

# Violation Risk Factors and Violation Severity Level Justifications

Project 2007-06.2 – Phase 2 of Protection System Coordination  
(TOP-009-1 – Knowledge of Composite Protection Systems and Remedial  
Action Schemes and Their Effects)

## Violation Risk Factor and Violation Severity Level Justifications

This document provides the drafting team's justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in TOP-009-1.

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.

The Protection System Coordination Phase 2 Standard Drafting Team (SDT) applied the following NERC criteria and FERC Guidelines when proposing VRFs and VSLs for the requirements under this project.

### **NERC Criteria - Violation Risk Factors**

#### ***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.

### **FERC Violation Risk Factor Guidelines**

The standard drafting team (SDT) also considered consistency with the FERC Violation Risk Factor Guidelines for setting VRFs:<sup>1</sup>

#### **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:<sup>2</sup>

- 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

<sup>1</sup> *North American Electric Reliability Corp.*, 119 FERC ¶ 61,145, order on reh'g and compliance filing, 120 FERC ¶ 61,145 (2007) (“VRF Rehearing Order”).

<sup>2</sup> *Id.* at footnote 15.

**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**

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.

**NERC Criteria - Violation Severity Levels**

Violation Severity Levels (VSLs) define the degree to which compliance with a requirement was not achieved. Each requirement must have at least one VSL. While it is preferable to have four VSLs for each requirement, some requirements do not have multiple “degrees” of noncompliant performance and may have only one, two, or three VSLs.

Violation severity levels should be based on the guidelines shown in the table below:

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.
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***FERC Order on Violation Severity Levels***

In its June 19, 2008 Order on Violation Severity Levels,<sup>3</sup> FERC indicated it would use the following four guidelines for determining whether to approve VSLs:

***Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance<sup>4</sup>***

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<sup>5</sup>***

Guideline 2a: A violation of a “binary” type requirement must be a “Severe” VSL.

Guideline 2b: 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<sup>6</sup>***

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<sup>7</sup>***

... 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.

<sup>3</sup> *Order on Violation Severity Levels Proposed by the Electric Reliability Organization*, 123 FERC ¶61,284 (2008).

<sup>4</sup> *Id.* at P20

<sup>5</sup> *Id.* at P22

<sup>6</sup> *Id.* at P32

<sup>7</sup> *Id.* at P35

<b>VRF and VSL Justifications – TOP-009-1, R1</b>	
<b>Proposed VRF</b>	<b>High</b>
NERC VRF Discussion	<p>A Violation Risk Factor of High is consistent with the NERC VRF Guidelines:</p> <p>The Transmission Operator must have the requisite knowledge of Composite Protection Systems and Remedial Action Schemes (RAS) in its Transmission Operator Area in order to maintain BES reliability; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>
FERC VRF G1 Discussion	<p>Guideline 1- Consistency w/ Blackout Report:</p> <p>This Requirement is consistent with the intent of Recommendation 8: Improve System Protection to Slow or Limit the Spread of Future Cascading Outages.</p>
FERC VRF G2 Discussion	<p>Guideline 2- Consistency within a Reliability Standard:</p> <p>The Requirement has a single reliability activity associated with the reliability objective and no sub-Requirement(s) which allows a single VRF to be assigned; therefore no conflict(s) exist.</p>
FERC VRF G3 Discussion	<p>Guideline 3- Consistency among Reliability Standards:</p> <p>TOP-009-1, Requirement R1 is consistent with the VRF of High that of PRC-001-1.1(ii), Requirement R1 which it replaces.</p>
FERC VRF G4 Discussion	<p>Guideline 4- Consistency with NERC Definitions of VRFs:</p> <p>The Transmission Operator must have the requisite knowledge of Composite Protection Systems and Remedial Action Schemes (RAS) in its Transmission Operator Area in order to maintain BES reliability; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>

VRF and VSL Justifications – TOP-009-1, R1			
FERC VRF G5 Discussion	<p>Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation:</p> <p>This Requirement does not co-mingle reliability objectives of differing risk; therefore, the assigned VRF of High is consistent.</p>		
Proposed VSL			
Lower	Moderate	High	Severe
N/A	N/A	Each Transmission Operator failed to ensure its personnel described in Requirement R1 have knowledge of operational functionality <b>or</b> effects of Composite Protection Systems and Remedial Action Schemes.	Each Transmission Operator failed to ensure its personnel described in Requirement R1 have knowledge of operational functionality <b>and</b> effects of Composite Protection Systems and Remedial Action Schemes.
NERC VSL Guidelines	Meets NERC’s VSL Guidelines—There is a gradated VSL for partial performance of High and a VSL of Severe for complete failure of the Requirement.		
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The proposed VSL does not lower the current level of compliance. TOP-009-1, Requirement R1 is a revision of the previous PRC-001-1.1(ii), Requirement R1, which has been clarified, only includes the reliability objective specific to the Transmission Operator, and also enhances reliability by including RASs.		

VRF and VSL Justifications – TOP-009-1, R1

<p>FERC VSL G2</p> <p>Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p>Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>Guideline 2a:</p> <p>This Requirement is binary and utilizes a VSL of Severe for failure in addition to incremental VSLs for partial performance.</p> <p>Guideline 2b:</p> <p>The proposed VSL does not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>
<p>FERC VSL G3</p> <p>Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL uses similar terminology to that used in the corresponding Requirement, and is therefore consistent with the Requirement.</p>
<p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The VSL is based on a single violation and not cumulative violations.</p>

<b>VRF and VSL Justifications – TOP-009-1, R2</b>	
<b>Proposed VRF</b>	<b>High</b>
NERC VRF Discussion	<p>A Violation Risk Factor of High is consistent with the NERC VRF Guidelines:</p> <p>The Balancing Authority must have the requisite knowledge of Composite Protection Systems and RAS in its Balancing Authority Area in order to maintain generation-Load-Interchange balance; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>
FERC VRF G1 Discussion	<p>Guideline 1- Consistency w/ Blackout Report:</p> <p>This Requirement is consistent with the intent of Recommendation 8: Improve System Protection to Slow or Limit the Spread of Future Cascading Outages.</p>
FERC VRF G2 Discussion	<p>Guideline 2- Consistency within a Reliability Standard:</p> <p>The Requirement has a single reliability activity associated with the reliability objective and no sub-Requirement(s) which allows a single VRF to be assigned; therefore no conflict(s) exist.</p>
FERC VRF G3 Discussion	<p>Guideline 3- Consistency among Reliability Standards:</p> <p>TOP-009-1, Requirement R2 is consistent with the VRF of High that of PRC-001-1.1(ii), Requirement R1 which it replaces.</p>
FERC VRF G4 Discussion	<p>Guideline 4- Consistency with NERC Definitions of VRFs:</p> <p>The Balancing Authority must have the requisite knowledge of Composite Protection Systems and RAS in its Balancing Authority Area in order to maintain generation-Load-Interchange balance; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>



VRF and VSL Justifications – TOP-009-1, R2			
FERC VRF G5 Discussion	<p>Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation:</p> <p>This Requirement does not co-mingle reliability objectives of differing risk; therefore, the assigned VRF of High is consistent.</p>		
Proposed VSL			
Lower	Moderate	High	Severe
N/A	N/A	The Balancing Authority failed to ensure its personnel described in Requirement R2 have knowledge of operational functionality <b>or</b> effects of Composite Protection Systems and Remedial Action Schemes.	The Balancing Authority failed to ensure its personnel described in Requirement R2 have knowledge of operational functionality <b>and</b> effects of Composite Protection Systems and Remedial Action Schemes.
NERC VSL Guidelines	Meets NERC’s VSL Guidelines—There is a gradated VSL for partial performance of High and a VSL of Serve for complete failure of the Requirement.		
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The proposed VSL does not lower the current level of compliance. TOP-009-1, Requirement R2 is a revision of the previous PRC-001-1.1(ii), Requirement R1, which has been clarified, only includes the reliability objective specific to the Balancing Authority, and also enhances reliability by including RASs.		

VRF and VSL Justifications – TOP-009-1, R2

<p>FERC VSL G2</p> <p>Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p>Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>Guideline 2a:</p> <p>This Requirement is binary and utilizes a VSL of Severe for failure in addition to incremental VSLs for partial performance.</p> <p>Guideline 2b:</p> <p>The proposed VSL does not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>
<p>FERC VSL G3</p> <p>Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL uses similar terminology to that used in the corresponding Requirement, and is therefore consistent with the Requirement.</p>
<p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The VSL is based on a single violation and not cumulative violations.</p>

**VRF and VSL Justifications – TOP-009-1, R3**

<b>Proposed VRF</b>	<b>High</b>
NERC VRF Discussion	<p>A Violation Risk Factor of High is consistent with the NERC VRF Guidelines:</p> <p>The Generator Operator must have the requisite knowledge of Composite Protection Systems and RAS necessary to operate its generating Facilities in order to maintain BES reliability; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>
FERC VRF G1 Discussion	<p>Guideline 1- Consistency w/ Blackout Report:</p> <p>This Requirement is consistent with the intent of Recommendation 8: Improve System Protection to Slow or Limit the Spread of Future Cascading Outages.</p>
FERC VRF G2 Discussion	<p>Guideline 2- Consistency within a Reliability Standard:</p> <p>The Requirement has a single reliability activity associated with the reliability objective and no sub-Requirement(s) which allows a single VRF to be assigned; therefore no conflict(s) exist.</p>
FERC VRF G3 Discussion	<p>Guideline 3- Consistency among Reliability Standards:</p> <p>TOP-009-1, Requirement R3 is consistent with the VRF of High that of PRC-001-1.1(ii), Requirement R1 which it replaces.</p>
FERC VRF G4 Discussion	<p>Guideline 4- Consistency with NERC Definitions of VRFs:</p> <p>The Generator Operator must have the requisite knowledge of Composite Protection Systems and RAS necessary to operate its generating Facilities in order to maintain BES reliability; not having the knowledge of Composite Protection Systems and RASs and their effects could place the bulk electric system at an unacceptable risk of instability, separation, or cascading failures.</p>

VRF and VSL Justifications – TOP-009-1, R3			
FERC VRF G5 Discussion	<p>Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation:</p> <p>This Requirement does not co-mingle reliability objectives of differing risk; therefore, the assigned VRF of High is consistent.</p>		
Proposed VSL			
Lower	Moderate	High	Severe
N/A	N/A	The Generator Operator failed to ensure its personnel described in Requirement R3 have knowledge of operational functionality <b>or</b> effects of Composite Protection Systems and Remedial Action Schemes.	The Generator Operator failed to ensure its personnel described in Requirement R3 have knowledge of operational functionality <b>and</b> effects of Composite Protection Systems and Remedial Action Schemes.
NERC VSL Guidelines	Meets NERC’s VSL Guidelines—There is a gradated VSL for partial performance of High and a VSL of Serve for complete failure of the Requirement.		
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The proposed VSL does not lower the current level of compliance. TOP-009-1, Requirement R3 is a revision of the previous PRC-001-1.1(ii), Requirement R1, which has been clarified, only includes the reliability objective specific to the Generator Operator, and also enhances reliability by including RASs.		

VRF and VSL Justifications – TOP-009-1, R3

<p>FERC VSL G2</p> <p>Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p>Guideline 2b: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>Guideline 2a:</p> <p>This Requirement is binary and utilizes a VSL of Severe for failure in addition to incremental VSLs for partial performance.</p> <p>Guideline 2b:</p> <p>The proposed VSL does not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>
<p>FERC VSL G3</p> <p>Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL uses similar terminology to that used in the corresponding Requirement, and is therefore consistent with the Requirement.</p>
<p>FERC VSL G4</p> <p>Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The VSL is based on a single violation and not cumulative violations.</p>