NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Violation Risk Factor and Violation Severity Level Justification Document

Project 2007-06 System Protection Coordination

This document provides the standard drafting team (SDT) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in PRC-027-1. Each requirement is assigned a VRF and a VSL. These elements support the determination of an initial value range for the Base Penalty Amount regarding violations of requirements in Federal Energy Regulatory Commission (FERC) approved Reliability Standards, as defined in the Electric Reliability Organizations (ERO) Sanction Guidelines. The SDT applied the following NERC criteria and FERC Guidelines when developing the VRFs and VSLs for the requirements.

NERC Criteria for 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.

FERC Guidelines for Violation Risk Factors

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 (BPS). In the VSL Order, FERC listed critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the BPS:

- 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

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 for 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.

VSLs should be based on NERC's overarching criteria shown in the table below:

Lower VSL	Moderate VSL	High VSL	Severe VSL
The performance or product measured almost meets the full intent of the requirement.	The performance or product measured meets the majority of the intent of the requirement.	The performance or product measured does not meet the majority of the intent of the requirement, but does meet some of the intent.	The performance or product measured does not substantively meet the intent of the requirement.

FERC Order of Violation Severity Levels

The FERC VSL guidelines are presented below, followed by an analysis of whether the VSLs proposed for each requirement in the standard 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.

VRF Justifications for PRC-027-1, Requirement R1	
VRF for Requirement R1 is Medium	
NERC VRF Discussion	A VRF of Medium is appropriate for this requirement because failure by an entity to establish a process to develop settings for its Bulk Electric System (BES) Protection Systems to operate in the intended sequence during Faults could directly affect the electrical state or the capability of the BES. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems. However, a violation of this requirement is unlikely to lead to BES instability, separation, or cascading failures, or to hinder restoration to a normal condition.

VRF Justifications for PRC-027-1, Requirement R1	
VRF for Requirement R1 is Medium	
FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report	In the VSL Order, FERC identified twelve critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the BPS. Requirement R1 relates to two of these areas, specifically (i) protection systems and their coordination; and (ii) system modeling and data exchange. Requirement R1 mandates that entities establish a process to address all aspects of BES Protection System coordination, including the updating of modeling information and the exchange of Protection System data with other owners, when applicable.
FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard	This requirement does not use sub-requirements so only one VRF was assigned. The requirement utilizes Parts to specify items that must be addressed within the settings development process. The VRF for this requirement is consistent with others in the standard with regard to relative risk; therefore, there is no conflict.
FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards	This requirement is consistent with NERC Reliability Standard PRC-005-2, Requirements R1 and R2, which are related to developing and documenting a Protection System Maintenance Program and have VRFs of Medium.
FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs	A VRF of Medium is appropriate for this requirement because failure by an entity to establish a process to develop settings for its BES Protection Systems to operate in the intended sequence during Faults could directly affect the electrical state or the capability of the BPS. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems. However, a violation of this requirement is unlikely to lead to BES instability, separation, or cascading failures, or to hinder restoration to a normal condition.

VRF Justifications for PRC-027-1, Requirement R1	
VRF for Requirement R1 is Medium	
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation	This requirement has only one reliability objective; therefore, does not co-mingle obligations.

VSLs for PRC-027-1, Requirement R1			
Lower	**Moderate**	**High**	**Severe**
N/A	The responsible entity established a process in accordance with Requirement R1, but failed to include Requirement R1, Part 1.1 or Part 1.2.	The responsible entity established a process in accordance with Requirement R1, but failed to include Requirement R1, Part 1.1 and Part 1.2.	The responsible entity established a process in accordance with Requirement R1, but failed to include Requirement R1, Part 1.3. OR The responsible entity failed to establish any process in accordance with Requirement R1.

VSL Justifications for PRC-027-1, Requirement R1	
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	While this requirement is new, it incorporates the reliability objectives of PRC-001-1.1(ii), Requirements R3 and R4, so there is no "consequence of lowering the current level of compliance."
FERC VSL G2 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 2a: N/A Guideline 2b: The language included in the High and Severe VSLs is clear and unambiguous, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

VSL Justifications for PRC-027-1, Requirement R1	
FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	The VSLs use language similar to that used in the associated requirement and is, therefore, consistent with the requirement.
FERC VSL G4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations	The VSLs are based upon a single violation, not a cumulative number of violations.

VRF Justifications for PRC-027-1, Requirement R2	
VRF for Requirement R2 is Medium	
NERC VRF Discussion	A VRF of Medium is appropriate for this requirement because failure to periodically perform a Protection System Coordination Study for existing Protection Systems could lead to failure in identifying and addressing changes in Fault current that have accumulated over time. These deviations in Fault current could result in miscoordinated Protection Systems which could, under anticipated Emergency, abnormal, or restorative conditions, directly and adversely affect the electrical state or the capability of the BES or the ability to effectively monitor and control the BES. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems. However, a violation of this requirement is unlikely to lead to BES instability, separation, or cascading failures.
FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report	In the VSL Order, FERC identified twelve critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the BES. Requirement R2 relates to one of these areas; specifically, protection systems and their coordination. Requirement R2 mandates that entities periodically perform Protection System Coordination Studies or Fault current comparisons to verify Protection Systems remain coordinated.
FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard	This requirement does not use sub-requirements so only one VRF was assigned. The VRF for this requirement is consistent with others in the standard with regard to relative risk; therefore, there is no conflict.
FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards	This requirement is consistent with NERC Reliability Standard PRC-010-1, Requirement R3, which relates to periodically performing comprehensive assessments to evaluate the effectiveness of UVLS Programs.

VRF Justifications for PRC-027-1, Requirement R2	
VRF for Requirement R2 is Medium	
FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs	A VRF of Medium is appropriate for this requirement because failure to periodically perform a Protection System Coordination Study for existing Protection Systems could lead to failure in identifying and addressing changes in Fault current that have accumulated over time. These deviations in Fault current could result in miscoordinated Protection Systems which could, under anticipated Emergency, abnormal, or restorative conditions, directly and adversely affect the electrical state or the capability of the BES, or the ability to effectively monitor and control the BES. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems. However, a violation of this requirement is unlikely to lead to BES instability, separation, or cascading failures.
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation	This requirement has only one reliability objective; therefore, does not co-mingle obligations.

VSLs for PRC-027-1, Requirement R2			
Lower	**Moderate**	**High**	**Severe**
The responsible entity performed a Protection System Coordination Study for each BES Element, in accordance with Requirement R2, Option 1, Option 2, or Option 3 but was late by less than or equal to 30 calendar days.	The responsible entity performed a Protection System Coordination Study for each BES Element, in accordance with Requirement R2, Option 1, Option 2, or Option 3, but was late by more than 30 calendar days but less than or equal to 60 calendar days.	The responsible entity performed a Protection System Coordination Study for each BES Element, in accordance with Requirement R2, Option 1, Option 2, or Option 3, but was late by more than 60 calendar days but less than or equal to 90 calendar days.	The responsible entity performed a Protection System Coordination Study for each BES Element, in accordance with Requirement R2, Option 1, Option 2, or Option 3, but was late by more than 90 calendar days. OR The responsible entity failed to perform Option 1, Option 2, or Option 3, in accordance with Requirement R2.

VSL Justifications for PRC-027-1, Requirement R2	
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering	While this requirement is new, it incorporates the reliability objectives of PRC-001-1.1(ii), Requirements R3 and R4, so there is no "consequence of lowering the current level of compliance."

the Current Level of Compliance	
FERC VSL G2 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 2a: N/A Guideline 2b: The language included in the proposed VSLs is clear and unambiguous, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

VSL Justifications for PRC-027-1, Requirement R2	
FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	The VSLs use language similar to that used in the associated requirement and is, therefore, consistent with the requirement.
FERC VSL G4	The VSLs are based upon a single violation, not a cumulative number of violations.

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

VRF Justifications for PRC-027-1, Requirement R3	
VRF for Requirement R3 is High	
NERC VRF Discussion	A VRF of High is appropriate for this requirement because failure by an entity to utilize its process to develop settings for its BES Protection Systems to operate in the intended sequence during Faults could place the BES at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems.
FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report	In the VSL Order, FERC identified twelve critical areas (from the Final Blackout Report) where violations could severely affect the reliability of the BPS. Requirement R2 relates to two of these areas, specifically (i) protection systems and their coordination; and (ii) system modeling and data exchange. Requirement R3 mandates that entities utilize their process established in Requirement R1 that incorporates all actions necessary to to develop settings for its BES Protection Systems to operate in the intended sequence during Faults.
FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard	This requirement does not use sub-requirements so only one VRF was assigned. The VRF for this requirement is consistent with others in the standard with regard to relative risk; therefore, there is no conflict.

VRF Justifications for PRC-027-1, Requirement R3	
VRF for Requirement R3 is High	
FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards	This requirement is consistent with NERC Reliability Standard PRC-005-2, Requirements R3 and R4, which are related to implementing time-based and performance-based maintenance program(s) respectively for Protection Systems.
FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs	A VRF of High is appropriate for this requirement because failure by an entity to utilize its process to develop settings for its BES Protection Systems to operate in the intended sequence during Faults could place the BES at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition. This VRF emphasizes the risk to the BES that results from miscoordinated Protection Systems.
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation	This requirement has only one reliability objective; therefore, does not co-mingle obligations.

VSLs for PRC-027-1, Requirement R3			
Lower	**Moderate**	**High**	**Severe**
N/A	N/A	N/A	The responsible entity failed to utilize the process established in accordance with Requirement R1.

VSL Justifications for PRC-027-1, Requirement R3	
FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	While this requirement is new, it incorporates the reliability objectives of PRC-001-1.1(ii), Requirements R3 and R4, so there is no "consequence of lowering the current level of compliance."
FERC VSL G2 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 2a: N/A Guideline 2b: The language included in the Severe VSL is clear and unambiguous, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.

VSL Justifications for PRC-027-1, Requirement R3	
FERC VSL G3 Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	The VSL uses language similar to that used in the associated requirement and is, therefore, consistent with the requirement.
FERC VSL G4 Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations	The VSL is based upon a single violation, not a cumulative number of violations.