

Comment Form — 2nd Draft of Relay Loadability Standard PRC-023

Please use this form to submit comments on the proposed Relay Loadability standard. Comments must be submitted by **February 7, 2007**. You may submit the completed form by e-mail to sarcomm@nerc.com with "**Relay Loadability**" in the subject line. If you have questions, please contact Richard Schneider at richard.schneider@nerc.net or by telephone at 609-452-8060.

Individual Commenter Information		
(Complete this page for comments from one organization or individual.)		
Name:		
Organization:		
Telephone:		
E-mail:		
NERC Region	<input type="checkbox"/>	Registered Ballot Body Segment
<input type="checkbox"/> ERCOT	<input type="checkbox"/>	1 — Transmission Owners
<input type="checkbox"/> FRCC	<input type="checkbox"/>	2 — RTOs and ISOs
<input type="checkbox"/> MRO	<input type="checkbox"/>	3 — Load-serving Entities
<input type="checkbox"/> NPCC	<input type="checkbox"/>	4 — Transmission-dependent Utilities
<input type="checkbox"/> RFC	<input type="checkbox"/>	5 — Electric Generators
<input type="checkbox"/> SERC	<input type="checkbox"/>	6 — Electricity Brokers, Aggregators, and Marketers
<input type="checkbox"/> SPP	<input type="checkbox"/>	7 — Large Electricity End Users
<input type="checkbox"/> WECC	<input type="checkbox"/>	8 — Small Electricity End Users
<input type="checkbox"/> NA – Not Applicable	<input type="checkbox"/>	9 — Federal, State, Provincial Regulatory or other Government Entities
	<input type="checkbox"/>	10 - Regional Reliability Organizations; Regional Entities

Background Information

The Relay Loadability standard was posted for a 45-day public comment period from August 16 through September 29, 2006. The standard and implementation plan were modified in response to the comments.

In addition, a new version of the Reliability Standards Development Procedure was approved by the NERC Board of Trustees on November 1, 2006. The drafting team made the following changes to the standard to bring it into conformance with the revised procedure or other changes needed to conform to the ERO Rules of Procedure:

- **Mitigation Time Horizons**

The ERO Rules of Procedure include the use of "Mitigation Time Horizons" as one element used to determine the size of sanctions. The drafting team used the following guidelines in developing Mitigation Time Horizons for each requirement:

- **Long-term Planning:** a planning horizon of one year or longer.
- **Operations Planning:** operating and resource plans from day-ahead up to and including seasonal.
- **Same-day Operations:** routine actions required within the time frame of a day, but not real-time.
- **Real-time Operations:** actions required within one hour or less to preserve the reliability of the Bulk Electric System.
- **Operations Assessment:** follow-up evaluations and reporting of real-time operations.

- **RRO as Responsible Entity**

The drafting team modified all requirements to eliminate the Regional Reliability Organization as the responsible entity, and replaced these references with the appropriate entity.

- **Levels of Non-compliance Versus Violation Severity Levels**

The drafting team deleted "levels of non-compliance" and added "violation severity levels" to comply with the revised Reliability Standard Development Procedure. Compliance personnel assisted the drafting team in using the following criteria from the procedure to establish violation severity levels:

- **Lower:** mostly compliant with minor exceptions — The responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more minor details. Equivalent score: 95% to 99% compliant.
- **Moderate:** mostly compliant with significant exceptions — The responsible entity is mostly compliant with and meets the intent of the requirement but is deficient with respect to one or more significant elements. Equivalent score: 85% to 94% compliant.
- **High:** marginal performance or results — The responsible entity has only partially achieved the reliability objective of the requirement and is missing one or more significant elements. Equivalent score: 70% to 84% compliant.

- **Severe:** poor performance or results — The responsible entity has failed to meet the reliability objective of the requirement. Equivalent score: less than 70% compliant.

- **Associated Documents**
The drafting team added a section “F” to the standard called, References.

You do not have to answer all questions.

Insert a "check" mark in the appropriate boxes by double-clicking the gray areas.

1. The draft standard specifies that the Reliability Coordinator is to determine "which of the facilities in its Reliability Coordinator Area are critical to the reliability of the Bulk Electric System" for the purpose of application of this standard to 100 kV–200 kV circuits. Do you agree that the Reliability Coordinator is the proper functional entity for this requirement?

Yes

No

Comments: The standard does not appear to require the Reliability Coordinator to do this in conjunction with the other Applicable Entities. R3.1.1 states This process shall include coordination with adjoining Reliability Coordinator(s). The MRO recommends that this requirement be expanded to include the other Applicable Entities listed in this standard.

The critical facilities list required by this standard, should be coordinated with the critical facilities lists required by other standards in as much as it it possible.

2. The Relay Loadability Drafting Team added a Mitigation Time Horizon for each requirement.

Do you agree with the Mitigation Time Horizon for each requirement in the proposed standard? If not, please identify any requirement with a time horizon you feel is incorrect.

I agree with the proposed Mitigation Time Horizons.

I do not agree with the following Mitigation Time Horizons.

Comments: Mitigation Time Horizons are described near the top of this comment form.

The description of the Mitigation Time Horizons states The ERO Rules of Procedure include the use of mitigation time horizons as one element used to determine the size of sanctions.

Can the drafting team inform the Registered Ballot Body where the ERO definition of Mitigation Time Horizons can be found along with documentation describing how the mitigation time horizons will be used in determining penalties. Mitigation Time Horizons are not listed as a Performance Element of a Reliability Standard in the Reliability Standards Development Procedure Version 6 adopted by the NERC BOT on November 1, 2006. As such, it does not seem appropriate to include them in any Reliability Standards.

The comment form description of Mitigation Time Horizons further states The drafting team used the following guidelines in developing mitigation time horizons for each requirement, whereas the final statement in the description of the Violation Risk Factors states The following categories of violation risk factors were approved with the latest version of the Reliability Standards Development Procedure. Like the Violation Risk Factors, the categories of Mitigation Time Horizons should also be approved and incorporated into the Reliability Standards Development Procedure in order to ensure that the definitions are consistent for all NERC Reliability Standards.

The MRO cannot vote to approve a standard that includes Mitigation Time Horizons until the drafting team can produce ERO documented definitions and the documented manner in which the Mitigation Time Horizons will be used to determine penalties.

3. The latest version of the Reliability Standards Development Procedure requires that each standard include "Violation Severity Levels" rather than "levels of non-compliance." "Violation Severity Levels" identify how badly an entity violated each requirement, and are not linked to the reliability-related impact of violating a requirement. (The reliability-related impact of violating a requirement is now identified in the "Violation Risk Factor" appended to each requirement.)

Do you agree with the Violation Severity Levels for each of the proposed standards? If you disagree with any of the Violation Severity Levels for the proposed standards, please identify the standard and requirement you feel has an incorrect Violation Severity Level.

I agree with the Violation Severity Levels.

I do not agree with the following Violation Severity Levels.

Comments: The MRO does not agree with the proposed Violation Severity Levels due to the fact that they have not been fully vetted in the Standards Development Process. A process which includes being held up for public comment, scrutiny and balloting.

4. Are you aware any requirement in this standard that has an unnecessary adverse impact on energy markets? Please identify the requirement and its adverse impact here.

No unnecessary adverse impacts

Unnecessary adverse impact on markets

5. One previous NERC activity and one ongoing activity, both outside the compliance process, have addressed relay loadability. The previous activity has essentially been completed. It was based on NERC Recommendation 8a (resulting from the investigation into the August 14, 2003 blackout) and addressed zone 3 relays on transmission lines, 200 kV and above. The ongoing activity, "Protection System Review Program — Beyond Zone 3" addresses all other load-responsive relays at 200 kV and above, and on "operationally significant circuits, 100 kV–200 kV", and should be essentially completed by 12/31/08. Both activities were approved in detail by the NERC Planning Committee and by the NERC Board of Trustees. The requirements of PRC-023, together with the added information in the PRC-023 Reference Document, were drafted from the specifications of these activities.

Transmission Owners, applicable Generator Owners, and applicable Distribution Providers, collectively referred to in the activities cited above as "Transmission Protection System Owners," or "TPSOs," have certified, through their respective Regions, that they have reviewed all of their load responsive relays in accordance with the specifications in those activities, and, in the case of the previous activity, have cited that they have completed the changes necessary to conform to those specifications. These certifications have been reviewed both by the respective Regions and by the NERC System Protection and Control Task Force; summary reports of these reviews have been approved by the NERC Planning Committee and have been presented to the

NERC Board of Trustees. These summary reports may be found at www.nerc.com, under Committees — Planning Committee — System Protection and Control Task Force — Related Files.

The draft implementation plan for PRC-023 proposes that the standard will be implemented following applicable regulatory approvals and the conclusion of the ongoing activity cited above. Based on these observations, the standard drafting team does not feel that PRC-023 will require field testing. Do you think that a field test period for PRC-023 is necessary?

No field testing is necessary

Field testing is necessary

Comments: The MRO believes that field testing is necessary so as to gauge if the time being allotted to the operators to respond is appropriate and to make sure the equipment is reasonably protected.

6. If you have any other comments on this set of standards or its implementation plan that you have not already submitted above, please provide them here.

No additional comments

Comments: Several companies in the MRO use line ratings of other than 4 hours. The MRO recommends the addition of a conversion factor for those companies using emergency ratings not consistent with what is stated in the standard. In lieu of a conversion factor, a standard line rating issued by NERC would be acceptable.

The MRO is concerned about what appears to be the forced assumption of risk with respect to overload levels and time durations that said overloads must be held. The MRO believes that it should be up to the Transmission Owner to determine the amount of risk they are willing to assume based on their own risk analysis.

In the Measures section under M3, the applicable entities listed for which the list of critical facilities must be provided to is not consistent with the applicable entities listed in R3 which M3 refers.

In the Violation Severity section, under violations for TOs, GOs, and DPs the definition of a Severe Violation is not complete.

The MRO is concerned that this standard is removing some inherent thermal overload protection from the bulk electric system. In its response to comments the SAR drafting team stated - The emergency loadability of equipment should be reflected in the equipment ratings, and the fault protective relay should not be responsible for relieving emergency loading concerns. Controlling of emergency load should be left to system operators. - The fact is that fault protection also provides, admittedly crude, overload protection and MRO believes there is increased inherent risk to the bulk electric system in the sentiment of the SAR drafting team's second statement. In NERC Recommendation 8a it is stated - It is not practical to expect operators will always be able to analyze a massive, complex system failure and to take the appropriate corrective actions in a matter of a few minutes - and yet this is what this standard is expecting. Something like 400 transmission circuits tripped during August 14 blackout with no significant thermal overload damage. If the requirements of this standard had been met prior to August 14, 2003, would equipment damage have further delayed restoration? The MRO believes that a risk analysis should be conducted before implementing this standard.

The MRO believes this draft of the standard is too prescriptive. The equipment owner should be deciding the appropriate level of risk with regard to thermal overload and loss of life. The SDT should not decide the level of risk for the transmission owners. The standard is a good guide but too prescriptive.

If during the largest blackout in US history, the existing system, group of standards, and relay set points separated the system in time to prevent significant equipment damage so that the system could be restored virtually without incident; then implications of changing relay setting philosophy should be studied carefully. For example, what is the time overload characteristic of wave traps compared to line conductors? How will system operators know when equipment damage is imminent in order to take that equipment out of service on time?

The effective dates for lines operated at 100kV to 200 kV and transformers, as designated by the regional reliability organization as critical to the reliability of the electric system in the region should be one year after the regional reliability organization has made this designation. It would seem reasonable that owners should not be expected to even start review of the 100kV OS circuits until the Region has defined the specific circuits. A date that the RROs are required to make this designation should be recommended by the SDT and added to the implementation plan. 2. Regarding the implementation plan, one would have expected an implementation time frame of the stated durations strictly for identifying initial areas of non-compliance, and defining a plan to become compliant, with subsequent dates provided for becoming fully compliant. Eleven months after establishment of the standard is not a reasonable time frame for implementing all setting changes, and certainly not for design changes if required. It would appear that NERC is depending on all participants to have proceeded with reviews and actions as indicated in the initial zone 3 exercise. Perhaps regions/owners had every right to not proceed until the proposed standard is in force. Perhaps many of the efforts have proceeded, but should the proposed standard require that they all did?

The MRO feels that the more appropriate violation risk factor is medium because implementing this standard will not prevent the initiation of a blackout event.

The MRO has a concern with the 15 percent additional margin applied to the facility rating. This can be considered a negative margin with regard to protecting against thermal overload. The SAR indicates that protection should not unnecessarily limit the loadability of the system, it does not state that protection should be sacrificed or removed. This approach is outside the intention of the SAR. Again it should be up to the equipment owner to assess the appropriate overloading philosophy.

Does this standard expose the TO etc. to legal risk if there is damage to the public, violating vertical clearances for example?

If we are relying on the operator to prevent overloads, are the associated metering, communication, and human machine interface systems, (not to mention the human involvement, designed and maintained with equivalent reliability to the protection system? Also, the SCADA system may be down therefore the operator may not be able to assume the role of preventing equipment damage.

There should be a classification that allows the transmission owners with stability limited lines to perform studies which allow relay settings to identify the conditions the relay will actual see under extreme conditions. The .85 p.u. voltage and power factor angle of 30 degrees criteria may not be appropriate for all cases.

This standard removes the option of using zone three relays to provide more reliable system operation a. For internal lines – it may not be possible to set an out of step

relay to block tripping on a true out of step condition. Moving blinders in may make it impossible to detect fast moving swings. b. On interties: It may not be possible to set relays to detect the fastest swing to be able to trip the tie – as a consequence, undesired tripping of other lines may occur.

This standard seems to be precluding the concept of TOs etc. applying to use other settings than prescribed by this standard as was the case with zone 3 issue. A TO should be allowed to use relay settings other than based on the prescribed criteria if it can be demonstrated there is no benefit to applying the prescribed criteria in a given situation but there is, in fact, a negative impact on the TO's system.

In M1 and M2 it should be further clarified what is meant by evidence.

The draft standard states the "The relay loadability reliability standard has been specifically developed to not interfere with system operator actions, while allowing for short-term overloads, with sufficient margin to allow for inaccuracies in the relays and instrument transformers." But for what scenario or number of contingencies is this statement accurate? If a study is conducted to show that the 150% setting for zone 3 is not necessary, and the Transmission Owner wants to protect equipment with a more appropriate trip setting of say 125 percent, would the Transmission Owner have to prove that the setting is good for Category C for example; the Category C is listed in our question because the Transmission Owner typically is required only to plan for Category D only when the risk and consequences indicates there is a need to plan for such an event? The Transmission Owner can always come up with scenarios of contingencies that will trip a line or transformer, even at the 150 percent setting and not allow the operator time to react. Should the four hour rating be replaced with a one hour rating given that the four hour rating may be used to allow operator action rather than require relay or automatic control actions to remove a disturbance in a more timely fashion?