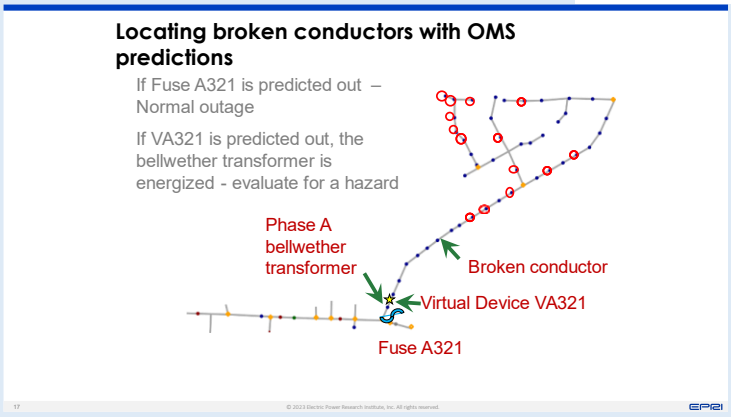
Supplemental Project Notice

ADAPTING AMI AND OMS TO IDENTIFY DOWN ENERGIZED CONDUCTORS



AMI outage patterns can identify many down energized conductor evebts.

PROJECT HIGHLIGHTS

- Implement methods to use AMI outage patterns to identify broken energized conductors has proven effective for many events.
- Multiple methods are adapted to match the outage reporting capabilities of the utility's AMI system.
- Demonstrate process that matches the utility's AMI system and code to integrate in utility product
- Enable improved public safety from downed conductors
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Background, Objectives, and New Learnings

Many utilities have been working towards or have deployed Advanced Metering Infrastructure (AMI) systems. Each utility's infrastructure and topology are unique. There are many different deployment strategies, and most are driven by the need to accurately collect data associated with electricity usage.

AMI systems primary business purpose is to automate the reading of power consumption by the use of communication enabled meters. All AMI deployments execute usage collection in a reliable format. But, the potential for additional use cases are also enabled by having a communicating meter at each customer premise. Previous EPRI research explored the opportunities and factors that enable a utility to realize operational benefits associated with AMI deployments as well as document the challenges with each approach. One of the prime use cases is to leverage AMI to identify energized downed conductors.

This project is planned to specifically focus on approaches to integrate AMI data with an Outage management system (OMS) to enable enhanced grid operations. Outage management systems analyze power outage messages from the AMI meters to predict which protection device is currently open creating an outage. When a down conductor event occurs, the OMS can be manipulated to identify a particular outage pattern that indicates the possibility of a down energized conductor and provides the location of the conductor break. EPRI intends to work with utilities to design, develop, and demonstrate approaches for automating AMI data integration and utilization for the use case of identifying down energized conductors which pose a significant public safety risk.

New Learnings

The project aims to provide the following new learnings:

- What is the most efficient method of analyzing AMI outages at each utility?
- What tools must be added or adapted to inform the operators of a potential down energized conductor.

Benefits

The primary benefit to the public is improved awareness of the utility of events involving down energized conductors. These AMI based algorithms can identify the very few outages that have the pattern of a down energized conductor.

Project Approach and Summary

EPRI intends to evaluate the capabilities of the distribution operations systems and AMI systems to support the identification of down energized conductors. EPRI plans to work with the utility to evaluate existing capabilities based on AMI deployment and document the integration needs with the operational systems (OMS, DMS, GIS) to support the identification of potential hazardous outage events.

EPRI intends to develop analytical methodologies and implementation approaches to integrate the identified use cases. EPRI intends to work with the utility to determine the detailed algorithms and presentation of the information.

EPRI intends to work with the utility to demonstrate the analytical methodology developed. The demonstration is planned to enable validation and refinement of the approach utilizing a utility data set. It is also expected to provide the opportunity to assess the value of the additional capability/knowledge to the distribution control center operator. If a utility is still in the process of installing their AMI system, a sample dataset is planned to be used to demonstrate the value of the application.

EPRI plans to develop a roadmap to integrate the new methodology into the distribution control center operations. This implementation is intended to assist the utility with integrating the new use cases with their internal systems. As part of this process, EPRI plans to work with the utility to identify any additional gaps that must be closed in order to fully integrate aim to work with project participants.

If the utility employs special operating philospies that involve operating without reclosing, the AMI identification of down conductors may also involve changing the AMI to OMS filtering strategy to take advantage of the increased speed that AMI can report outages when there are no reclosing events.

Deliverables

- Uncompiled code developed to enable the demonstration of down conductor identification.

The non-proprietary results of this work will be incorporated into EPRI's R&D Programs, and made available to the public, for purchase or otherwise.

Price of Project

The price to participate in the project is $50,000.

The project qualifies for Self-Directed Funding (SDF). Project funding may be spread over two years of the project.

Who Should Join

Utilities that are interested in improving methods to identify down energized conductors, utilizing their investment in AMI and improving public safety

Contact Information

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

Technical Contacts

Van Holsomback 980.312.4671(VHolsomback@epri.com)

Additional Contacts

Anne Haas at 704.595.2980 (ahaas@epri.com)
Barry Batson at 704.595.2873 (bbatson@epri.com)
Brian Dupin at 650.906.2936 (bdupin@epri.com)
Chuck Wentzel at 618.320.0011 (cwentzel@epri.com)
Warren Frost at 403.390.0735 (wfrost@epri.com)

EPRI
3420 Hillview Avenue, Palo Alto, California 94304-1338 USA • 800.313.3774 • 650.855.2121 • askepri@epri.com • www.epri.com