

May 25, 2011

TO: TRANSMISSION OWNERS

Voluntary Data Request for NERC Reliability Metric ALR1-5 System Voltage Performance

On behalf of the Operating Committee and the Planning Committee, we are asking for your participation in an industry-wide program to establish a set of Adequate Level of Reliability (ALR) metrics across the North American bulk power system. The Reliability Metrics Working Group (RMWG) is spearheading this effort.¹

The RMWG has organized a pilot project to provide a measure of the capability of reactive resources to support the bulk transmission system. Since voltage control is primarily a local responsibility, the Reliability Coordinators (RCs) have provided the key buses/nodes operated at 345 kV and above in their areas. Your company owns one or more of the key buses/nodes identified by your RC. To meet the objectives of this pilot project, we are asking for the following data on a quarterly basis beginning October 1, 2011.


- *Record the number of minutes the actual voltage level is outside of a predetermined range around nominal.*

A detailed description and reporting template of the reliability metric ALR1-5 is described in Attachment 1. Transmission Owners (TOs) can designate an organization to submit data and information on their behalf. Data reported by the participating TOs or the designated organizations will be aggregated so that no entity can be identified. Indeed, anonymity is one of the cornerstones of this program.

The RMWG also examined the possibility of using the existing ICCP (Inter-control Center Communications Protocol) infrastructure or channelling this data through the SAFNR II (Situation Awareness for FERC, NERC, and the Regional Entities, Phase II) initiative. Since the current NERC ICCP does not support voltage as a data type, the use of ICCP infrastructure is not possible at this time. As for SAFNR II, this alternative has been ruled out because Canadian entities are not participants of this initiative.

The RMWG would like to emphasize that this is a pilot project. As such, some data processing (e.g. quality codes) is inevitable. The asset owners are better qualified to provide the necessary engineering judgement to collect this data. Furthermore, any results will need to be vetted by the individual asset owners before reporting is finalized. As such, the RMWG appreciates the

¹ http://www.nerc.com/docs/pc/rmwg/RMWG_Metric_Report-09-08-09.pdf.



time and effort required and thanks the asset owners for their contributions to this project in assessing how operational performance matches planning expectations.

The RMWG will be contacting you shortly on the details of this metric and to answer any questions you may have.

We sincerely hope you will help us in achieving the objectives of this industry-wide undertaking.

Yours truly,

Sam Holeman

Sam Holeman, Chair, Operating Committee

Tom Burgess

Tom Burgess, Chair, Planning Committee

CC: Operating Committee
Planning Committee
Reliability Coordinators Working Group
Reliability Metrics Working Group

Attachment 1 – ALR1-5 Metric Description and Reporting Template

ALR1-5 System Voltage Performance						
Metric Number	ALR1-5					
Submittal Date	May 8, 2009					
Sponsor Group	Reliability Metrics Working Group (RMWG)					
Short Title	Transmission System Voltage Profile					
Metric Description	Measure the transmission system voltage performance over time					
Purpose	Measure the transmission system voltage performance (either absolute or per unit of a nominal value) over time which provides an indication of the reactive capability applied to the transmission system. Record the amount of time that system voltage is outside of a predetermined band around nominal.					
How will it be suited to indicate performance?	Measuring the transmission system voltage level over time provides an indication of the capability of reactive resources (both static and dynamic) applied to the transmission system. Wide fluctuations in voltage levels from off-peak to on-peak load cycles may indicate inadequate reactive resources necessary to maintain stable voltage profiles.					
Formula	At selected transmission system nodes/buses, record one-minute average node/bus voltage for positive sequence, phase-to-phase RMS (root-mean-square) value. Record the number of minutes the actual voltage level is outside of a predetermined range around nominal.					
Time Horizon	Real time, operating horizon					
Metric Start Time or Baseline	October 1, 2011 or when data is first available					
Data Collection Interval and Roll Up	Voltage readings are recorded in one minute interval.					
Ease of Collection	RMWG will work with all the entities involved, including the Transmission Owners, Transmission Operators, and Reliability Coordinators to ensure the applicable voltage bandwidths are specified and key nodes/buses are designated to monitor. Data will be collected through EMS and/or SCADA system readings and archived for reporting on a quarterly basis.					
Aggregation	Total minutes of node/bus voltages outside of the range of nominal are aggregated by quarter and voltage class.					
Linkage to NERC Standard	VAR-001					
Linkage to Data Source	EMS and/or SCADA system data readily available. Recording and storage system may be required but should be obtainable.					
Need for Validation or Pilot	Data pilot and validation are required.					
Data Submitting Entity	Transmission Owners (TOs) or designated reporting organizations					
SMART Rating	Total Score	Specific/Simple	Measurable	Attainable	Relevant	Tangible/Timely
	14	3	3	3	3	2
Reporting						
Style (look and feel)	Line graphs of actual values or deviations from nominal. Bar charts for total time outside of a range of nominal.					
Publications and Documentation	This metric will be included in NERC RMWG reports					

Reliability Metric ALR1-5 System Voltage Performance Reporting Template

ALR1-5 System Voltage Performance				
Reporting Transmission Owner or Designated Organization:				
Reporting Quarter:				
Reporting Year:				
<p><u>Submission Instructions:</u></p> <p>(1) Please use this template to send data files to NERC at metrics@nerc.net by the end of the month following each calendar quarter. The first quarterly data submittal is requested on October 1, 2011. The due date for the first quarterly submittal is January 31, 2012.</p> <p>(2) The definition and purpose of metric ALR1-5 are available at http://www.nerc.com/docs/pc/rmwg/ALR1-5.pdf.</p> <p>(3) The actual voltage in the metric refers to one-minute average node/bus voltage for positive sequence, phase-to-phase RMS (root-mean-square) value.</p>				
System Voltage Performance				
	345 kV	500 kV	765 kV	Comments
Total number of key buses/nodes being monitored				
Total number of minutes the actual voltage level is above the predetermined upper threshold				
Total number of minutes the actual voltage level is below the predetermined lower threshold				