

AT A GLANCE

Distribution Systems

Program 180



RESEARCH VALUE

- Enhance safety for utility workers and the public.
- Increase system resiliency and reliability, and reduce restoration time after major events
- Improve specifications and designs for new assets
- Reduce maintenance costs and proactively plan capital and maintenance budgets.
- Improve inspection capabilities with new technologies

MEMBER BENEFITS

- Provide guidance on design and performance of overhead structures
- Access to industry-references on underground distribution and automation
- Insights into leading grounding and arc flash practices
- Evaluate virtual inspection techniques for distribution automation assets
- Evaluate pole inspection technologies
- Understand how to apply data science techniques to distribution asset data

Grid modernization efforts are driving substantial change in how the distribution system is designed, constructed, maintained, and managed. At the same time, expectations of the reliability, resiliency, sustainability, and affordability of energy are continually shifting. Balancing these priorities can be a challenge for distribution asset owners, especially since the impact of today's decisions may be felt for decades to come.

The EPRI Distribution Systems Research team performs industry-leading R&D to enable and inform utilities to design and manage the distribution system more effectively. The research focuses on distribution assets across their entire life-cycle, from specification to removal.

EPRI T&D LABORATORIES

EPRI's Power Delivery laboratories provide unique capabilities to investigate distribution equipment. Researchers use these labs to perform failure analyses, technology evaluations, accelerated aging, and performance tests. The labs feature dedicated sites to test manhole events, full-scale distribution structures, impulse performance, drones, and many other topics. The sites are flexible so that researchers can develop custom tests to meet utility needs.



Key Activities for 2022

RESEARCH PORTFOLIO

Overhead Distribution

- Comprehensive structure design testing and analysis to improve overhead system performance, reliability, and resiliency
- Assessments of connectors, hardware, and components to improve specifications and reliability
- Evaluate online monitoring techniques using large-scale laboratory tests
- Updates on drone use, applications, and test results for distribution

Underground Distribution

- Testing of inspection and monitoring systems to improve predictive capability to proactively identify and resolve issues
- Expansion of the Underground Distribution Reference book to include content on grounding

Automation Assets

- Development of a DA Inspection and Maintenance field guide
- Continued laboratory testing of sensors, controls, and switching devices
- Testing to improve lightning and surge protection for DA assets
- Development of methods to perform virtual online monitoring of DA equipment

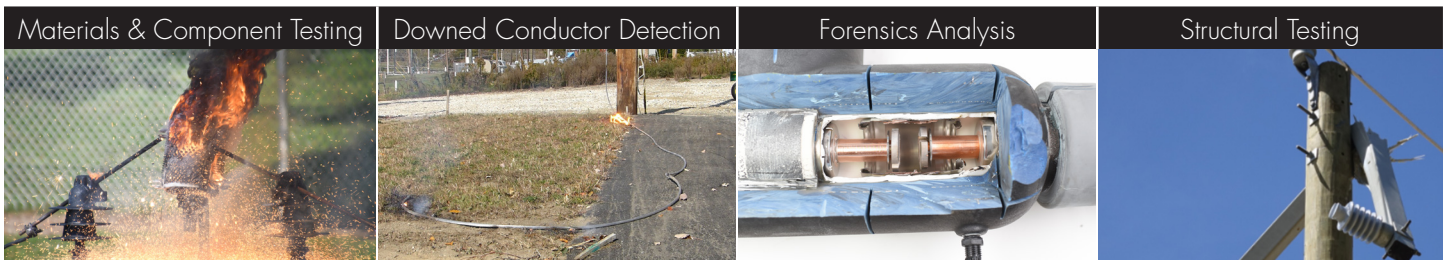
Distribution Safety and Work Practices

- Expansion of the arc flash guide to include considerations for battery systems
- Evaluation of methods to detect live downed conductors
- Testing to identify methods to reduce backfeed risks from DER

Asset and Reliability Analytics

- Developing metrics to better assess and evaluate equipment and system performance.
- Evaluating the effectiveness of synthetic data to train AI systems
- Investigating the application of emerging data science techniques such as artificial intelligence/machine learning.

SPECIAL TOPICS AND APPLICATIONS



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