

AT A GLANCE

Transmission & Distribution: Environmental Solutions

Program 51

Research Value

- Reduces costs for:
 - Right-of-way (ROW) maintenance
 - Management of utility pole and other assets
 - Management of mineral oil spill
 - Compliance of spill prevention, control, and countermeasure (SPCC) plans
- Improves power system reliability through:
 - Decreased potential for T&D outages from avian/animal interactions
 - Informed enhanced and emerging vegetation management leading practices
 - Reducing vulnerabilities and risks to substation reliability
- Reduces ecological and human health risks along T&D ROWs through:
 - Optimized vegetation management
 - Prevention of avian and other wildlife impacts
 - Prevention or remediation of soil and water contamination related to T&D activities
- Enhances T&D line permitting and regulatory compliance along ROWs and substations
- Helps utilities to attain strategic corporate goals by reducing financial risk as well as balancing the economic and environmental challenges of siting, constructing, and upgrading T&D infrastructure and ROWs

Electric transmission and distribution (T&D) systems are increasingly interrelated with the surrounding environment. As they design, construct, and operate T&D infrastructure, many utilities seek to minimize and mitigate environmental impacts and costs.

EPRI's research regarding T&D environmental issues (P51) is designed to help utilities reduce costs, increase reliability, and manage the environmental aspects of T&D infrastructure. The team conducts research on evaluating emergent technologies, protecting resources, managing environmental impacts, protecting human health, and informing permitting, regulatory compliance, corporate strategy, and social responsibility.

The program provides practical knowledge to help utilities manage the various environmental aspects associated with T&D assets and infrastructure. Specific research activities include:

- Evaluation of emergent technologies to optimize vegetation management efforts
- Experimental design and field trials for wildlife deterrents
- Field assessment of different vegetation management methods
- Studies on mitigation and remediation of chemicals of concern
- Analysis, modeling, and remediation of environmental issues in substations
- Laboratory assessment of the potential environmental impacts of utility poles and utility pole preservatives
- Development of tools for siting, restoration, and resource protection during construction and maintenance



Research Highlights



Vegetation Management and Remote Sensing (P51A)

- Field assessment of the value of Rights-of-Way as foraging resources for Bats
- Study on how to use LiDAR coupled with Satellite imagery to inform VM planning
- Review of Rights-of-Way pests: Monitoring, management, and movement



Wildlife Interaction with T&D Assets (P51B)

- Field demonstration of fogging methods to deter avian activity in substations and laboratory tests to determine if fogging increases the risk of flashover on insulating surfaces
- Assess durability and effectiveness of flight diverters compatible with drone installation on T&D lines



Environmental Aspects of Substations (P51C)

- Study the use of vegetative screen to reduce heat island and light pollution impacts from substations
- Provide a MOSES-MP v5.5 live training session
- Understand if nano dust can effectively coagulate mineral oil, natural and synthetic esters, and diesel fuel



Environmental Aspects of T&D Lines (P51D)

- Develop machine learning algorithms to aid the identification of cultural resources
- Laboratory tests to assess fate and transport of DCOI from treated wood poles in soil and groundwater
- Study considerations for incorporating climate change into infrastructure siting methodology



Strategic T&D Environmental Topics (P51E)

- Investigate robotic applications for environmental inspections in substations
- Collect industry experience on data management and data storage of compliance related documents

Supplemental Projects

- *Urban Pollinator Conservation and Multifunctional Site Design* ([3002028221](#))
- *Pollinator Responses to Vegetation Management Practices in Rights-of-Way* ([3002011786](#))
- *Data-Driven Evaluation of Animal Intrusion Issues in Substations* ([3002025743](#))
- *Assessment of Anthraquinone (AQ) wood pole treatment* ([3002030295](#))
- *Fire Characteristics of Midel 7131 Synthetic Ester Laboratory Testing (Phase 2)* ([3002030848](#))
- *Adsorptive Capacity and Retention Capabilities of a New Material Designed to Remove Dielectric Fluids from Water* ([3002031096](#))
- *Ester Dielectric Fluid Environmental Fate and Field Identification* ([3002031098](#))

EPRI Technical Contact

YAMILLE del VALLE, Program Manager, 704.595.2053, ydelvalle@epri.com

For more information, contact:

EPRI Customer Assistance Center
800.313.3774 • askepri@epri.com

3002031020

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EPRI

3420 Hillview Avenue, Palo Alto, California 94304-1338 USA • 650.855.2121 • www.epri.com

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