

**UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION**

Transmission Planning Reliability Standards)

Docket No. RM12-1-000

**JOINT COMMENTS OF ELECTRIC RELIABILITY COUNCIL OF TEXAS, INC.; ISO
NEW ENGLAND INC.; MIDWEST INDEPENDENT TRANSMISSION SYSTEM
OPERATOR, INC.; NEW YORK INDEPENDENT SYSTEM OPERATOR, INC.; PJM
INTERCONNECTION, L.L.C.; AND SOUTHWEST POWER POOL, INC.**

I. INTRODUCTION

The Electric Reliability Council Of Texas, Inc.; ISO New England Inc.; Midwest Independent Transmission System Operator, Inc.; New York Independent System Operator, Inc.; PJM Interconnection, L.L.C.; and Southwest Power Pool, Inc. (“Joint ISO/RTO Commenters”) respectfully submit these joint comments in response to the Commission’s Notice of Proposed Rulemaking (“NOPR”) issued by the Federal Energy Regulatory Commission (the “Commission”) in the above-captioned docket on April 19, 2012.¹

As discussed in the NOPR, the North American Electric Reliability Corporation (“NERC”), the Commission-certified Electric Reliability Organization (“ERO”), has petitioned for approval of the modified Transmission Planning Reliability Standard, TPL-001-2 (Transmission System Planning Performance Requirements), which combines four currently effective TPL Reliability Standards, TPL-001-1, TPL-002-1b, TPL-003-1a, and TPL-004-1, into a single standard. NERC has also requested retirement of the currently effective TPL standards. Pursuant to Section 215(d) of the Federal Power Act, the Commission proposes to remand proposed Reliability Standard, TPL-001-2, due to the inclusion therein (as Footnote 12 to Table

¹ *Transmission Planning Reliability Standards*, Notice of Proposed Rulemaking, 139 FERC ¶ 61,059 (2012).

1, addressing Steady State and Stability Performance Extreme Events) of a provision that would allow a transmission planner to plan for non-consequential load loss following a single contingency, provided that the plan is documented and vetted in an open and transparent stakeholder process.

Specifically, the NOPR indicates the Commission’s belief that this provision is “vague and unenforceable because it does not adequately define the circumstance in which an entity can plan for non-consequential load loss following a single contingency.”² On that basis, the Commission proposes to find that proposed TPL-001-2 “does not meet the statutory criteria for approval that a mandatory Reliability Standard must be just, reasonable, not unduly discriminatory or preferential, and in the public interest.”³

Beyond this, the Commission agreed that the proposed standard “includes specific improvements over the currently effective Transmission Planning Reliability Standards and...is responsive to certain Commission directives.”⁴ Accordingly, notwithstanding the remand, the Commission:

seeks comments from the ERO and other interested persons regarding the following important reliability issues to ensure that the proposed Reliability Standards adequately maintains reliability and that the directives have been met: (a) Planned Maintenance Outages, (b) Violation Risk Factors, (c) Protection System Failures versus Relay Failures, (d) Assessment of Backup or Redundant Protection Systems, (e) Single Line to Ground Faults, and (f) Order No. 693 Directives.⁵

² NOPR at P 1. *See also* NOPR at P 13.

³ *Id.*

⁴ NOPR at P 2. *See also* NOPR at P 15.

⁵ NOPR at P 15.

II. COMMENTS

In addition to expressing its views on the proposed remand, the Joint ISO/RTO Commenters offer comments on five of the areas addressed in the NOPR:

- (A) Violation Risk Factors;
- (B) Protection System Failures versus Relay Failures;
- (C) Assessment of Backup or Redundant Protection Systems;
- (D) P5 Single Line to Ground Faults; and
- (E) Order No. 693 Directives.

By way of background, the Joint ISO/RTO Commenters are registered NERC Planning Entities and would be subject to the requirements of the TPL-001-2 reliability standard. The s generally agrees with the Commission’s proposed remand of the Reliability Standard based on present interpretation of Footnote 12 of Exhibit 1 and its continuation from Footnote “b” of existing TPL Standards 001-004. Until NERC has resolved those issues with the Footnote “b” requirement, Footnote 12 will not be acceptable.

Substantively, the Joint ISO/RTO Commenters do not support transmission planning for planned or controlled interruption of non-consequential firm load following loss of a single transmission facility. The original footnote b was included in the standards to address unusual system circumstances, such as where generation and load comprise a local area network, or where such generation and load are remotely positioned and supported by limited and costly transmission ties to a more robust grid. In such circumstances – where the loss of one element of the supporting tie could result in inability to serve all of the load in the local area network – it may be reasonable to base decisions regarding the acceptability of such load loss on the likelihood of the event relative to the high cost of remedial action. However, the standard and its various revisions have never sufficiently specified the nature of such circumstances because of

the inherent difficulty in doing so. As a result, confusion has arisen about the characteristics of the n-1 events for which loss of firm load is acceptable.

The Joint ISO/RTO Commenters believe that perpetuating this confusion can result in degradation of levels of load service reliability below what should be reasonably expected by customers of the Bulk Electric System. Further, the Joint ISO/RTO Commenters do not believe that in the vast majority of circumstances, routinely planning for supply to firm loads for all n-1 events will cause transmission investment that is disproportionate to service-level benefits.

For these reasons, the Joint ISO/RTO Commenters propose that the Commission either require the elimination of Footnote 12 from the Reliability Standard or modify it to allow its use only in conjunction with a petition to FERC to waive (on an exception basis) the requirement to maintain firm load service for a specifically identified system configuration issue warranting Footnote 12's application.

A. Violation Risk Factors

The Commission seeks comment on why Requirement R1 of proposed Reliability Standard TPL-001-2 carries a VRF of "Medium" while Requirement R1 of the currently effective Reliability Standard TPL-001-0 carries a VRF of "High."⁶ The new Requirement R1 of the proposed TPL-001-2 relates to model maintenance, a necessary condition to being able to perform an assessment, which is a different matter from the current Requirement R1. Requirement R1 of the currently effective standard, relating to performing an assessment, corresponds to Requirement R2 of the proposed standard, both of which carry a VRF of "High" Thus, the Joint ISO/RTO Commenters understand that the VRF is different for the new Requirement R1 because it is a different requirement from the current Requirement R1.

⁶ NOPR at PP 20-23.

The Commission also seeks clarification why the VRF level assigned to Requirement R6 is “Low,” since it appears that Requirement R6 requires more than a purely administrative task.⁷ Prior to commencing the planning assessment, the Planning Coordinator and Transmission Planner must determine as matter of policy and practice the criteria or method that will be used to identify unstable conditions from the simulation results. Given that this would be done outside of the planning assessment, the Joint ISO/RTO Commenters believe that defining and documenting within the assessment is essentially an administrative task, suitable to the “Low” VRF level assigned.

B. Protection System Failures versus Relay Failures

The NOPR provides the following background regarding this issue from the NERC petition:

NERC states that its modification to the planning contingency categories in Table 1 of the proposed standard is intended to add clarity and consistency regarding how a delayed fault clearing will be modeled in planning studies. NERC states that the basic elements of any protection system design involve inputs (i.e., current and D/C and A/C voltage) to protective relays and outputs (i.e., trip signals, close signals, and alarms) from protective relays and that reliability issues associated with improper clearing of a fault on the bulk electric system can result from the failure of hundreds of individual protection system components in a substation. However, NERC believes that while the population of components that could fail and result in improper clearing is large, that population can be reduced dramatically by eliminating those components which share failure modes with other components. NERC states that the critical components in protection systems are the protective relays themselves, and a failure of a non-redundant protective relay will often result in undesired consequences during a fault. According to NERC, other protection system components related to the protective relay could fail and lead to a bulk electric system issue, but the event that would be studied is identical, from both transient and steady state perspectives, to the event resulting from a protective relay failure if an adequate population of protective relays is considered.⁸

⁷ NOPR at PP 24-26.

⁸ NOPR at P 27 (footnote omitted).

In response to NERC’s explanation, the Commission observes that as-built designs are not standardized and the most critical component failure may not always be the relay.”⁹ Accordingly, the NOPR solicits comments on whether the provisions of the proposed Reliability Standard relating to the study of multiple contingencies “limit[] the planners’ assessment of a protection system failure because it only includes the contingency of a faulty relay component.”¹⁰ The Commission also seeks comments on whether the relay may not always be the larger contingency, and how the loss of protection system components that may be integral to multiple protection systems impacts reliability.¹¹

The Joint ISO/RTO Commenters agree with the Commission that the range of potential assessment should be expanded to include all components of a protection system including instrument transformers, protective relays, auxiliary relays and communications systems for the purpose of Category P-5 contingencies. However, as these devices are often in series, consideration of all of these components will not necessarily have any significant impact on analyses. This will typically require only one “failure to trip” contingency per protective zone to cover the failure of any component with the associated protection system, but could introduce additional contingencies to cover “failure to block tripping” (*e.g.*, communications failure on directional comparison blocking scheme, etc.). With regard to DC power supply (*i.e.*, batteries), complete failure of the DC power supply in conjunction with a short-circuit fault should be considered an extreme event, so long as there is remote monitoring and/or alarming on the DC voltage.

⁹ NOPR at P 31.

¹⁰ NOPR at P 33.

¹¹ *Id.*

C. Assessment of Backup or Redundant Protection Systems

As summarized in the NOPR, NERC’s petition explains that proposed Reliability Standard TPL-001-2, Requirement R3, Part 3.3.1 and Requirement R4, Part 4.3.1 “require that simulations faithfully duplicate what will happen in an actual power system based on the expected performance of the protection systems[, so that] if a protection simulation is designed ‘to remove multiple Elements from service for an event that the simulation will be run with all of those Elements removed from service.’”¹² The Commission notes that the current standard (Reliability Standard TPL-003-0, Requirement R1.3.10) provides that a planner must “include the effects of existing and planned protection systems, *including any backup or redundant systems* in its planning assessment.”¹³ The Commission finds, however, that the proposed standard does not explicitly refer to backup or redundant systems, and therefore seeks clarification from the ERO “whether the proposed Requirements address all protection systems, including backup and redundant protection systems that can have an impact on the performance of the bulk electric system.”¹⁴

Pertinent to this point, the Joint ISO/RTO Commenters believe that if a protection system is not fully redundant, then contingencies should be studied under Category P5 to simulate both delayed clearing and operation of remote backup protection to trip additional facilities when required. If a protection system is fully redundant, that is, if a single failure of any component in the protection system (other than monitored DC voltage) would not result in delayed tripping, failure to trip, failure to block tripping or any other kind of over tripping, then it should not be necessary to analyze protection system failure under Category P5.

¹² NOPR at P 34.

¹³ NOPR at P 35 (emphasis added).

¹⁴ NOPR at P 36.

D. P5 Single Line to Ground Faults

The NOPR states that Table 1 of the proposed Reliability Standard TPL-001-2 identifies the initiating contingencies that must be evaluated to ensure that the planned system meets the performance requirements.¹⁵ The proposed modifications to Table 1 would change the classification of events and fault types, clarify events and fault types, and remove the ambiguity of performance requirements. The Commission seeks clarification whether “fault types” in Table 1 of the proposed Reliability Standard “refers to the initiating event or initiating fault for the contingency rather than the type of fault into which the initiating fault may evolve, and how the clarification is consistent with the simulations being representative of what will occur in real-time.”¹⁶

The Joint ISO/RTO Commenters believe that the possibility of the fault described in P5 evolving into a three-phase fault is already covered as an extreme contingency, so the inclusion of this possibility in P5 would require an extreme contingency to meet normal contingency performance requirements. Therefore, the current “fault types” in Table 1 are appropriate.

E. Order No. 693 Directives

The Commission seeks clarification and comment on certain Order No. 693 directives.

1. Peer Review of Planning Assessments

In Order No. 693, the Commission stated that “it sees no reason why peer reviews should not be part of a Reliability Standard since TPL-001-0 through TPL-004-0 already include . . . a review of assessment by the associated regional reliability organization.”¹⁷ In the NOPR, the Commission seeks clarification on how the NERC proposal ensures the early input of peers into

¹⁵ NOPR at P 37.

¹⁶ NOPR at PP 37-38.

¹⁷ NOPR at P 40, quoting Order No. 693, FERC Stats. & Regs. ¶ 31,242 a P 1755.

the planning assessments or any type of coordination amongst peers will occur, on whether and how there is a sufficient level of evaluation and ability to provide feedback to planners, and on whether Requirement R8 requires input on comments to be included in assessment.¹⁸

The Joint ISO/RTO Commenters recommend that the requirement for peer review of planning assessments be revised to reflect that a response is required only to comments on a final Planning Assessment, and not to comments on drafts developed during the analysis process. Requiring formal responses on all drafts would be cumbersome and unworkable, and is not necessary to provide commenters the opportunity to provide input. Moreover, to recognize the time limitations involved in conducting assessments, there should also be a limit on the comment period. Formal comments should be submitted within 90 days of receipt of the assessment, and planning coordinators should have 90 days from the date of receipt to provide written responses to those comments.

2. Spare Equipment Strategy

In Order No. 693, the Commission directed NERC to develop a modification “to require assessments of outages of critical long lead-time equipment, consistent with the entity’s spare equipment strategy.”¹⁹ In the NOPR, the Commission notes that NERC’s spare equipment strategy appears limited to steady-state analysis, and seeks clarification why stability analysis conditions were excluded from the spare equipment strategy.²⁰

The Joint ISO/RTO Commenters believe that stability analyses comparable to steady-state analyses required under Requirement 2.1.5 as a result of spare equipment strategy would not produce significant benefits justifying the extra analysis burden, because stability analysis

¹⁸ NOPR at 42.

¹⁹ NOPR at P 43, quoting Order No. 693, FERC Stats. & Regs. ¶ 31,242 at P 1786.

²⁰ NOPR at P 44.

already required under Category P6 will produce more definitive tests of longer-term equipment unavailability.

3. Assessments and Documentation

a. Dynamic Load Models

In Order No. 693, the Commission directed “the ERO to modify the Reliability Standards to require documentation of load models used in system studies and the supporting rationale for their use.”²¹ The Commission seeks clarification whether the documentation of dynamic load models used in system studies and the supporting rationale for their use under Requirement 2.4, Part 2.4.1, will be included in the documented assumptions under Requirement R2.²² The Joint ISO/RTO Commenters have not uniformly determined a need to model dynamic loads, and therefore have not benchmarked any such models.

The Joint ISO/RTO Commenters recommend that prior to the implementation of Requirement 2.4, Part 2.4.1, a modeling standard should exist that is specific to dynamic load models. Such a modeling standard (MOD) could require documentation of the models and the supporting rationale for their use.

b. Footnote “a”

In Order No. 693, the Commission directed NERC to modify “footnote (a) of Table 1 with regard to applicability of emergency rating and consistency of normal ratings and voltages with values obtained from other reliability standards.”²³ The Commission seeks comment on whether normal facility ratings align with FAC-008-1 and normal voltage ratings align with

²¹ NOPR at P 50, quoting Order 693, FERC Stats & Regs. ¶ 31,242, at P 1789.

²² NOPR at P 50.

²³ NOPR at P 53, quoting Order No. 693.

VAR-001-1, and on whether facility ratings used in planning assessments align with other reliability standards.

As a general matter, the Joint ISO/RTO Commenters note that because transmission facility thermal ratings are typically calculated only for time periods of minutes or more, there are generally no applicable emergency thermal ratings that would be valid in the shorter timeframe of a stability simulation. However, observation of facility trip ratings (i.e., relay trip ratings) are valid in the stability simulation time frame, and should be considered if associated protective relay schemes are sensitive to power swings (e.g., impedance relays with no out-of-step trip blocking for stable swings, etc.). Accordingly, the Joint ISO/RTO Commenters believe that there is no reason to include a requirement to observe thermal facility ratings in stability studies, but also believes that facility trip ratings should be observed in stability studies.

III. CONCLUSION

The Joint ISO/RTO Commenters request the Commission to act on the NOPR in a manner consistent with these comments.

Respectfully submitted,

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