10) Include the effects of existing and planned protection systems, including any backup or redundant systems.

**\_\_\_** (R1.3.11) Include the effects of existing and planned control devices.

**\_\_\_** (R1.3.12) Include the planned (including maintenance) outage of any bulk electric equipment (including protection systems or their components) at those demand levels for which planned (including maintenance) outages are performed. See note to auditor section.

**\_\_\_ (R1.4)** Confirm that the Assessment addressed planned upgrades needed to meet the performance requirements of Category B of Table I.

**\_\_\_ (R1.5)** Confirm that the Assessment considers all contingencies applicable to category B.

Note: See page 18 of this RSAW for interpretation related to this requirement.

**Note to Auditor:**

Regarding R 1.3.12, Outages to be included in TPL assessments:

A Compliance Enforcement Authority (CEA) is to verify that a registered entity’s TPL assessments include all “planned” equipment outages, including Protection System outages, that are to occur within the near-term (years one through five) and longer-term (years six through 10) planning horizons.

A CEA is to use the following to determine whether the outage is “planned” in the TPL planning horizon as required by the standard:

1. If it is included on an approved, applicable TOP or BA outage schedule; and

2. If the outage was included on the approved, applicable TOP or BA outage schedule more than 12 months from the time the TPL assessment was concluded; and

3. If it is an outage of a Protection System, it affects the reliability performance of transmission system.

**Detailed notes:**

**R2.** When System simulations indicate an inability of the systems to respond as prescribed in Reliability Standard TPL-002-0\_R1, the Planning Authority and Transmission Planner shall each:

**R2.1.** Provide a written summary of its plans to achieve the required system performance as described above throughout the planning horizon:

**R2.1.1.** Including a schedule for implementation.

**R2.1.2.** Including a discussion of expected required in-service dates of facilities.

**R2.1.3.** Consider lead times necessary to implement plans.

**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.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

**Question**: Have your planning assessments ever indicated an inability of the systems to respond as prescribed in Requirement 1 of this standard? If yes, please describe the actions taken.

**Entity** **Response: *(Registered Entity Response Required)***

**Registered Entity Evidence (Required):**

|  |
| --- |
| Registered Entity to provide the following:  File name, file extension, document title, revision, date, page(s), section, section title, description |
|  |

|  |
| --- |
| **Audit Team Evidence Reviewed** **(Completed by the Compliance Enforcement Authority):** |
|  |

**This section must be completed by the Compliance Enforcement Authority.**

**Compliance Assessment Approach Specific to TPL-002-0b R2.**

**\_\_\_\_\_\_** Determine if system simulations indicate an inability of the system to respond as prescribed in Reliability Standard TPL-002-0\_R1.

**\_\_\_\_\_\_ (R2.1)** Determine if a written summary of plans to achieve the required system performance has been provided.

**\_\_\_\_\_\_** Determine if the above summary includes:

**\_\_\_\_\_\_ (R2.1.1)** A schedule for implementation.

**\_\_\_\_\_\_ (R2.1.2)** A discussion of expected required in-service dates of facilities.

**\_\_\_\_\_\_ (R2.1.3)** Consideration of the lead times necessary to implement the plans.

**\_\_\_\_\_\_ (R2.2)** Determine if the current assessment has reviewed the continuing need for previously identified system facilities.

**Detailed notes:**

**R3.** The Planning Authority and Transmission Planner shall each document the results of its Reliability Assessments and corrective plans and shall annually provide the results to its respective Regional Reliability Organization(s), as required by the Regional Reliability Organization.

**Describe, in narrative form, how you meet compliance with this requirement: *(Registered Entity Response Required)***

**Registered Entity Evidence (Required):**

|  |
| --- |
| Registered Entity to provide the following:  File name, file extension, document title, revision, date, page(s), section, section title, description |
|  |

|  |
| --- |
| **Audit Team Evidence Reviewed** **(Completed by the Compliance Enforcement Authority):** |
|  |

**This section must be completed by the Compliance Enforcement Authority.**

**Compliance Assessment Approach Specific to TLP-002-0a R3.**

**\_\_\_** Determine if entity has documented the results of its reliability Assessments and Corrective Plans per TPL-002-0 Requirement 3 .

**\_\_\_** Determine if documentation has been submitted to the entity’s Regional Reliability Organization/Regional Entity per the Regional Reliability Organization’s/Regional Entity’s submission requirements.

**Detailed notes:**

# Supplemental Information

**Other ‑** The list of questions above is not all inclusive of evidence required to show compliance with the Reliability Standard. Provide additional information here**, as necessary that** demonstrates compliance with this Reliability Standard.

**Entity** **Response: *(Registered Entity Response)***

# Compliance Findings Summary (to be filled out by auditor)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Req.** | **NF** | **PV** | **OEA** | **NA** | **Statement** |
| **1** |  |  |  |  |  |
| **2** |  |  |  |  |  |
| **3** |  |  |  |  |  |

**Excerpts from FERC Orders -- For Reference Purposes Only**

**Updated Through September 1, 2010**

**TPL-002-0a**

**Order 693**

**March 16, 2007**

P 1683. The Transmission Planning (TPL) group of Reliability Standards consists of six Reliability Standards that are applicable to transmission planners, planning authorities and regional reliability organizations. These Reliability Standards are intended to ensure that the transmission system is planned and designed to meet an appropriate and specific set of reliability criteria. Transmission planning is a process that involves a number of stages including developing a model of the Bulk-Power System, using this model to assess the performance of the system for a range of operating conditions and contingencies, determining those operating conditions and contingencies that have an undesirable reliability impact, identifying the nature of potential options, and the need to develop and evaluate a range of solutions and selecting the preferred solution, taking into account the time needed to place the solution in service. The proposed TPL Reliability Standards address: (1) the types of simulations and assessments that must be performed to ensure that reliable systems are developed to meet present and future system needs and (2) the information required to assess regional compliance with planning criteria and for self-assessment of regional reliability.

P 1684. The TPL group of Reliability Standards contains a table designated “Table 1” (Transmission System Standards – Normal and Emergency Conditions), which is a key part of this group of Reliability Standards. It lays out the system performance requirements for a range of contingencies grouped according to the number of elements forced out of service as a result of the contingency. For example: Category A applies to the normal system with no contingencies; Category B applies to contingencies resulting in the loss of a single element, defined as a generator, transmission circuit, transformer, single DC pole with or without a fault; Category C applies to a contingency resulting in loss of two or more elements, such as any two circuits on a multiple circuit tower line or both poles of a bi-polar DC line; while Category D applies to extreme contingencies resulting in loss of multiple elements, such as a substation or all lines on a right-of-way. The system performance expectations for Category C contingencies are lower than those for Category B contingencies, in that they allow unspecified amounts of planned or controlled loss of load.

P 1771. Reliability Standard TPL-002-0 addresses system planning related to performance under contingency conditions involving the failure of a single element with or without a fault, i.e., the occurrence of an event such as a short circuit, a broken wire or an intermittent connection. The Reliability Standard seeks to ensure that the future Bulk-Power System is planned to meet the system performance requirements, with the loss of one element, by requiring that the transmission planner and planning authority annually evaluate and document the ability of the transmission system to meet the performance requirements where an event results in the loss of a single element.Meeting these requirements means two things. First, it means that the system can be operated following the event to supply projected firm customer demands and projected firm (non-recallable reserved) transmission services at all demand levels over the range of forecast system demands. Second, it means that the system remains stable and within the applicable ratings for thermal and voltage limits, no loss of demand or curtailed firm transfers occurs, and no cascading outages occur.The Reliability Standard applies both to near-term and longer-term planning horizons.

P 1772. TPL-002-0 specifies that the planning authority and transmission planner must demonstrate through a valid assessment that the Reliability Standard’s system performance requirements can be met. The assessment must be supported by a current or past study and/or system simulation testing that addresses various categories of conditions to be simulated, as set forth in the Reliability Standard, to verify system performance under contingency conditions involving the failure of a single element with or without a fault. The Reliability Standard requires that planned outages of transmission equipment be considered for those demand levels for which planned outages are performed. When system simulations indicate that the system cannot meet the performance requirements stipulated in the Reliability Standard, a documented plan to achieve system performance requirements must be prepared. The specific study elements selected from each of the categories for assessments are subject to approval by the associated regional reliability organization.

P 1784. The Commission approves TPL-002-0 as a mandatory and enforceable Reliability Standard….

P 1785. The Commission notes that, like Requirement R1.3.1 of TPL-001-0, R1.3.2 of TPL-002-0 requires an entity assessing system performance to cover “critical system conditions and study years” as deemed appropriate by the entity performing the study.

P 1794. Based on the record before us, we believe that the transmission planning Reliability Standard should not allow an entity to plan for the loss of non-consequential load in the event of a single contingency….

P 1797. Accordingly, the Commission approves Reliability Standard TPL-002-0 as mandatory and enforceable….

**Order No. 705**

**December 20, 2007**

P 53. In response to the NYSRC and NYISO comments, the Commission reiterates its holding that addressed similar language on loss of load in Order No. 693, regarding Reliability Standard TPL-002-0. In Order No. 693, the Commission noted that “allowing for the 30 minute system adjustment period, the system must be capable of withstanding an N-1 contingency, with load shedding available to system operators as a measure of last resort to prevent cascading failures.” Order No. 693 stated that the transmission system should not be planned to permit load shedding for a single contingency. Order No. 693 directed NERC to clarify the planning Reliability Standard TPL-002-0 accordingly. The Commission reaches the same conclusion here. We will approve Reliability Standard FAC-010-1, Requirement R2.3 and the ERO should ensure that the clarification developed in response to Order No. 693 is made to the FAC Reliability Standards as well. Ameren’s comments concerning the operational timeframe do not affect FAC-010-1, which concerns the planning time frame.

P 161. The Commission believes that violations of FAC-010-1, sub-Requirements R2.1 and R2.2 present similar, if not the same, risk to Bulk-Power System reliability as violations of TPL-001-0, Requirement R1 and TPL-002-0, Requirement R1. TPL-001-0, Requirement R1 establishes reliable pre-contingency Bulk-Power System performance. NERC proposed, and the Commission approved, a high Violation Risk Factor for TPL-001-0, Requirement R1. TPL-002-0, Requirement R1 establishes reliable post-contingency Bulk-Power System performance. The Commission directed, and NERC revised, the Violation Risk Factor assignment for TPL-002-0, Requirement R1 to high to be consistent with the pre-contingency performance Requirement of TPL-001-0, Requirement R1. The Commission believes both TPL Requirements establish similar, if not the same, Bulk-Power System performance metrics as FAC-010-1, Requirements R2.1 and R2.2.

**Order No. 722**

**March 20, 2009**

P 25. The Commission adopts its NOPR proposal approving the ERO’s proposal to address revisions to the term “loss of consequential load” in the modification being made to the TPL Reliability Standards.

**Order on Reliability Standards Interpretation**

**April 23, 2010**

12. The Commission approves NERC’s interpretations of Requirements R1.3.2 and R1.3.12 of TPL-002-0 and TPL-003-0, as discussed below. The Commission approves the Reliability Standards with the interpretations that are appended in the currently filed versions. The Commission’s approval is effective immediately after issuance of this order, as requested. Applicable entities should comply with the Reliability Standards, including the appended interpretations, following issuance of this order.

13. Reliability Standards TPL-002-0 and TPL-003-0 apply to transmission planners, and planning authorities.The TPL Reliability Standards are intended to ensure that the transmission system is planned and designed to meet an appropriate and specific set of reliability criteria. Transmission planning is a process that involves a number of stages including developing models or base cases of the Bulk-Power System, assessing system performance for a range of operating conditions and contingencies, identifying operating conditions and contingencies that have an undesirable reliability impact, developing and evaluating a range of solutions, and selecting the preferred solution, while taking into account implementation time. The TPL Reliability Standards address the types of base cases that must be used in simulations and assessments to ensure that reliable systems are developed to meet present and future system needs, at both local and regional levels.

14. Reliability Standard TPL-002-0 addresses system planning related to performance under contingency conditions involving the failure or unplanned outage of a single element (single contingency). Reliability Standard TPL-003-0 seeks to ensure that the Bulk-Power System is planned to meet the system performance requirements of a system with the unplanned loss of multiple elements, i.e., multiple contingencies.

21. NERC provides a single interpretation of Requirement R1.3.2 in response to the elated requests of Ameren and Midwest ISO:

The selection of credible generation dispatch for the modeling of critical systems is within the discretion of the planning authority [now referred to as planning coordinator]. . . . Under the Functional Model, the Planning Coordinator [planning authority] “Provides and informs Resource Planners, Transmission Planners, and adjacent Planning Coordinators of the methodologies and tools for the simulation of the transmission system” while the Transmission Planner “Receives from the Planning Coordinator methodologies and tools for the analysis and development of transmission expansion plans.” A [planning authority’s] selection of “critical system conditions” and its associated generation dispatch falls within the purview of “methodology.”

Furthermore, consistent with this interpretation a [planning authority] would formulate critical system conditions that may involve a range of critical generator unit outages as part of the possible generator dispatch scenarios.

22. NERC’s interpretation notes that regional entities are to measure compliance with TPL-002-0 and TPL-003-0 and determine whether a planning authority or transmission planner has developed a valid assessment based on the specific sub-requirements that are selected from Requirement R1.3. In its petition, NERC explains that it could not clarify the term “critical system conditions” because the term had not been previously defined, and to do so through the interpretations process would be improper.In light of this fact, NERC states that the proposed interpretation provides the process to determine critical system conditions, with the planning authority supervising transmission planners in directing the planning process.NERC notes that the Regional Entity, as the compliance monitor, determines whether an assessment is valid through its compliance enforcement responsibilities.

23. NERC explains its decision not to address Ameren’s specific questions regarding contingent outages or critical system conditions, stating that “the question ventured beyond interpreting the current version of the standard and would require revising the standards to adequately address.”NERC notes that other commenters questioned placing the planning authority in a supervisory role over transmission planners and cites confusion over the regional entity’s role in determining a valid assessment.

25. The Commission approves the ERO’s interpretation of Requirement R1.3.2 of TPL-002-0 and TPL-003-0. The ERO’s interpretation is reasonable and in concert with the current TPL-002-0 and TPL-003-0 Reliability Standards, as explained below.

26. The ERO’s interpretation explains that the selection of a credible generation dispatch for the modeling of critical system conditions is within the discretion of the planning coordinator. Further, the ERO interpretation explains that the planning coordinator would formulate critical system conditions that may involve a range of critical generator unit outages as part of the possible generator dispatch scenarios. We find this interpretation to be reasonable.

39. The Commission approves the ERO’s interpretation of Requirement R1.3.12 of TPL-002-0 and TPL-003-0. The interpretation reinforces that planned (including maintenance) outages are not contingencies and are required to be addressed in transmission planning for any bulk electric equipment at demand levels for which the planned outages are performed. The Commission understands that planned maintenance outages tend to be for a relatively short duration and are routinely planned at a time that provides favorable system conditions, i.e., off-peak conditions. Given that all transmission and generation facilities require maintenance at some point during their service lives, these “potential” planned outages must be addressed, so long as their planned start times and durations may be anticipated as occurring for some period of time during the planning time frames required in the TPL series of Reliability Standards.

40. The ERO’s interpretation explains that Reliability Standards TPL-002-0 and TPL-003-0 “explicitly provide that the inclusion of planned (including maintenance) outages of and bulk electric system equipment at demand levels for which the planned outages are required.”Further, NERC clarifies that, for studies that include planned outages, “compliance with the contingency assessment for TPL-002-0 and TPL-003-0 as outlined in Table 1 would include any necessary system adjustments which might be required to accommodate planned outages since a planned outage is not a contingency.”We agree with NERC that a planned outage is not a contingency.

41. Consequently, for these reasons, we approve the ERO’s interpretation of Requirement R1.3.12 of TPL-002-0 and TPL-003-0.

**Order No. 762**

**April 19, 2012**

66. In sum, the Commission remands the proposed footnote ‘b’ and directs NERC to revise its proposal to address the Commission’s concerns described above, subject to consideration of the additional guidance provided in this Final Rule.

67. As stated in the NOPR, NERC will need to support the revision to footnote ‘b.’ If there is a threshold component to the revised footnote, NERC would need to support the threshold and show that instability, uncontrolled separation, or cascading failures of the system will not occur as a result of planning to shed Firm Demand up to the threshold. In addition, if there is an individual exception option, the applicable entities should be required to find that there is no adverse impact to the Bulk-Power System from the exception and that it is considered in wide-area coordination and operations. Further, the Commission believes that any exception should be subject to further review by the Regional Entity or NERC.

**Appendix 2 of TPL-002-0b**

**Requirement Number and Text of Requirement**

**R1.3.** Be supported by a current or past study and/or system simulation testing that addresses each of the

following categories, showing system performance following **Category B of Table 1** (single contingencies). The specific elements selected (from each of the following categories) for inclusion in these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).

**R1.3.10.** Include the effects of existing and planned protection systems, including any backup or

redundant systems.

**Background Information for Interpretation**

Requirement R1.3 and sub-requirement R1.3.10 of standard TPL-002-0a contain three key obligations:

1. That the assessment is supported by “study and/or system simulation testing that addresses each of the following categories, showing system performance following Category B of Table 1 (single contingencies).”

2. “…these studies and simulations shall be acceptable to the associated Regional Reliability Organization(s).”

3. “Include the effects of existing and planned protection systems, including any backup or redundant systems.”

*Category B of Table 1 (single Contingencies) specifies:*

Single Line Ground (SLG) or 3-Phase (3Ø) Fault, with Normal Clearing:

1. Generator

2. Transmission Circuit

3. Transformer

Loss of an Element without a Fault.

Single Pole Block, Normal Clearinge:

4. Single Pole (dc) Line

*Note e specifies*:

e) Normal Clearing is when the protection system operates as designed and the Fault is cleared in the time normally expected with proper functioning of the installed protection systems. 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 NERC Glossary of Terms defines Normal Clearing as “A protection system operates as designed and

the fault is cleared in the time normally expected with proper functioning of the installed protection

systems.”

**Conclusion**

TPL-002-0a requires that System studies or simulations be made to assess the impact of single Contingency operation with Normal Clearing. TPL-002-0a R1.3.10 does require that all elements expected to be removed from service through normal operations of the Protection Systems be removed in simulations.

This standard does not require an assessment of the Transmission System performance due to a Protection System failure or Protection System misoperation. Protection System failure or Protection System misoperation is addressed in TPL-003-0 — System Performance following Loss of Two or More Bulk Standard Elements (Category C) and TPL-004-0 — System Performance Following Extreme Events Resulting in the Loss of Two or More Bulk Electric System Elements (Category D).

TPL-002-0a R1.3.10 does not require simulating anything other than Normal Clearing when assessing the

impact of a Single Line Ground (SLG) or 3-Phase (3Ø) Fault on the performance of the Transmission

System.

**In regards to PacifiCorp’s comments on the material impact associated with this interpretation, the**

**interpretation team has the following comment:**

Requirement R2.1 requires “a written summary of plans to achieve the required system performance,”

including a schedule for implementation and an expected in-service date that considers lead times

necessary to implement the plan. Failure to provide such summary may lead to noncompliance that could

result in penalties and sanctions.

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Reviewers** | **Revision Description** |
| 1 | 5/5/10 | Craig Struck -NERC | Added Revision History. Modified compliance assessment approach for R1 & R3. |
| 2 | 07/01/2010 | RSAW Working Group | Effective dates and version # change |
| 2 | September 2010 | NERC Legal & NERC Compliance | Added regulatory language & reviewed for formatting consistency. |
| 2.1 | February 2013 | Jacki Power | Added Appendix 2 – Interpretation of R1.3.10 approved by BOT on November 5, 2009. FERC Order issued approving the Interpretation of R1.3.10 (FERC Order becomes effective October 24, 2011). |
| 2.1 | April 2013 | NERC Legal | Added regulatory language. |
| 2.2 | March 2014 | RSAW Task Force | Updated to reflect compliance guidance from CAN-0020. |