

Violation Risk Factor and Violation Severity Level Justifications for Requirement R15 of PRC-006-2 Project 2008-02: Underfrequency Load Shedding (UFLS)

This document provides the Standard Drafting Team (SDT) justification for assignment of the violation risk factor (VRF) and violation severity levels (VSLs) for the proposed PRC-006-2 Requirement R15.¹

For all NERC Reliability Standards, each requirement is assigned a VRF and a set of one or more VSL. 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 Electric Reliability Organization (ERO) Sanction Guidelines.

Part I. Violation Risk Factor (VRF) Justification

The SDT applied the following NERC criteria and FERC Guidelines when proposing the VRF for Requirement R15 of PRC-006-2:

NERC VRF Criteria

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.

¹ The VRFs for Requirements R9 and R10 were not changed. The VSLs for Requirements R9 and R10 were updated to reflect the revisions to the language of the requirement. Specifically, the “Corrective Action Plan” language was added; also, the word “application” was replaced with “implementation” to achieve consistency of terminology throughout the standard. Otherwise, the VSLs were not changed.

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 Violation Risk Factor (VRF) Guidelines

FERC VRF 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:

- 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.

FERC VRF 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.

FERC VRF 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.

FERC VRF 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.

FERC VRF 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.

Proposed VRF for Requirement R15: High

VRF Justification for PRC-006-2 Requirement R15	
Proposed VRF for Requirement R15	High
Discussion of NERC VRF Criteria	<p>A VRF of High is consistent with the NERC VRF Guidelines. Failure to develop a Corrective Action Plan to address identified deficiencies in the UFLS program could place the Bulk Electric System at an unacceptable risk of instability, separation, or cascading failures, or could hinder restoration to a normal condition.</p> <p>Requirement R15 applies to a circumstance in which a PC has conducted a design assessment (under Requirement R4, R5 or R12) and determined that its UFLS program fails to meet the performance characteristics mandated by Requirement R3. In brief, Requirement R3 requires that each PC develop a UFLS program for UFLS entities within its area that meets certain predefined performance characteristics in simulations of underfrequency conditions resulting from an imbalance of up to 25 percent within the identified island. Requirement R3 also requires the PC to develop a schedule for implementation by the UFLS entities. Requirement R3 is assigned a High VRF because if violated, it could directly cause or contribute to bulk electric system failure (blackout), or could place the bulk electric system at an unacceptable risk of failure, and could hinder restoration to a normal condition.²</p> <p>Under Requirement R15, if the PC identifies that the UFLS program is deficient and fails to meet the mandatory performance characteristics identified in Requirement R3, the PC must</p>

² See, *Petition of the North American Electric Reliability Corporation for Approval of Proposed New Reliability Standards and Implementation Plans related to Underfrequency Load-Shedding*, Docket No. RM11-20-000 (March 31, 2011) (“NERC Petition”).

	<p>develop a Corrective Action Plan and schedule for implementation by the UFLS entities. The Corrective Action Plan will provide a list of actions and an associated timetable for implementation to remedy the specific problem or deficiency that was identified in the UFLS program.</p> <p>Requirement R15 only applies when a UFLS program fails to meet the performance characteristics identified in Requirement R3. Because the Corrective Action Plan required under Requirement R15 is developed as a result of a deficient UFLS program, and for the purpose of implementing corrective action to remedy the identified deficiency, it should have the same violation risk factor assignment as the requirement for the Planning Coordinator to develop a UFLS program that meets the specified performance characteristics. Therefore, because Requirement R3 has a High VRF, Requirement R15 should also be assigned a High VRF.</p>
<p>Discussion of FERC VRF Guideline 1: Consistency with Blackout Report:</p>	<p>Not applicable to this requirement.</p>
<p>Discussion of FERC VRF Guideline 2: Consistency within a Reliability Standard</p>	<p>There is no inconsistency between sub-Requirement and main Requirement VRF assignments because NERC no longer assigns VRFs to sub-Requirements in Reliability Standards.</p>
<p>Discussion of FERC VRF Guideline 3: Consistency among Reliability Standards</p>	<p>There are no comparable standards that address similar reliability goals to that of the UFLS standard. However, it is important to note that the PRC-006 standard was constructed such that there are a number of requirements contained in the standard that are related, affect and/or are conditions precedent to the application of Requirement R15. Because of this construct, these requirements are helpful to consider in determining the proper VRF assignment for Requirement R15. Specifically,</p> <ul style="list-style-type: none"> • Requirement R3 – High VRF – Identifies the specific performance characteristics that each PC’s UFLS program must meet.

	<ul style="list-style-type: none"> • Requirement R4 – High VRF – Requires each PC to conduct a design assessment at least once every five years to determine whether the UFLS program meets the performance characteristics of Requirement R3. • Requirement R5 – High VRF – Requires each PC to coordinate its design assessment with other PCs, when the PC area is part of the same island identified by another PC. • Requirement R9 – High VRF – Requires each PC to provide automatic tripping of load in accordance with the PC’s UFLS program, including any Corrective Action Plan. • Requirement R10 – High VRF – Requires each Transmission Owner to provide automatic switching of certain identified devices if required by the PC’s UFLS program, including any Corrective Action Plan. • Requirement R12 – Medium VRF – Requires each PC that identifies deficiencies through an islanding event assessment conducted under Requirement R11, to conduct a design assessment of the UFLS program. <p>Because the vast majority of these requirements have a High VRF and in order to achieve consistency and treat similar requirements contained within PRC-006 in a like manner, Requirement R15 is assigned a High VRF.</p>
<p>Discussion of FERC VRF Guideline 4: Consistency with NERC Definitions of VRFs</p>	<p>See “NERC VRF Discussion” above.</p>
<p>Discussion of FERC VRF Guideline 5: Treatment of Requirements that Co-mingle More Than One Obligation</p>	<p>Requirement R15 does not co-mingle more than one obligation.</p>

Part II. Violation Severity Level (VSL) Justification

NERC VSL Criteria

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 are based on the NERC 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 VSL Guidelines³

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.

³ Order on Violation Severity Levels Proposed by the Electric Reliability Organization, 123 FERC ¶ 61,284 (2008)(“VSL Order”), order on rehearing and clarification, 125 FERC ¶ 61,212(2008).

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 provides that assessing penalties on a per violation per day basis is the “default” for penalty calculations.

Proposed VSLs for Requirement R15

Lower VSL	Moderate VSL	High VSL	Severe VSL
N/A	The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period of up to 1 month.	The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 1 month but not more than 2 months.	The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, but failed to develop a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area. OR

			<p>The Planning Coordinator determined, through a UFLS design assessment performed under Requirement R4, R5, or R12, that the UFLS program did not meet the performance characteristics in Requirement R3, and developed a Corrective Action Plan and a schedule for implementation by the UFLS entities within its area, but exceeded the permissible time frame for development by a period greater than 2 months.</p>
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VSL Justifications for PRC-006-2 Requirement R15

<p>NERC VSL Guidelines</p>	<p>Consistent with the NERC VSL Guidelines, the VSLs describe the degree of noncompliant performance in an incremental manner (moderate, high and severe).</p>
<p>FERC VSL Guideline 1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p>	<p>The current levels of compliance are not lowered by the proposed VSLs.</p>

<p>FERC VSL Guideline 2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a:</u> The single VSL assignment category for “Binary” Requirements is not consistent</p> <p><u>Guideline 2b:</u> VSL Assignments that contain ambiguous language</p>	<p>The proposed VSL is written to ensure uniformity and consistency in the determination of penalties.</p> <p><u>Guideline 2a:</u> The VSL is not written in a binary (pass/fail) manner; instead the VSL has an incremental time-based approach for assigning the level of violation severity.</p> <p><u>Guideline 2b:</u> The VSL assignments contain clear and unambiguous language.</p>
<p>FERC VSL Guideline 3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The language of the VSL directly mirrors the language in the corresponding Requirement R15.</p>
<p>FERC VSL Guideline 4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The proposed VSLs are not based on a cumulative number of violations.</p>