UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Remedial Action Schemes Reliability Standard	)	Docket No. RM16-20-000

COMMENTS OF THE NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION IN RESPONSE TO NOTICE OF PROPOSED RULEMAKING

The North American Electric Reliability Corporation ("NERC") hereby provides comments on the Notice of Proposed Rulemaking ("NOPR") issued by the Federal Energy Regulatory Commission ("FERC" or the "Commission") on January 19, 2017 in the above-captioned docket proposing to approve NERC Reliability Standard PRC-012-2.[1] The purpose of proposed Reliability Standard PRC-012-2 is to ensure that Remedial Action Schemes ("RAS") do not introduce unintentional or unacceptable reliability risks to the Bulk Electric System ("BES"). Proposed Reliability Standard PRC-012-2 enhances reliability by requiring a centralized review process for each new or functionally modified RAS prior to implementation, obligating entities to complete periodic evaluations, tests, and operational analyses for all RAS, and requiring the entity with a wide-area view to establish a database with pertinent information about each RAS.

NERC supports the Commission's proposal to approve the proposed Reliability Standard and urges the Commission to approve the proposed Reliability Standard without directing modifications. The following comments address the Commission's request for comment on the "limited impact" RAS designation, as follows:

- Section 1 provides an overview of the "limited impact" RAS designation under PRC-012-1;

[1] *Remedial Action Schemes Reliability Standard*, Notice of Proposed Rulemaking, 158 FERC ¶ 61,042 (2017) ("NOPR").

- Section 2 confirms that proposed Reliability Standard PRC-012-2 does not modify or supersede any system performance obligations under Reliability Standard TPL-001-4;

- Section 3 confirms that Local Area Protection Schemes ("LAPS") in the Western Electricity Coordinating Council ("WECC") and Type III RAS in the Northeast Power Coordinating Council ("NPCC") must comply with proposed Reliability Standard TPL-001-4 before and after the effective date of proposed Reliability Standard PRC-012-2; and

- Section 4 provides that it is not necessary to include the term "limited impact" RAS in the *Glossary of Terms Used in NERC Reliability Standards* ("NERC Glossary").

1. Limited Impact RAS Designations

As NERC explained in its petition in this proceeding, RAS vary widely in complexity and impact on the BES. Recognizing these distinctions, proposed Reliability Standard PRC-012-2 differentiates between those RAS that could significantly impact the reliable operation of the BES if the RAS misoperates or fails to operate from those that could not have a significant impact. For those RAS that present greater risk to BES reliability, PRC-012-2 requires an additional level of scrutiny in the design, implementation, and review of the RAS to help ensure a higher level of dependability (e.g., that a single component failure or malfunction would not result in significant adverse reliability impact). For those RAS with a more limited impact on BES reliability, the design, implementation, and review requirements are tailored to the lower risks they pose to BES reliability and provide a cost-effective approach to mitigating those risks without introducing unnecessary complexity in the RAS design.

Specifically, proposed Reliability Standard PRC-012-2 provides that the Reliability Coordinator may designate a RAS as a "limited impact" RAS if the RAS cannot, by inadvertent operation or failure to operate, cause or contribute to BES Cascading, uncontrolled separation, angular instability, voltage instability, voltage collapse, or unacceptably damped oscillations.[2]

[2] *Petition of the North American Electric Reliability Corporation for Approval of Proposed Reliability Standard PRC-012-2* at 22-27, Docket No. RM16-20-000 (Aug. 5, 2016) ("Petition").

Proposed Reliability Standard PRC-012-2 distinguishes "limited impact" RAS from all other RAS in two limited areas: (1) the substance of the Planning Coordinator's review of the RAS pursuant to Requirement R4; and (2) the periodicity of the RAS-entity's functional test of each RAS under Requirement R8.[3]

In evaluating a "limited impact" RAS every five years pursuant to Requirement R4, the Planning Coordinator must determine whether: (1) it continues to mitigate the System condition(s) or Contingency(ies) for which it was designed (Part 4.1.1); (2) it avoids adverse interactions with other RAS, and protection and control systems (Part 4.1.2); and (3) the inadvertent operation of the RAS or the failure of the RAS would not cause or contribute to BES Cascading, uncontrolled separation, angular instability, voltage instability, voltage collapse, or unacceptably damped oscillations (Part 4.1.3).[4]

In contrast, for non-limited impact RAS, given the greater risk they present to reliability, the Planning Coordinator must also determine whether:

- The possible inadvertent operation of the RAS, resulting from any single RAS component malfunction, satisfies all of the following: the BES shall remain stable; Cascading shall not occur; applicable Facility Ratings shall not be exceeded; BES voltages shall be within post-Contingency voltage limits and post-Contingency voltage deviation limits established by the Transmission Planner and the Planning Coordinator; and transient voltage responses shall be within acceptable limits established by the Transmission Planner and the Planning Coordinator (Part 4.1.4).

- A single component failure in the RAS, when the RAS is intended to operate, would prevent the BES from meeting the same performance requirements (defined in Reliability Standard TPL-001-4 or its successor) as those required for the events and conditions for which the RAS is designed (Part 4.1.5).

These tests help ensure that should a single component of the RAS malfunction or fail, the RAS would continue to meet its design objectives and not have any significant adverse effect on BES

[3] As discussed in the Petition at 4, the RAS-entity is the entity (Transmission Owner, Generation Owner, or Distribution Provider) that owns all or part of a RAS.

[4] Petition at 22.

performance. Requiring entities to perform the single component failure and single component malfunction tests for "limited impact" RAS, however, would add unnecessary complexity and costs to the RAS design and implementation with little benefit to reliability.

Additionally, pursuant to Requirement R8, a RAS-entity must perform a functional test of its "limited impact" RAS at least once every 12 calendar years. For all other RAS, the RAS-entity needs to perform the functional test at least once every six years. The timeframes in Requirement R8 are designed to balance the resources required to perform the testing and the potential reliability impacts to the BES created by undiscovered latent failures that could cause an incorrect operation of the RAS. Longer test intervals for "limited impact" RAS are acceptable because incorrect operations or failures to operate present a low reliability risk to the BES. It is important to note that the Protection Systems (with the exception of the "controller") that comprise the "limited impact" RAS are already covered under Reliability Standard PRC-005-6 (Protection System, Automatic Reclosing, and Sudden Pressure Relaying Maintenance.

Other than the two instances discussed above, the "limited impact" RAS designation is not relevant to any other requirement in proposed Reliability Standard PRC-012-2 or any other Reliability Standard, including TPL-001-4, as the Commission proposes to clarify.

2. Proposed Reliability Standard PRC-012-2 Does Not Modify or Supersede Any System Performance Obligation Under Reliability Standard TPL-001-4

Consistent with NERC's Petition,[5] NERC supports the Commission's proposed clarification that proposed Reliability Standard PRC-012-2 does not modify or supersede any System performance obligations under Reliability Standard TPL-001-4. Proposed Reliability Standard PRC-012-2 presupposes that entities are complying with the performance requirements

[5] *Id*. at 28-29.

in TPL-001-4. Proposed PRC-012-2 simply adds design, implementation, and review requirements to help ensure that a RAS enhances reliability and does not introduce unintentional or unacceptable reliability risks.[6] Nothing in proposed Reliability Standard PRC-012-2 or the designation of a RAS as "limited impact" exempts an entity from meeting its performance requirements under TPL-001-4, including the requirement that Non-Consequential Load Loss may not exceed 75 MW for certain Category P1, P2, or P3 contingencies, as provided in Table 1 and footnote 12 of TPL-001-4.

In performing the assessments required pursuant to Reliability Standard TPL-001-4, an entity must consider all RAS, whether designated as "limited impact" or not. While Reliability Standard TPL-001-4, Requirement R2, Part 2.7.1 recognizes that entities may use a RAS as a method for meeting the performance obligations of Table 1, TPL-001-4 does not distinguish between different types of RAS. As such, entities must satisfy the performance requirements of TPL-001-4 considering the actions of "limited impact" RAS and non-limited impact RAS alike.

3. LAPS in WECC and Type III RAS in NPCC Must Be Compliant with Reliability Standard TPL-001-4 Before and After the Effective Date of Proposed Reliability Standard PRC-012-2

As discussed in the Petition, prior to development of proposed Reliability Standard PRC 012-2, two NERC Regional Entities, WECC and NPCC, used individual RAS classification regimes to identify RAS that would meet criteria similar to those for RAS described as "limited impact" in proposed Reliability Standard PRC-012-2. In the WECC region, such RAS are classified as LAPS and in the NPCC region they are classified as Type III RAS. For purposes of PRC-012-2, LAPS and Type III RAS are considered "limited impact" RAS, subject to future review and potential reclassification by the Planning Coordinator under Requirement R4.

[6] For purposes of the assessments performed under TPL-001-4, the entity is not required to take into account the potential failure or misoperation of the RAS (i.e., all RAS are assumed to operate correctly). Proposed Reliability Standard PRC-012-2 complements TPL-001-4 as is provides the mechanism to require entities to take steps to prevent the failure or misoperation of a RAS.

In the NOPR, the Commission requested "comment on the processes used to ensure the LAPS or Type III RAS will be compliant with Reliability Standard TPL-001-4 prior to the effective date of Reliability Standard PRC-012-2, including a description of considerations on whether the load disconnected by each RAS installation is consequential or non-consequential, and if Non-Consequential Load Loss is greater than 75 MW."[7] As discussed above with respect to "limited impact" RAS under proposed PRC-012-2, the designation of a RAS as a LAPS in WECC or Type III in NPCC does not modify or supersede an entity's responsibility under Reliability Standard TPL-001-4 to satisfy the performance requirements therein. In performing the assessments required pursuant to Reliability Standard TPL-001-4, an entity must consider all RAS, including LAPS or Type III RAS. TPL-001-4 does not distinguish between different types of RAS or exempt LAPS or Type III RAS from any of the performance requirements. The applicable entities must satisfy the performance requirements of TPL-001-4 considering the actions of all RAS, both before and after the effective date of PRC-012-2.

Nevertheless, NERC understands that both NPCC and WECC have processes that help ensure that RAS are compliant with the performance requirements of TPL-001-4. NPCC's process for RAS (referred to as a Special Protection System ("SPS") in NPCC) design and approval is found in NPCC's Regional Reliability Reference Directory #7 ("NPCC Directory #7").[8] The initial activity for reviewing new or modified RAS in NPCC is for the NPCC Task Force on System Studies to verify the "Type" of RAS by determining its impact on the BES. For Type III RAS, NPCC Directory #7 provides, in part, that the relevant NPCC task force must confirm that the RAS conforms to the criteria in NPCC Regional Reliability Reference Directory #1 ("NPCC Directory

[7] NOPR at 75.

[8] NPCC Directory #7 is available at: https://www.npcc.org/Standards/Directories/Directory%207_SPS_%20clean_20150331_GJD.pdf.

#1").[9] NPCC Directory #1 contains the planning criteria for the NPCC region as well as design and operations requirements. Table 1 of NPCC Directory #1, which provides planning design criteria, contingency events, fault type and performance requirements, is consistent with, yet more stringent than, the performance requirements appearing in Table 1 of TPL-001-4. NERC understands that use of this process helps ensure that RAS used in the NPCC region comply with the performance requirements in TPL-001-4, including consideration of load disconnected by each RAS installation.

For reference, NPCC has only one Type III RAS in the United States that is a load rejection type (i.e. that drops load for a specific system condition). NERC understands that this Type III RAS, which was installed in 2006, prior to the effective date of TPL-001-4, is infrequently "armed" (less than 1% of the time) and only when specific lines or equipment are not in service, such as during maintenance activities. The RAS was initially proposed, designed, and implemented for very specific operating conditions and not as a result of meeting performance requirements in Reliability Standard TPL-001-4. Further, NERC understands that the owner of this RAS is currently developing new transmission projects that will result in the retirement of the RAS within six years.

As in NPCC, WECC's review of RAS includes consideration of compliance with Reliability Standard TPL-001-4. WECC's Remedial Action Scheme Reliability Subcommittee ("RASRS") reviews all RAS modifications, new RAS, and retiring RAS. The RASRS review process, as outlined in the WECC Guideline *Procedure and Information Required for RAS*

[9] NPCC Directory #1 is available at: https://www.npcc.org/Standards/Directories/Directory_1_TFCP_rev_20151001_GJD.pdf.

Assessment, verifies affected loads, generation, and protection systems.[10] The RASRS review process is specifically oriented to review RAS that are designed to result in System performance meeting the TPL Reliability Standards. The RASRS performs a more detailed review for those RAS that may have a significant System performance impact. Given the lower risk associated with a RAS classified as a LAPS, NERC understands that the RASRS review primarily focuses on the reliability impacts of the LAPS and confirmation that the classification is appropriate, although a more detailed review of the LAPS may be performed. NERC understands that there are only 16 LAPS in the United States designed to shed load.[11] Seven of those LAPS are designed to shed load to mitigate Category P1, P2, or P3 events, none of which shed more than 75 MW. The other nine LAPS in the United States designed to shed load are used to mitigate Category P4-P7 events.

4. The Term "Limited Impact RAS" Should Not Be Defined in the NERC Glossary

In the NOPR, the Commission requested "comment on whether the term 'limited impact RAS' should be defined in the [NERC Glossary]."[12] NERC Glossary terms are typically developed for two purposes: (1) to establish a single meaning for a term or concept used across several different Reliability Standards or multiple times within a single Reliability Standard, or (2) to provide for a more readable standard by creating a shorthand reference to avoid unnecessary repetition. Neither of these reasons necessitate creating a definition for the term "limited impact" RAS.

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[10] The WECC Guideline *Procedure and Information Required for RAS Assessment* is available at https://www.wecc.biz/_layouts/15/WopiFrame.aspx?sourcedoc=/Administrative/10a%20Procedure%20and%20Information%20Required%20for%20RAS%20Assessment.pdf&action=default&DefaultItemOpen=1.

[11] There are over 180 LAPS in the WECC region but only 23 of those LAPS are designed to shed load, 16 of which are located in the United States.

[12] NOPR at P 17.

During development of proposed Reliability Standard PRC-012-2, the standard drafting team considered this issue, ultimately concluding that a universally applicable definition was not necessary or preferable. Diversity among the different types, functions, and placements of RAS make it difficult to establish a definition of "limited impact" RAS applicable across North America.[13] As such, instead of developing a one-size-fits-all definition, the standard drafting team determined it was preferable to: (1) include in the proposed standard a high level statement outlining the type of impact a "limited impact" RAS could not cause or contribute to as a result of inadvertent operation or a failure to operate; (2) provide Reliability Coordinators the authority to designate a RAS as "limited impact" on a case-by-case basis as appropriate for its area; and (3) require Planning Coordinators to verify on a periodic basis whether the RAS continues to be "limited impact."[14] The approach in proposed Reliability Standard PRC-012-2 provides the necessary flexibility without sacrificing readability. As with all of its standards, NERC will assess whether there are ways to improve the proposed Reliability Standard following its implementation, including whether a NERC Glossary definition for "limited impact" RAS is necessary to promote clarity.

[13] *See* Petition at 25.

[14] As discussed in the Petition, the Reliability Coordinator is the appropriate entity to initially designate a RAS as "limited impact" as it has the wide-area view and understanding of the BES to determine whether a RAS could cause or contribute to BES Cascading, uncontrolled separation, angular instability, voltage instability, voltage collapse, or unacceptably damped oscillations. Additionally, the Planning Coordinator is the appropriate entity to verify that a RAS continues to be "limited impact" because the Planning Coordinator maintains a wide-area planning perspective to determine whether the designation still applies.

5. Conclusion

NERC respectfully requests that the Commission consider these comments and approve proposed Reliability Standard PRC-012-2 without modification.

Respectfully submitted,

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