

## ALR6-13 Automatic AC Transmission Outages Initiated by Failed AC Substation Equipment

**Metric Number** ALR6-13

**Submittal Date** March 31, 2010

**Sponsor Group (OC,  
PC or subgroup  
name)** NERC

**Short Title** AC Transmission Outages – Failed AC Substation Equipment

**Metric Description** Normalized count (on a per circuit basis) of 200kV and above AC Transmission Element outages (i.e. TADS momentary and sustained Automatic Outages) that were initiated by failed AC substation equipment. This metric will use the TADS definition of “*Failed AC Substation Equipment*”, which states “Automatic Outages caused by the failure of AC Substation; i.e., equipment “inside the substation fence” including Transformers and circuit breakers but excluding Protection System equipment. The TADS definition of “*AC Substation*” states “An AC Substation includes the circuit breakers and disconnect switches which define the boundaries of an AC Circuit, as well as other facilities such as surge arrestors, buses, transformers, wave traps, motorized devices, grounding switches, and shunt capacitors and reactors. Series compensation (capacitors and reactors) is part of the AC Substation if it is not part of the AC Circuit. See the explanation in the definition of “AC Circuit.” Protection System equipment is excluded.” *Transmission Elements* in this metric include AC Circuits and Transformers.

**Purpose** The purpose of this metric is to gauge failed substation equipment as one of many factors in the performance of transmission system Automatic Outages.

**How will it be suited to indicate performance?** The normalized count provides an indication of the relative substation equipment performance, specifically the AC Transmission Element outage rate for momentary and sustained outages initiated by AC substation equipment. AC substation equipment is one of the highest causes for initiating automatic transmission system outages.

**Formula** Automatic AC Outages initiated by Failed AC Substation Equipment = Number of Momentary and Sustained Automatic AC Element Outages initiated by Failed AC Substation Equipment / Total Number of AC Elements (AC Circuits or Transformers).  
For example on a NERC-wide basis the 2008 calculation = 328 / (6605 AC Circuits) = 0.05 outages per circuit. (Preliminary 2009 calculation = 305 / (6756.7 AC Circuits) = 0.05 outages per circuit).

**Metric Start Time** Year 2008 and 2009 TADS data initially and eventually a 5 year rolling

<b>or Baseline</b>	average.												
<b>Time Horizon</b>	Historical time frame												
<b>Data Collection Interval and Roll Up</b>	The TADS data provides the total number of automatic transmission system outages and the number of outages initiated by Failed AC Substation Equipment <sup>1</sup> for 200 kV and above.												
<b>Ease of Collection</b>	Data is already being collected via the NERC TADS process.												
<b>Aggregation</b>	Results could be presented by normalized counts on a Regional Entity basis, Interconnection basis, or NERC wide basis.												
<b>Linkage to NERC Standard</b>	None												
<b>Linkage to Data Source</b>	The NERC TADS definitions and data.												
<b>Need for Validation or Pilot</b>	No, the data and results are already being reported via the TADS process.												
<b>Data Submitting Entity</b>	Transmission Owners via TADS procedures.												
<b>SMART Rating</b>	<table border="1"> <thead> <tr> <th>Total Score</th> <th>Specific/Simple</th> <th>Measurable</th> <th>Attainable</th> <th>Relevant</th> <th>Tangible/Timely</th> </tr> </thead> <tbody> <tr> <td>14</td> <td>3</td> <td>3</td> <td>3</td> <td>3</td> <td>2</td> </tr> </tbody> </table>	Total Score	Specific/Simple	Measurable	Attainable	Relevant	Tangible/Timely	14	3	3	3	3	2
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## Reporting

<b>Style (look and feel)</b>	Bar charts
<b>Publications and Documentation</b>	The statistics needed to compute this ALR metric are currently shown in the TADS reports. This metric may be included in the annual NERC LTRA report, at the discretion of the NERC Planning Committee.

<sup>1</sup> TADS Data Reporting Instruction Manual can be viewed at [http://www.nerc.com/docs/pc/tadstf/Ph\\_I\\_Data\\_Reporting\\_Instr\\_Manual\\_112108.pdf](http://www.nerc.com/docs/pc/tadstf/Ph_I_Data_Reporting_Instr_Manual_112108.pdf).