Supplemental Project Notice

MODERNIZING RELIABILITY PLANNING: PROCESSES, TOOLS, AND BENEFIT ANALYSIS

Investments in Distribution Automation and other reliability improvement solutions are rapidly increasing across the industry.

PROJECT HIGHLIGHTS

- Collaborate with industry peers to identify gaps to meet reliability planning objectives and enhance distribution planning processes
- Develop a flexible and comprehensive reliability planning process
- Develop and validate prototype reliability planning tool
- Test, refine, and validate new planning process with utility use cases
- Document/share lessons learned

Background, Objectives, and New Learnings

Current distribution planning tools are geared toward tactical planning applications, aimed at providing a detailed assessment of individual projects. For reliability projects, this may involve several iterations across functional groups including planning, protection, automation, telecommunications, and system operations. With the scope and scale of reliability investments shifting from demonstration to wide-spread deployments, today's practices cannot keep up with the needs of tomorrow's distribution system.

New processes, methods, and tools are needed for planning and improving distribution system reliability. Future planning tools must provide a comprehensive, efficient, flexible, and integrated approach to planning the distribution system while estimating the benefits of deploying a range of reliability improvement options. These could include distribution automation, lateral protection, pole hardening, and undergrounding, among others. New methods and analytical approaches are becoming available and can provide a more informed understanding of investment needs at a granular level with the efficiency to analyze a broad portion of the distribution system.

This project seeks to develop, test, and demonstrate a new planning and evaluation method that enables more holistic and integrated distribution planning and informs no-regrets, prioritized decision making for reliability investments. Working with participants, this project aims to develop a comprehensive and efficient process that captures the growing demands of reliability planning. It will also leverage the advanced capabilities present in DRIVE™ to develop an initial prototype tool. To achieve these goals, this project intends to answer the following research questions:

- What model attributes and supporting data are needed to effectively plan for reliability investments?
- What methods, processes, and assumptions must be considered to comprehensively study an array of reliability improvement options to address the needs of all stakeholders?

This project aims to guide utilities in developing a reliability planning method, including model and data requirements, and implement a prototype tool to evaluate and prioritize reliability investments.

Benefits

The potential public benefits of this project include improved system reliability while maintaining affordability through more holistic assessment of distribution reliability investments. The potential benefits to project participants include:

- Comprehensive planning method that meets the near- and long-term needs of reliability planning;
- Proven, validated, and transparent method and tool for industry benchmarking; and
- Ability to respond to near-term requests to evaluate reliability alternatives in planning and protection.

Project Approach and Summary

EPRI and participating subject matter experts will work to develop a comprehensive and efficient reliability planning process that captures the growing demands of distribution planning and operation. Each participating utility will provide input into defining a reliability planning process, including identifying gaps in existing tools and processes. Additionally, EPRI will work with utilities to develop and implement this new process. To do this, EPRI intends to work collaboratively with all participating funders on the following tasks:

- Develop and document a flexible and comprehensive reliability planning process including the identification of gaps, new objective functions, and data needs.
- The new process will be implemented in a prototype planning tool which will be demonstrated on a robust distribution test system. The functionality and capabilities of the tool will be prioritized by participants based on their use cases.

Furthermore, EPRI intends to work individually with each participating funder on the following task:

- Apply the new planning framework and prototype tool for specific utility-driven use cases.

Deliverables

- Report documenting new planning process, methods, and their application along with a roadmap for future tool advancements.
- Report detailing results of applying method on sample feeders for specific utility use cases (maximum of 4 substations and 20 feeders).
- Prototype software implementation compatible with participant's planning tool (includes training and tool documentation)
- Final report summarizing collaborative lessons learned from process implementation studies and actionable recommendations.

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

Price of Project

$125,000

This project qualifies for Self-Directed Funding (SDF). Funding can be distributed across two calendar years.

Project Status and Schedule

The project will commence when the fourth member agreement is executed. The project is expected to last for 24 months with ongoing support for the prototype tool that participants receive.

This project requires a minimum of four participants.

Who Should Join

Utilities considering large scale or complex reliability investments driven by new or evolving corporate objectives, regulatory drivers, customer satisfaction, or advanced operational capabilities.

Contact Information

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