EPRI

2024

AT A GLANCE

Principles and Practices of Underground Transmission

Program 36, Project 36.006

Research Value

- Improved underground transmission system design.
- Improved cable project execution.
- Retention and/or transfer of institutional knowledge.

Member Benefits

This project intends to provide resources and technical support to current and future cable engineers. Participants may be better equipped with captured knowledge, transferred technologies, and educational materials, resulting in more reliable and cost-effective transmission cable systems. Utility engineers can apply the results of this project by participating in educational sessions while interacting with industry subject matter experts and other experienced utility engineers. For example:

- The educational workshops and workshop proceedings can be used to equip utility engineers and improve work productivity for long-term system performance.
- The updated Underground Transmission Systems Reference Book and Increased Power Flow Guidebook can be used to validate system designs, improve system operation and maintenance, and increase or optimize ratings of transmission cable lines.
- The fault location application guide can aid utility engineers to apply proper location detection techniques to efficiently locate a fault and reduce outage time.

Reliability of an underground transmission system depends on highly skilled utility engineers working throughout the life cycle of design, construction, installation, operation, and maintenance of the system. It is essential to retain cable system institutional knowledge and support the next generation of technical leaders. The project addresses the following needs with knowledge, methods, and tools:

- Knowledge management of EPRI research and development project results and industry experiences.
- Investigation results of advanced tools and techniques for effective cable system management.
- Knowledge transfer on various topics covering design, construction, installation, operation, or maintenance of both extruded and laminar dielectric cable systems.

This project focuses on knowledge management in underground transmission. It provides updates of the EPRI Underground Transmission Systems Reference Book and Increased Power Flow Guidebook. It provides semiannual educational sessions and reports investigation results on various topics related to design, installation, operation, and maintenance of underground transmission systems.

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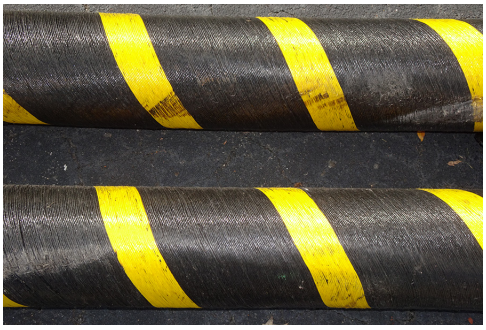
Research Highlights



Underground Transmission Education Workshops

- EPRI plans to hold educational workshops in conjunction with the Underground Transmission Task Force meetings, two times per year.
- Topics include design, construction, installation, operation, and maintenance of both extruded and laminar dielectric cable systems.
- Workshop proceedings will be made available.

EPRI Underground Transmission Systems Reference Book (The Green Book)

- The EPRI Underground Transmission Systems Reference Book (the Green Book) is a desk and field compendium on the general principles involved in planning, design, manufacturing, installation, testing, operation, and maintenance of underground transmission cable systems.
- The project team continuously updates the Green Book, focusing on one or two sections each year.

Increased Power Flow Guidebook (The Platinum Book)

This report will be continuously augmented with updated and additional materials on the state of the science and best practices for increasing and optimizing power flow through underground transmission cables and their associated circuit components.

Underground Cable Fault Location Reference and Application Guide

This report summarizes underground cable fault location methods and provides details in application of methods for cable systems.

For more information, contact:

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