



## **Project 16-3: Best Practices to Mitigate Temporary Faults on Overhead Distribution Systems**

Final Report prepared December 2018; available @ [www.dstar.org](http://www.dstar.org)

### **Project Summary:**

New feeder distribution technologies are being developed to help mitigate temporary faults. These technologies utilize automatic switching principles to detect and interrupt faults, while automatically determining if the fault is temporary or permanent. This allows for fewer customer interruptions, better temporary fault identification, and fewer manual reclosing operations needed to be performed by linemen crews (which can lead to higher outage times).

DSTAR P16-3 summarizes current activities by DSTAR and non-DSTAR utility members across North America, highlighting best practices and lessons learned in mitigating temporary faults.

Key findings include:

- The top three causes of temporary faults are wildlife, vegetation, and lightning.
- Some form of cover or guard over leads/bushings was found to be the most effective way to mitigate temporary faults for overhead distribution systems.
- Lightning arresters are the best way to mitigate temporary faults caused by lightning.
- A tree trimming cycle between 2-7 years is the most common cycle observed across utilities with a tree trimming clearance of 6+ feet (both sides of the pole).
- The best strategies for using TripSavers/Fusesavers are: fast trip recloser overreaching downstream fuses, single-phase hydraulic recloser replacement, and on lateral lines.
- Using a “fuse blow” scheme behind three-phase reclosing devices and a “fuse save” scheme behind single-phase reclosing devices helps reduce temporary faults and the number of customers affected by them.
- Switching to a horizontal cross arm pole configuration and increasing conductor spacing helps prevent mid-span faults along long spans.
- Use of vibration-resistant conductor is better at preventing galloping in high wind locations (50-60mph) when compared to armor rods and vibration dampeners.
- Relay data and fault current limiters can be used to find temporary fault locations.
- Switching to a “fuse blow” scheme can assist in finding high fault locations on smaller circuits.

### **Who Should Use:**

Distribution Planners, Standards Engineers, Power Quality and Reliability Engineers

**Table of Contents:**

1	Executive Summary.....	2
2	Introduction.....	3
2.1	BACKGROUND .....	3
2.2	OBJECTIVE.....	3
2.3	REPORT ORGANIZATION.....	4
3	Survey.....	5
4	Interviews.....	7
5	Survey Analysis.....	8
5.1	FEEDER DESIGN AND OUTAGE DATA COLLECTION.....	8
5.2	CAUSES OF TEMPORARY FAULTS, PREVENTION, AND CURRENT MITIGATION TECHNIQUES.....	10
5.3	PROTECTION COORDINATION METHODS AND FUSE PHILOSOPHY.....	13
5.4	PROTECTIVE DEVICE UTILIZATION.....	18
6	Case Studies – Interviews.....	24
6.1	PIKE ENGINEERING, LLC.....	24
6.2	DUKE ENERGY, LLC.....	25
6.3	FEDERATED RURAL ELECTRIC ASSOCIATION.....	27
6.4	CITY OF ROCKY MOUNT, NORTH CAROLINA.....	28
6.5	WEC ENERGY GROUP: WE ENERGIES.....	28
6.6	FORT PIERCE UTILITIES AUTHORITY.....	29
7	Take-Aways.....	30
8	Appendix A: Survey Questions.....	31
9	Appendix B: Follow-Up Interview Questions.....	36
10	References.....	37

For the complete report on DSTAR Project 16.3: Best Practices to Mitigate Temporary Faults on Overhead Distribution Systems, visit [www.dstar.org](http://www.dstar.org).



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