

Violation Risk Factor and Violation Severity Level Justifications

VAR-001-4 – Voltage and Reactive Control

This document provides the Standard Drafting Team's (SDT) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in VAR-001-4 – Voltage and Reactive Control. 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 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 proposing VRFs and VSLs for the requirements under this project. A copy of the standard with the associated VRFs and VSLs is available [here](#).

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.

FERC Violation Risk Factor Guidelines**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.

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 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

FERC’s 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 Justification – VAR-001-4 Requirement R1	
Proposed VRF	High
NERC VRF Discussion	A VRF of High is necessary because this requirement ensures that a system voltage schedule is created to ensure system stability.
FERC VRF G1 Discussion	Guideline 1 – Consistency with Blackout Report: This High VRF is consistent with the Blackout Report because Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System.
FERC VRF G2 Discussion	Guideline 2 – Consistency within a Reliability Standard: The VRF applies to the entire requirement. The sub-part within Requirement R1 is consistent and considered a High VRF.
FERC VRF G3 Discussion	Guideline 3 – Consistency among Reliability Standards: Because maintaining a voltage schedule is critical to preventing a violation of a System Operating Limit, this VRF was drafted to be consistent with the VRFs for other standards (e.g., TOP, FAC, etc.) addressing operating within the appropriate limits.
FERC VRF G4 Discussion	Guideline 4 – Consistency with NERC Definitions of VRFs: This VRF is consistent with the NERC Definition because voltage instability will cause “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.”
FERC VRF G5 Discussion	Guideline 5- Treatment of Requirements that Co-mingle More Than One Obligation: This VRF does not co-mingle multiple objectives, nor does it water down the Requirement to reflect a lower risk level.

VSL Justification – VAR-001-4 Requirement R1	
NERC VSL Guidelines	Consistent with NERC’s VSL Guideline, this VSL acknowledges the criticality of this requirement and whether or not a system voltage schedule was created.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The current level of compliance is not lowered with the proposed VSL because this is a new requirement, and it only has a “severe” VSL.
FERC VSL G2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The single VSL assignment category for “Binary” Requirements is not consistent Guideline 2b: VSL Assignments that contain ambiguous language	The proposed VSL is written to ensure uniformity and consistency in the determination of penalties. Guideline 2a: The proposed VSL is binary, and therefore, a single severe VSL is necessary. Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.
FERC VSL G3: Violation Severity Level Assignment Should Be Consistent with the	The proposed VSL is consistent with the corresponding requirements.

Corresponding Requirement	
FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations	The proposed VSL is not based on a cumulative number of violations.

VRF Justification – VAR-001-2 Requirement R2	
Proposed VRF	High
NERC VRF Discussion	A VRF of High is consistent with the NERC VRF definition. Requirement R2 focuses on ensuring there are enough reactive resources online to regulate voltage levels, and a High VRF represents the criticality of making sure the system resources are adjusted to meeting normal and Contingency conditions.
FERC VRF G1 Discussion	Guideline 1 – Consistency with Blackout Report: This High VRF is consistent with the Blackout Report because Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System. Therefore, ensuring the proper resources are online for voltage support warrants a High VRF.
FERC VRF G2 Discussion	Guideline 2 – Consistency within a Reliability Standard: There is no sub-part to Requirement R2; therefore, it is consistent.
FERC VRF G3 Discussion	Guideline 3 – Consistency among Reliability Standards: Because scheduling resources is critical to preventing a system operating limit, this VRF is drafted to be consistent with other standards (e.g., TOP, FAC, etc.) that address operating within the appropriate limits.
FERC VRF G4 Discussion	Guideline 4 – Consistency with NERC Definitions of VRFs:

	This VRF is consistent with the NERC Definition because not scheduling enough resources to support system conditions will cause “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.”
FERC VRF G5 Discussion	<p>Guideline 5 - Treatment of Requirements that Co-mingle More Than One Obligation:</p> <p>This VRF does not co-mingle multiple objectives, nor does it water down the requirement to reflect a lower risk level.</p>

VSL Justification – VAR-001-4 Requirement R2	
NERC VSL Guidelines	Consistent with NERC’s VSL Guidelines, the VSL describes degrees of noncompliant performance in an incremental manner.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	There is no prior compliance obligation related to the subject of this standard.
<p>FERC VSL G2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The single VSL assignment category for</p>	<p>The proposed VSL is written to ensure uniformity and consistency in the determination of penalties.</p> <p>Guideline 2a: The proposed VSL is not binary.</p> <p>Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>

<p>“Binary” Requirements is not consistent Guideline 2b: VSL Assignments that contain ambiguous language</p>	
<p>FERC VSL G3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL is worded consistently with the corresponding requirement.</p>
<p>FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The proposed VSL is not based on cumulative number of violations.</p>

VRF Justification – VAR-001-4 Requirement R3	
Proposed VRF	High
NERC VRF Discussion	This requirement warrants a High VRF and is consistent with the NERC definition because this requirement represents a critical step that TOPs should take in order to avoid an SOL violation in Real-time.
FERC VRF G1 Discussion	<p>Guideline 1 – Consistency with Blackout Report:</p> <p>This High VRF is consistent with the Blackout Report because Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System. Therefore, ensuring that the TOP directs the Real-time devices as necessary to regulate voltage and reactive flow warrants a High VRF.</p>

FERC VRF G2 Discussion	<p>Guideline 2 – Consistency within a Reliability Standard:</p> <p>There is no sub-part to Requirement 3; therefore, the requirement is consistent.</p>
FERC VRF G3 Discussion	<p>Guideline 3 – Consistency among Reliability Standards:</p> <p>Because directing other Real-time devices for voltage and reactive flows is critical to preventing a system operating limit, this VRF is drafted to be consistent with other standards (e.g., TOP, FAC, etc.) that address operating within the appropriate limit.</p>
FERC VRF G4 Discussion	<p>Guideline 4 – Consistency with NERC Definitions of VRFs:</p> <p>This VRF is consistent with the NERC Definition because not directing Real-time operation of devices as necessary could directly cause “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.”</p>
FERC VRF G5 Discussion	<p>Guideline 5 - Treatment of Requirements that Co-mingle More Than One Obligation</p> <p>This VRF does not co-mingle multiple objectives, nor does it water down the Requirement to reflect a lower risk level</p>

VSL Justification – VAR-001-4 Requirement R3

NERC VSL Guidelines	Consistent with NERC’s VSL Guidelines. The VSL describes degrees of noncompliant performance in an incremental manner.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The current level of compliance is not lowered with the proposed VSL.

<p>FERC VSL G2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The single VSL assignment category for “Binary” Requirements is not consistent</p> <p>Guideline 2b: 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>Guideline 2a: The proposed VSL is not binary.</p> <p>Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>
<p>FERC VSL G3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL is worded consistently with the corresponding requirement.</p>
<p>FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The proposed VSL is not based on cumulative number of violations.</p>

VRF Justification – VAR-001-4 Requirement R4

Proposed VRF	Lower
NERC VRF Discussion	This requirement is Lower because it focuses on whether a TOP has created an exemption criteria. The Lower VRF is warranted because many entities will not have any exemptions allowed generators within their system. Additionally, a violation of this requirement would not adversely affect the electrical state or capability of the Bulk Electric System, or the ability to effectively monitor and control the Bulk Electric System.
FERC VRF G1 Discussion	<p>Guideline 1 – Consistency with Blackout Report:</p> <p>This VRF is consistent with the Blackout Report because although Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System, a violation of the requirements to have exemption criteria would result in the GOPs being held to a more stringent performance requirement and is unlikely to severely affect the reliability of the bulk Power System. Therefore, a lower VRF is warranted.</p>
FERC VRF G2 Discussion	<p>Guideline 2 – Consistency within a Reliability Standard:</p> <p>The sub-part within Requirement R4 is consistent with R4 and is considered a Lower VRF.</p>
FERC VRF G3 Discussion	<p>Guideline 3 – Consistency among Reliability Standards:</p> <p>Other standards do not address exemptions from 1) voltage schedules; 2) AVR settings; or 3) any associated notifications.</p>
FERC VRF G4 Discussion	<p>Guideline 4 – Consistency with NERC Definitions of VRFs:</p> <p>This VRF is consistent with the NERC Definition because if the GOP is not exempted, a higher performance expectation maintained for GOPs. This does more to protect against events that could cause “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.”</p>
FERC VRF G5 Discussion	Guideline 5 - Treatment of Requirements that Co-mingle More Than One Obligation:

	This VRF does not co-mingle multiple objectives, nor does it water down the Requirement to reflect a Lower risk level.
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VSL Justification – VAR-001-4 Requirement R4	
NERC VSL Guidelines	This VSL is consistent with NERC’s VSL Guidelines. The VSL describes degrees of noncompliant performance in an incremental manner.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The current level of compliance is not lowered with the proposed VSL.
FERC VSL G2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The single VSL assignment category for “Binary” Requirements is not consistent Guideline 2b: VSL Assignments that contain ambiguous language	The proposed VSL is written to ensure uniformity and consistency in the determination of penalties. Guideline 2a: The proposed VSL is not binary. Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.
FERC VSL G3:	The proposed VSL is worded consistently with the corresponding requirement.

Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	
FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations	The proposed VSL is not based on cumulative number of violations.

VRF Justification – VAR-001-4 Requirement R5	
Proposed VRF	Medium
NERC VRF Discussion	This requirement is a Medium because even if a TOP does not provide the voltage or Reactive Power schedules to all GOPs, the TOP is still monitoring the system and will direct the GOPs within an area to provide voltage support as necessary.
FERC VRF G1 Discussion	<p>Guideline 1 – Consistency with Blackout Report:</p> <p>This VRF is consistent with the Blackout Report because although Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System, the TOP standards and Requirements R1-4, still require the TOP to monitor voltage to operate within System Operating Limits. Therefore, a Medium VRF is warranted.</p>
FERC VRF G2 Discussion	<p>Guideline 2 – Consistency within a Reliability Standard:</p> <p>The parts within Requirement R5 are consistent with Requirement R5 and is considered a Medium VRF.</p>

FERC VRF G3 Discussion	<p>Guideline 3 – Consistency among Reliability Standards:</p> <p>As explained in Guideline 1, this requirement is consistent with other standards, namely TOP standards.</p>
FERC VRF G4 Discussion	<p>Guideline 4 – Consistency with NERC Definitions of VRFs:</p> <p>This VRF is consistent with the NERC Definition because a violation “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, due to the TOP standards, a violation is unlikely to lead to a “Bulk Electric System instability, separation, or cascading failures.”</p>
FERC VRF G5 Discussion	<p>Guideline 5 - Treatment of Requirements that Co-mingle More Than One Obligation:</p> <p>This VRF does not co-mingle multiple objectives, nor does it water down the Requirement to reflect a lower risk level.</p>

VSL Justification – VAR-001-4 Requirement R5

NERC VSL Guidelines	Consistent with NERC’s VSL Guidelines. The VSL describes degrees of noncompliant performance in an incremental manner.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	There is no prior compliance obligation related to the subject of this standard.
FERC VSL G2:	The proposed VSL is written to ensure uniformity and consistency in the determination of penalties.

<p>Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p>Guideline 2a: The single VSL assignment category for “Binary” Requirements is not consistent</p> <p>Guideline 2b: VSL Assignments that contain ambiguous language</p>	<p>Guideline 2a: The proposed VSL is not binary.</p> <p>Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.</p>
<p>FERC VSL G3: Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>The proposed VSL is worded consistently with the corresponding requirement.</p>
<p>FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations</p>	<p>The proposed VSL is not based on cumulative number of violations.</p>

VRF Justification – VAR-001-4 Requirement R6

Proposed VRF	Lower
NERC VRF Discussion	This requirement ensures there is coordination for making TOP-directed tap setting changes. A violation of this requirement would not lead to a system event, but the coordination must happen in order for a TOP to know when a generator is going offline. The proper tap settings also ensures Max VAR capability of a unit is maintained.
FERC VRF G1 Discussion	<p>Guideline 1 – Consistency with Blackout Report:</p> <p>This VRF is consistent with the Blackout Report because although Reactive Power and voltage control are part of the list of critical areas where a violation could severely affect the reliability of the Bulk-Power System, this requirement is aimed at improving the max VARs put into the system. If this requirement were violated, the system would still operate at the level it was prior to making the tap changes.</p>
FERC VRF G2 Discussion	<p>Guideline 2 – Consistency within a Reliability Standard:</p> <p>There is no sub-part to Requirement R6, and a TOP would still be monitoring the system in order to prevent a system event. Therefore, this requirement is consistent and considered a Medium VRF.</p>
FERC VRF G3 Discussion	<p>Guideline 3 – Consistency among Reliability Standards:</p> <p>This requirement is not addressed by other standards.</p>
FERC VRF G4 Discussion	<p>Guideline 4 – Consistency with NERC Definitions of VRFs:</p> <p>This VRF is consistent with the NERC Definition because a violation “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, due to the TOP standards, a violation of this requirement alone is unlikely to lead to a lead “to Bulk Electric System instability, separation, or cascading failures.”</p>
FERC VRF G5 Discussion	Guideline 5 - Treatment of Requirements that Co-mingle More Than One Obligation:

	This VRF does not co-mingle multiple objectives, nor does it water down the Requirement to reflect a lower risk level.
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VSL Justification – VAR-001-4 Requirement R6	
NERC VSL Guidelines	Consistent with NERC’s VSL Guidelines. The VSL describes degrees of noncompliant performance in an incremental manner.
FERC VSL G1: Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	There is no prior compliance obligation related to the subject of this standard.
FERC VSL G2: Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties Guideline 2a: The single VSL assignment category for “Binary” Requirements is not consistent Guideline 2b: VSL Assignments that contain ambiguous language	The proposed VSL is written to ensure uniformity and consistency in the determination of penalties. Guideline 2a: The proposed VSL is not binary. Guideline 2b: The proposed VSL does not use ambiguous terms, supporting uniformity and consistency in the determination of similar penalties for similar violations.
FERC VSL G3:	The proposed VSL is worded consistently with the corresponding requirement.

Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement	
FERC VSL G4: Violation Severity Level Assignment Should Be Based on A Single Violation, Not on A Cumulative Number of Violations	The proposed VSL is not based on cumulative number of violations.