NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Violation Risk Factor and Violation Severity Level Assignments

Project 2007-09 Generator Verification

This document provides the drafting team's justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in MOD-027-1 — Verification of Models and Data for Turbine/Governor and Load Control or Active Power/Frequency Control Functions.

Each primary requirement is assigned a VRF and a set of one or more VSLs. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in FERC-approved Reliability Standards, as defined in the ERO Sanction Guidelines.

Justification for Assignment of Violation Risk Factors

The Generator Verification Standard Drafting Team applied the following NERC criteria when proposing VRFs for the requirements under this project:

High Risk Requirement

A requirement that, if violated, could directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly cause or contribute to bulk electric system instability, separation, or a cascading sequence of failures, or could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.

Medium Risk Requirement

A requirement that, if violated, could directly affect the electrical state or the capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system. However, violation of a medium risk requirement is unlikely to lead to bulk electric system instability, separation, or cascading failures; or, a requirement in a planning time frame that, if violated, could, under emergency, abnormal, or restorative conditions anticipated by the preparations, directly and adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. However, violation of a medium risk requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to bulk electric system instability, separation, or cascading failures, nor to hinder restoration to a normal condition.

Lower Risk Requirement

A requirement that is administrative in nature and a requirement that, if violated, would not be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor and control the bulk electric system; or, a requirement that is administrative in nature and a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. A planning requirement that is administrative in nature.

The SDT also considered consistency with the FERC Violation Risk Factor Guidelines for setting VRFs:[1]

Guideline (1) — Consistency with the Conclusions of the Final Blackout Report

The Commission seeks to ensure that Violation Risk Factors assigned to Requirements of Reliability Standards in these identified areas appropriately reflect their historical critical impact on the reliability of the Bulk-Power System.

In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the Bulk-Power System:[2]

- Emergency operations
- Vegetation management
- Operator personnel training
- Protection systems and their coordination
- Operating tools and backup facilities
- Reactive power and voltage control
- System modeling and data exchange
- Communication protocol and facilities
- Requirements to determine equipment ratings
- Synchronized data recorders
- Clearer criteria for operationally critical facilities
- Appropriate use of transmission loading relief

Guideline (2) — Consistency within a Reliability Standard

The Commission expects a rational connection between the sub-Requirement Violation Risk Factor assignments and the main Requirement Violation Risk Factor assignment.

Guideline (3) — Consistency among Reliability Standards

[1] North American Electric Reliability Corp., 119 FERC ¶ 61,145, order on reh'g and compliance filing, 120 FERC ¶ 61,145 (2007) ("VRF Rehearing Order").
[2] Id. at footnote 15.

The Commission expects the assignment of Violation Risk Factors corresponding to Requirements that address similar reliability goals in different Reliability Standards would be treated comparably.

Guideline (4) — Consistency with NERC's Definition of the Violation Risk Factor Level

Guideline (4) was developed to evaluate whether the assignment of a particular Violation Risk Factor level conforms to NERC's definition of that risk level.

Guideline (5) — Treatment of Requirements that Co-mingle More Than One Obligation

Where a single Requirement co-mingles a higher risk reliability objective and a lesser risk reliability objective, the VRF assignment for such Requirements must not be watered down to reflect the lower risk level associated with the less important objective of the Reliability Standard.

The following discussion addresses how the SDT considered FERC's VRF Guidelines 2 through 5. The team did not address Guideline 1 directly because of an apparent conflict between Guidelines 1 and 4. Whereas Guideline 1 identifies a list of topics that encompass nearly all topics within NERC's Reliability Standards and implies that these requirements should be assigned a "High" VRF, Guideline 4 directs assignment of VRFs based on the impact of a specific requirement to the reliability of the system. The SDT believes that Guideline 4 is reflective of the intent of VRFs in the first instance and therefore concentrated its approach on the reliability impact of the requirements.

VRF for MOD-027-1:

There are five requirements in MOD-027-1. Three requirements were assigned a "Lower" VRF while the remaining two were assigned a "Medium" VRF.

VRF for MOD-027-1, Requirement R1:

- FERC Guideline 2 — Consistency within a Reliability Standard exists. Requirement R1 does not contain Parts. Requirement obligations include actions similar in scope to actions specified in Requirement R5; and all standard requirements specify a Long-term Planning Time Horizon.
- FERC Guideline 3 — Consistency among Reliability Standards exists. This requirement is similar with MOD-004-1, Requirement R9 that has an approved Lower VRF. This requirement is also similar to draft standard MOD-026-1 Requirement R1 which also specifies a Lower VRF.
- FERC Guideline 4 — Consistency with NERC's Definition of the VRF Level selected exists. Failure to provide requested information is a requirement that is administrative in nature for the planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. Therefore the assigned "Lower" VRF is appropriate.
- FERC Guideline 5 — Treatment of Requirements that Co-mingle More Than One Obligation is satisfactory. The Requirement R1 high risk objective is to provide requested information. This

requirement is administrative in nature for providing instructions and data used for performing model verification. The "Lower" VRF assigned is based on the high risk objective specified.

VRF for MOD-027-1, Requirement R2:

- FERC Guideline 2 — Consistency within a Reliability Standard exists. Requirement R2 contains Parts specifying supporting obligations for satisfying the main requirement. The VRFs are only applied at the Requirement level and each Requirement Part is treated equally. Requirement obligations include actions similar in scope to actions specified in Requirement R1 and R5; and all standard requirements specify a Long-term Planning Time Horizon.
- FERC Guideline 3 — Consistency among Reliability Standards exists. This requirement is similar with MOD-010-0 and MOD-012-0 Requirements R1 and R2 which have an approved VRF of Medium. This requirement is also similar to draft standard MOD-026-1 Requirement R2 which also specifies a Medium VRF.
- FERC Guideline 4 — Consistency with NERC's Definition of the VRF Level selected exists. Failure to verify models in the Long-term Planning Time Horizon is a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. Therefore the assigned "Medium" VRF is appropriate.
- FERC Guideline 5 — Treatment of Requirements that Co-mingle More Than One Obligation is satisfactory. The Requirement R2 high risk objective is to verify models per specified periodicity. Requirement Parts and obligations are lower risk elements that ensure main requirement completeness which are administrative in nature consisting of documentation, information revision obligation and submission requirements. The "Medium" VRF assigned is based on the high risk objective specified.

VRF for MOD-027-1, Requirement R3:

- FERC Guideline 2 — Consistency within a Reliability Standard exists. Requirement R3 does not contains Parts. Requirement obligations include actions similar in scope to actions specified in Requirement R1 and R5; and all standard requirements specify a Long-term Planning Time Horizon.
- FERC Guideline 3 — Consistency among Reliability Standards exists. This requirement is similar to MOD-004-1, Requirement R7 and R8 that has an approved Lower VRF. This requirement is also similar to draft standard MOD-026-1 Requirement R3 which also specifies a Lower VRF.
- FERC Guideline 4 — Consistency with NERC's Definition of the VRF Level selected exists. Failure to verify models in the Long-term Planning Time Horizon is a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or

capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. Therefore the assigned "Lower" VRF is appropriate.

- FERC Guideline 5 — Treatment of Requirements that Co-mingle More Than One Obligation is satisfactory. The Requirement R3 high risk objective is to provide a written response after receiving notice. The Requirement is administrative in nature consisting of documentation, information revision obligation and submission requirements. The "Lower" VRF assigned is based on the high risk objective specified.

VRF for MOD-027-1, Requirement R4:

- FERC Guideline 2 — Consistency within a Reliability Standard exists. Requirement R4 does not contain Parts. Requirement obligations include actions similar in scope to actions specified in Requirement R1 and R5; and all standard requirements specify a Long-term Planning Time Horizon.
- FERC Guideline 3 — Consistency among Reliability Standards exists. This requirement is similar to MOD-004-1, Requirement R1 and R2 that has an approved Lower VRF. This requirement is also similar to draft standard MOD-026-1 Requirement R4 which also specifies a Lower VRF.
- FERC Guideline 4 — Consistency with NERC's Definition of the VRF Level selected exists. Failure to verify models in the Long-term Planning Time Horizon is a requirement in a planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. Therefore the assigned "Lower" VRF is appropriate.
- FERC Guideline 5 — Treatment of Requirements that Co-mingle More Than One Obligation is satisfactory. The Requirement R4 high risk objective is to provide revised data after making changes to equipment. The Requirement is administrative in nature consisting of documentation, information revision obligation and submission requirements. The "Lower" VRF assigned is based on the high risk objective specified.

VRF for MOD-027-1, Requirement R5:

- FERC Guideline 2 — Consistency within a Reliability Standard exists. Requirement R5 contains Parts specifying supporting obligations for satisfying the main requirement. The VRFs are only applied at the Requirement level and each Requirement Part represents an obligation for ensuring main requirement completeness. Requirement obligations include actions similar in scope to actions specified in Requirement R1; and all standard requirements specify a Long-term Planning Time Horizon.

- FERC Guideline 3 — Consistency among Reliability Standards exists. This requirement is similar with MOD-010-0 and MOD-012-0 Requirements R1 and R2 that have approved VRFs of Medium. This requirement is also similar to draft standard MOD-026-1 Requirement R6 which also specifies a Medium VRF.
- FERC Guideline 4 — Consistency with NERC's Definition of the VRF Level selected exists. Failure to identify if a model is useable or not is a requirement that is administrative in nature for the planning time frame that, if violated, would not, under the emergency, abnormal, or restorative conditions anticipated by the preparations, be expected to adversely affect the electrical state or capability of the bulk electric system, or the ability to effectively monitor, control, or restore the bulk electric system. Therefore the assigned "Medium" VRF is appropriate.
- FERC Guideline 5 — Treatment of Requirements that Co-mingle More Than One Obligation is satisfactory. The Requirement R5 high risk objective is to verify if the model is useable or not. Requirement Parts and obligations are lower risk elements that ensure main requirement completeness which are administrative in nature consisting of documentation and submission requirements. The "Medium" VRF assigned is based on the high risk objective specified.

Justification for Assignment of Violation Severity Levels:

In developing the VSLs for the standards under this project, the SDT anticipated the evidence that would be reviewed during an audit, and developed its VSLs based on the noncompliance an auditor may find during a typical audit. The SDT based its assignment of VSLs on the following NERC criteria:

Lower	Moderate	High	Severe
Missing a minor element (or a small percentage) of the required performance The performance or product measured has significant value as it almost meets the full intent of the requirement.	Missing at least one significant element (or a moderate percentage) of the required performance. The performance or product measured still has significant value in meeting the intent of the requirement.	Missing more than one significant element (or is missing a high percentage) of the required performance or is missing a single vital component. The performance or product has limited value in meeting the intent of the requirement.	Missing most or all of the significant elements (or a significant percentage) of the required performance. The performance measured does not meet the intent of the requirement or the product delivered cannot be used in meeting the intent of the requirement.

FERC's VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in MOD-027-1 meet the FERC Guidelines for assessing VSLs:

Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance

Compare the VSLs to any prior levels of non-compliance and avoid significant changes that may encourage a lower level of compliance than was required when levels of non-compliance were used.

Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties

A violation of a "binary" type requirement must be a "Severe" VSL.

Do not use ambiguous terms such as "minor" and "significant" to describe noncompliant performance.

Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement

VSLs should not expand on what is required in the requirement.

Guideline 4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations

. . . unless otherwise stated in the requirement, each instance of non-compliance with a requirement is a separate violation. Section 4 of the Sanction Guidelines states that assessing penalties on a per violation per day basis is the "default" for penalty calculations.

VSLs for MOD-027-1 Requirement R1:

R#	Compliance with NERC VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
R1.	The NERC VSL guidelines are satisfied by incorporating increments for tardiness VSL elements. The SDT has determined a 30 day "Increments for Tardiness" period is appropriate for standard VSLs proposed.	This is a new Requirement and does not have a prior level of compliance.	Proposed VSL's incorporate the increments for tardiness methodology. Proposed VSL language does not include ambiguous terms and ensure uniformity and consistency in the determination of penalties based on timeliness of the action specified.	Proposed VSL's do not expand on what is required in the requirement. The VSL's assigned only consider performing required action and if information submission is timely. Proposed VSL's are consistent with the requirement.	Proposed VSL's are based on a single violation and not a cumulative violation methodology.

VSLs for MOD-027-1 Requirement R2:

R#	Compliance with NERC Revised VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
R2.	The NERC VSL guidelines are satisfied by incorporating increments for tardiness VSL elements for the main Requirement action. The SDT has determined a 30 day "Increments for Tardiness" period is appropriate for standard VSLs proposed.	This is a new Requirement and does not have a prior level of compliance.	Proposed VSL's consider completeness of listed parts deemed to possess equal reliability weight and also increments for tardiness. Proposed VSL language does not include ambiguous terms and ensure uniformity and consistency in the determination of penalties based on binary performance, and both completeness and timeliness of the actions and obligations specified.	Proposed VSL's do not expand on what is required in the requirement. The VSL's assigned only consider performing required action and if information submission is complete. Proposed VSL's are consistent with the requirement.	Proposed VSL's are based on a single violation and not a cumulative violation methodology.

VSLs for MOD-027-1 Requirement R3:

R#	Compliance with NERC Revised VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
R3.	The NERC VSL guidelines are satisfied by incorporating increments for tardiness VSL elements for the main Requirement action. Actions and obligations specified in the Requirement Parts incorporate a binary element, consideration for omitting required information. The SDT has determined a 30 day "Increments for Tardiness" period is appropriate for standard VSLs proposed.	This is a new Requirement and does not have a prior level of compliance.	Proposed VSL's are a combination of a binary element and increments for tardiness. Binary requirements are categorized as severe. Proposed VSL language does not include ambiguous terms and ensure uniformity and consistency in the determination of penalties based on binary performance, and both completeness and timeliness of the actions and obligations specified.	Proposed VSL's do not expand on what is required in the requirement. The VSL's assigned only consider performing required action and if information submission is both complete and provided in a timely manner. Proposed VSL's are consistent with the requirement.	Proposed VSL's are based on a single violation and not a cumulative violation methodology.

VSLs for MOD-027-1 Requirement R4:

R#	Compliance with NERC Revised VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
R4.	The NERC VSL guidelines are satisfied by incorporating increments for tardiness VSL elements for the main Requirement action. The SDT has determined a 30 day "Increments for Tardiness" period is appropriate for standard VSLs proposed.	This is a new Requirement and does not have a prior level of compliance.	Proposed VSL's utilize increments for tardiness rationale. Proposed VSL language does not include ambiguous terms and ensure uniformity and consistency in the determination of penalties based on timeliness of the actions and obligations specified.	Proposed VSL's do not expand on what is required in the requirement. The VSL's assigned only consider performing required action and if information submission is complete and provided in a timely manner. Proposed VSL's are consistent with the requirement.	Proposed VSL's are based on a single violation and not a cumulative violation methodology.

VSLs for MOD-027-1 Requirement R5:

R#	Compliance with NERC VSL Guidelines	Guideline 1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	Guideline 2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language	Guideline 3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	Guideline 4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations
R5.	The NERC VSL guidelines are satisfied by incorporating increments for tardiness VSL elements for the Main Requirement action. Actions specified in the Requirement Parts incorporate completeness of the actions and obligations specified. The SDT has determined a 30 day "Increments for Tardiness" period is appropriate for standard VSLs proposed.	This is a new Requirement and does not have a prior level of compliance.	Proposed VSL's are a combination of completeness of listed parts and also increments for tardiness. Proposed VSL language does not include ambiguous terms and ensure uniformity and consistency in the determination of penalties based on both completeness and timeliness of the actions and obligations specified.	Proposed VSL's do not expand on what is required in the requirement. The VSL's assigned only consider performing required action and if information submission is both complete provided in a timely manner. Proposed VSL's are consistent with the requirement.	Proposed VSL's are based on a single violation and not a cumulative violation methodology.