

## Meeting NERC Requirements for Oscillography and Disturbance Monitoring by Collecting Data From Relays

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### Abstract

NERC and the regional reliability councils have mandated electric utilities monitor their power systems at critical locations. The monitoring systems are to be phased into service by the year 2010. Tarigma and SEL have been working with AEP to provide an alternative to adding traditional monitoring equipment to meet the new requirements. This paper discusses the collection of event and synchrophasor data from relays to satisfy the NERC requirements for fault recording and disturbance monitoring. Event data from relays on the AEP system are presently retrieved, stored locally, and then moved to several regional server sites on the AEP corporate network. This same approach will be taken with synchrophasors and will allow AEP to use this data to meet the disturbance requirements mandated by NERC.

Combining these two approaches provides the means for AEP to save millions of dollars by adding no new digital fault recorders (DFRs) while meeting NERC requirements. This cost-effective means for capturing event and disturbance data would typically justify the need for a DFR. Because this approach is very low cost, it justifies the monitoring of smaller stations that would not have normally been considered with the traditional DFR option.

This paper addresses the challenges of retrieving the data from relays in a way to meet the NERC requirements. The economics of the traditional approach of collecting data versus using data captured by relays is contrasted. Techniques for storing the data locally and moving it efficiently and securely to corporate servers for engineering access is also examined.

### Discussion Points

1. The reliability of the electrical power grid is scrutinized to a higher degree than it ever has been. The mandate of utilities to monitor certain critical areas of their power systems is a direct result of the focus on the performance and the reliability of the electric power grid.
2. To meet the mandates, most utilities are increasing their monitoring capability with the traditional DFR approach. AEP examined and began implementing a much more innovative approach by using the data captured by modern digital relays.
3. Although DFR prices have decreased over time, installing a DFR is very labor intensive. The rising cost of labor has made the installation of DFRs very costly.
4. This new technique, using relays to capture the event and disturbance data, compared with the traditional approach indicates a cost reduction in the range of 85 percent.
5. Once the collection process is in place, a wealth of additional data held within digital relays, meters, and controls can be retrieved. This data can be translated into actionable information.

to respond to grid component needs. The system can predict trends and potential failures, determine the performance of various grid elements, and alert users to precise locations, times and nature of transmission, distribution station, or circuit problems.

### **Short Paragraph**

The Energy Policy Act of 2005 established mandatory reliability standards for the bulk electric power system. Several of these new standards address how utilities are to monitor their power systems. Most utilities have found they have to add costly new equipment to comply.

This paper looks at a new approach taken by AEP, one of the largest electric utilities in the United States. AEP has found they can meet the NERC requirements by retrieving the data from existing relays at roughly 20% of the cost of the more traditional approach of adding standalone equipment. This new approach will save AEP millions of dollars as they move toward compliance.

Challenges of retrieving the data from relays in a way that meets the NERC requirements are reviewed. Techniques for storing the data locally and then moving the data efficiently, securely and automatically to corporate servers for engineering access will also be examined.