

SWITCHING SAFETY AND RELIABILITY (SSR)



PROJECT HIGHLIGHTS

- **Increase** safety and reliability
- Evaluate the use of **new technology**
- Promote sharing of **lessons learned and best practices**
- Increase worker productivity and **reduce switching errors**
- Capture and leverage data from **events and near misses**
- Promote the use of good **human performance (HP)** practices

Background, Objectives, and New Learnings

Safety and reliability of the power grid are at the top of every utility's list of concerns. To meet this challenge, personnel who prepare and review switching orders or perform switching in the field must be vigilant and properly trained to avoid errors which may result in undesired switching events. These events must be avoided since they may create hazardous situations for utility personnel and the public, and can result in avoidable power interruptions, injuries, and/or fatalities.

A non-punitive method for reporting near misses allows for them to be reviewed as learning opportunities. This, in turn, allows for increasing knowledge, skills, and abilities to aid in identifying the error-likely situations that need to be avoided.

Key research objectives include:

- Discover and address weak links in switching processes
- Identify safe switching work procedures
- Identify conditions where failures may have the most consequences
- Identify improvements to help systems fail safely vs. unwanted events and outages
- Identify and address training needs
- Monitor new industry trends and technological developments (ex: robotics, augmented reality, etc.)
- Sharing lessons learned.

New learnings are expected around training materials needed to improve switching safety, evaluating new technologies to determine if their use could improve switching safety, and enabling process assessments and engineering improvements to improve safety.

Benefits

Improvements to worker safety and reliability, reductions in unscheduled outages, and enhanced operating efficiency and compliance with regulatory requirements may be achieved through this project's research of methodologies, human performance issues, and technological advances related to operational switching.

Although some utilities have achieved very low error rates, others can benefit from further improvements and EPRI research. Low error rates may not be a true indicator of success. Latent switching errors may exist that have yet to be discovered. Working together, those latent errors can be discovered and reduced.

Additionally, this project will help the public by focusing on electric reliability, health, and safety aspects. Switching errors can create unexpected power interruptions to customers and hazardous situations for utility personnel and the public.

Project Approach and Summary

This project traditionally has three main avenues for technology transfer, which includes: 1) hosting meetings (virtual or face-to-face), 2) creating training material, and 3) developing technical reports on various switching and safety-related topics.

Feedback from project funders is critical to aligning tasks with priorities for both short- and long-term tasks.

Deliverables

The expected deliverables for this project may include:

- Annual EPRI Switching Safety and Reliability Conference, workshop(s), and routine meetings (usually quarterly)
- Training material development (videos, etc.)
- Review of switching procedures, orders, and instructions from a human performance perspective
- Other technical reports and reference material (ex: SSR Field Guide & Reference Book, etc.)

Price of Project

The price of participation is a function of metrics as measured by transmission capacity. The price range will be **\$15,000 to \$30,000**.

The project qualifies for co-funding or self-directed funding (SDF).

Project Status and Schedule

This is an annual project that runs from January 1 to December 31 each year.

Who Should Join

The information applies to control operators, engineers, field staff and other utility staff seeking to advance their education and increase their knowledge of various Switching Safety and Reliability topics.

Contact Information

For more information, contact the EPRI Customer Assistance Center at 800.313.3774 (askepri@epri.com).

Technical Contacts

To join, contact a Transmission and Substations Technical Advisor:

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