

Violation Risk Factor and Violation Severity Level Justifications

Project 2023-02 Analysis and Mitigation of BES Inverter-Based Resource Performance Issues

This document provides the drafting team's (DT's) justification for assignment of violation risk factors (VRFs) and violation severity levels (VSLs) for each requirement in Project 2023-02 Analysis and Mitigation of BES Inverter-Based Resource Performance Issues. 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 DT 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

FERC seeks to ensure that VRFs 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

FERC expects a rational connection between the sub-Requirement VRF assignments and the main Requirement VRF assignment.

Guideline (3) – Consistency among Reliability Standards

FERC expects the assignment of VRFs 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 VRF 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

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-030-1, Requirement R1	
Proposed VRF	Medium
NERC VRF Discussion	A VRF of Medium is appropriate because not having a process for identifying changes in Real Power output, which is required in defining the minimum standards will be performed, could directly affect the electrical state or the capability of the Bulk-Electric System (BES), or the ability to effectively monitor and control the BES. In addition, a violation of this requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to BES instability, separation, or cascading failures, nor to hinder restoration to a normal condition. Therefore, it is in line with the definition of a Medium VRF.
FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report	This VRF is in line with the identified areas from the FERC list of critical areas in the Final Blackout Report.
FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard	The assignment of Medium VRF is consistent with the VRF assignments for other requirements in the proposed Reliability Standard. This requirement has only a main VRF and no different sub-requirement VRFs.
FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards	This VRF is in line with other VRFs that address similar reliability goals in different Reliability Standards.
FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs	This VRF is in line with the definition of a medium VRF requirement per the criteria filed with FERC as part of the ERO’s Sanctions Guidelines.
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More	This requirement does not co-mingle a higher risk reliability objective and a lesser risk reliability objective.

VRF Justifications for PRC-030-1, Requirement R1

Proposed VRF	Medium
than One Obligation	

VSLs for PRC-030-1, Requirement R1

Lower	Moderate	High	Severe
N/A	N/A	N/A	The responsible entity failed to implement a documented process to identify changes in Real Power output in accordance with Requirement R1.

VSL Justifications for PRC-030-1, Requirement R1

<p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p>	<p>The requirement is new. Therefore, the proposed VSLs do not have the unintended consequence of lowering the level of compliance.</p>
<p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>The proposed VSLs are binary and do not use any ambiguous terminology, thereby 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 VSLs use the same terminology as used in the associated requirement and are, therefore, consistent with the 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>Each VSL is based on a single violation and not cumulative violations.</p>

VRF Justifications for PRC-030-1, Requirement R2

Proposed VRF	Medium
<p>NERC VRF Discussion</p>	<p>A VRF of Medium is appropriate because a Generator Owner not analyzing it’s Inverter Based Resource’s performance which are required in defining the minimum standards will be within 90 days of an event, identified pursuant to Requirement R1 or receipt of a request pursuant to Requirement R2, to address the unexpected change(s) in power output and the applicability to its other IBR facilities that could be affected by the same cause of unexpected change(s) in power output could directly affect the electrical state or the capability of the Bulk-Electric System (BES), or the ability to effectively monitor and control the BES.</p> <p>In addition, a violation of this requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to BES instability, separation, or cascading failures, nor to hinder restoration to a normal condition. Therefore, it is in line with the definition of a Medium VRF.</p>
<p>FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report</p>	<p>This VRF is in line with the identified areas from the FERC list of critical areas in the Final Blackout Report.</p>
<p>FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard</p>	<p>The assignment of Medium VRF is consistent with the VRF assignments for other requirements in the proposed Reliability Standard. This requirement has only a main VRF and no different sub-requirement VRFs.</p>
<p>FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards</p>	<p>This VRF is in line with other VRFs that address similar reliability goals in different Reliability Standards.</p>
<p>FERC VRF G4 Discussion Guideline 4- Consistency with NERC</p>	<p>This VRF is in line with the definition of a medium VRF requirement per the criteria filed with FERC as part of the ERO’s Sanctions Guidelines.</p>

VRF Justifications for PRC-030-1, Requirement R2	
Proposed VRF	Medium
Definitions of VRFs	
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation	This requirement does not co-mingle a higher risk reliability objective and a lesser risk reliability objective.

VSLs for PRC-030-1, Requirement R2			
Lower	Moderate	High	Severe
The responsible entity performed an analysis in accordance with Requirement R2, but in more than 90 calendar days but less than 120 calendar days of an event or receiving a request.	The responsible entity performed an analysis in accordance with Requirement R2, but in 120 or more calendar days but less than 150 calendar days of an event or receiving a request.	<p>The responsible entity performed an analysis in accordance with Requirement R2, but in 150 or more calendar days but less than 180 calendar days of an event or receiving a request.</p> <p>OR</p> <p>The responsible entity performed the analysis in Requirement R2 but failed to address Part 2.1.1 or Part 2.1.4.</p> <p>OR</p> <p>The responsible entity failed to provide the analysis results from the requesting entity in accordance with Requirement R2, Part 2.2.</p>	<p>The responsible entity developed an analysis in accordance with Requirement R2, but in 180 calendar days or more of an event or receiving a request.</p> <p>OR</p> <p>The responsible entity performed the analysis in Requirement R2 but failed to address Part 2.1.1 and Part 2.1.4.</p> <p>OR</p> <p>The responsible entity failed to document the facility’s Ride-through performance in accordance with Requirement R2, Part 2.1.2</p> <p>OR</p>

			The responsible entity failed to determine the susceptibility of other inverter-based resource facilities in accordance with Requirement R2, Part 2.1.3.
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VSL Justifications for PRC-030-1, Requirement R2	
<p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p>	<p>The requirement is new. Therefore, the proposed VSLs do not have the unintended consequence of lowering the level of compliance.</p>
<p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>The proposed VSLs are not binary and do not use any ambiguous terminology, thereby 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 VSLs use the same terminology as used in the associated requirement and are, therefore, consistent with the requirement.</p>
<p>FERC VSL G4 Violation Severity Level Assignment</p>	<p>Each VSL is based on a single violation and not cumulative violations.</p>

VSL Justifications for PRC-030-1, Requirement R2

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

VRF Justifications for PRC-030-1, Requirement R3

Proposed VRF	Medium
NERC VRF Discussion	<p>A VRF of Medium is appropriate because a Generator Owner’s failure to develop either a Corrective Action Plan (CAP), or technical justification that addresses why corrective actions will not be applied nor implemented for it’s Inverter Based Resource’s could directly affect the electrical state or the capability of the Bulk-Electric System (BES), or the ability to effectively monitor and control the BES.</p> <p>In addition, a violation of this requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to BES instability, separation, or cascading failures, nor to hinder restoration to a normal condition. Therefore, it is in line with the definition of a Medium VRF.</p>
FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report	This VRF is in line with the identified areas from the FERC list of critical areas in the Final Blackout Report.
FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard	The assignment of Medium VRF is consistent with the VRF assignments for other requirements in the proposed Reliability Standard. This requirement has only a main VRF and no different sub-requirement VRFs.
FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards	This VRF is in line with other VRFs that address similar reliability goals in different Reliability Standards.
FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs	This VRF is in line with the definition of a medium VRF requirement per the criteria filed with FERC as part of the ERO’s Sanctions Guidelines.

VRF Justifications for PRC-030-1, Requirement R3

Proposed VRF	Medium
FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation	This requirement does not co-mingle a higher risk reliability objective and a lesser risk reliability objective.

VSLs for PRC-030-1, Requirement R3

Lower	Moderate	High	Severe
The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented within 60 days, but provided it within 90 days.	The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented within 90 days, but provided it within 120 days.	<p>The responsible entity failed to develop a CAP or provide a technical justification why no corrective actions will be implemented within 120 days, but provided it within 150 days</p> <p>OR</p> <p>The developed CAP did not include corrective actions for other facilities owned by the Generator Owners as identified in Requirement R2 Part 2.1.3, if necessary.</p> <p>OR</p> <p>The developed CAP or technical justification was not provided to the associated Reliability Coordinator, Balancing Authority,</p>	The responsible entity failed to develop a CAP or provide a technical justification addressing why no corrective actions will be implemented, within 150 calendar days.

		and Transmission Operator.	
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VSL Justifications for PRC-030-1, Requirement R3	
<p>FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance</p>	<p>The requirement is new. Therefore, the proposed VSLs do not have the unintended consequence of lowering the level of compliance.</p>
<p>FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties</p> <p><u>Guideline 2a</u>: The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent</p> <p><u>Guideline 2b</u>: Violation Severity Level Assignments that Contain Ambiguous Language</p>	<p>The proposed VSLs are not binary and do not use any ambiguous terminology, thereby 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 VSLs use the same terminology as used in the associated requirement and are, therefore, consistent with the 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>Each VSL is based on a single violation and not cumulative violations.</p>

VRF Justifications for PRC-030-1, Requirement R4

Proposed VRF	Medium
<p>NERC VRF Discussion</p>	<p>A VRF of Medium is appropriate because failure to implement, update, or notify with the applicable Reliability Coordinator (RC) the Corrective Action Plan (CAP) for its Inverter Based Resource’s could directly affect the electrical state or the capability of the Bulk-Electric System (BES), or the ability to effectively monitor and control the BES.</p> <p>In addition, a violation of this requirement is unlikely, under emergency, abnormal, or restoration conditions anticipated by the preparations, to lead to BES instability, separation, or cascading failures, nor to hinder restoration to a normal condition. Therefore, it is in line with the definition of a Medium VRF.</p>
<p>FERC VRF G1 Discussion Guideline 1- Consistency with Blackout Report</p>	<p>This VRF is in line with the identified areas from the FERC list of critical areas in the Final Blackout Report.</p>
<p>FERC VRF G2 Discussion Guideline 2- Consistency within a Reliability Standard</p>	<p>The assignment of Medium VRF is consistent with the VRF assignments for other requirements in the proposed Reliability Standard. This requirement has only a main VRF and no different sub-requirement VRFs.</p>
<p>FERC VRF G3 Discussion Guideline 3- Consistency among Reliability Standards</p>	<p>This VRF is in line with other VRFs that address similar reliability goals in different Reliability Standards.</p>
<p>FERC VRF G4 Discussion Guideline 4- Consistency with NERC Definitions of VRFs</p>	<p>This VRF is in line with the definition of a medium VRF requirement per the criteria filed with FERC as part of the ERO’s Sanctions Guidelines.</p>
<p>FERC VRF G5 Discussion Guideline 5- Treatment of Requirements that Co-mingle More than One Obligation</p>	<p>This requirement does not co-mingle a higher risk reliability objective and a lesser risk reliability objective.</p>

VSLs for PRC-030-1, Requirement R4

Lower	Moderate	High	Severe
The responsible entity implemented, but failed to update a CAP, when actions or timetables changed, in accordance with Requirement R4.	N/A	N/A	The responsible entity failed to implement a CAP in accordance with Requirement R4.

VSL Justifications for PRC-030-1, Requirement R4

FERC VSL G1 Violation Severity Level Assignments Should Not Have the Unintended Consequence of Lowering the Current Level of Compliance	The requirement is new. Therefore, the proposed VSLs do not have the unintended consequence of lowering the level of compliance.
FERC VSL G2 Violation Severity Level Assignments Should Ensure Uniformity and Consistency in the Determination of Penalties <u>Guideline 2a</u> : The Single Violation Severity Level Assignment Category for "Binary" Requirements Is Not Consistent <u>Guideline 2b</u> : Violation Severity Level Assignments that Contain Ambiguous Language	The proposed VSLs are not binary and do not use any ambiguous terminology, thereby supporting uniformity and consistency in the determination of similar penalties for similar violations.
FERC VSL G3	The proposed VSLs use the same terminology as used in the associated requirement and are, therefore,

VSL Justifications for PRC-030-1, Requirement R4

<p>Violation Severity Level Assignment Should Be Consistent with the Corresponding Requirement</p>	<p>consistent with the 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>Each VSL is based on a single violation and not cumulative violations.</p>