Supplemental Project Notice

CONTROL CENTER OF THE FUTURE ROADMAP – DISTRIBUTION

Defining the Requirements to Meet the Needs of the Modern Decarbonized Distribution System

PROJECT HIGHLIGHTS

- Develop a standard industry framework for the distribution control center of the future, covering technology, facilities, people, and processes.
- Build on the standard framework to develop company-specific vision, roadmap, and action plans.
- Develop a decision support tool to provide guidance as to when key new technologies and capabilities should be deployed.
- Develop requirements for future operational technologies, equipment, simulators, facilities, organizational changes, and human resources.

Background, Objectives, and New Learnings

Electric companies are currently planning for the transformation of the energy industry towards increased electrification, resilience, decarbonization, and integration of distributed energy resources (DER). At the same time, utilities are also beginning to adopt advanced technologies to enhance grid operation in order to enable this transition and sustain overall grid performance and reliability. The rapid transformation—particularly of distribution grids—may compel electric companies to build new distribution control centers (DCC) or modernize existing ones to accommodate these challenges.

Developing a strategy for modernizing the DCC can be a complicated endeavor. Investments are significant and must be sequenced over several years to achieve both the foundational requirement of safely delivering low-cost, reliable electricity service while also adding new capabilities. Many operational capabilities need to be addressed as part of a modernization process. For example:

- Evolution of DCC organizations, roles and responsibilities to incorporate new and enhanced responsibilities.
- Evolution of advanced distribution management system (ADMS) applications and protection and control systems.
- Integration of DER aggregators through hierarchical distributed energy resource management system (DERMS) implementations.
- Developing the organizational, technology, and process infrastructure to support FERC Order 2222 implementation.
- Implementation of flexible interconnection with DER to support distribution system operator (DSO) dispatch of resources.
- New markets, ancillary services and regulatory requirements to coordinate with other functional entities.
- Evolving cyber security threats requiring new capabilities to detect, respond, and recover from potential attacks.

This project aims to develop and apply a standard framework to help distribution utilities develop a company-specific vision, roadmap, and action plan with decision support as to when to deploy advanced operational capabilities for DCC modernization. This research will leverage and be coordinated with EPRI's *Transmission Control Center of the Future* [3002026896] work which introduced a standard framework for transmission control centers.

Benefits

The public may benefit from this research through improved reliability of the distribution grid and more efficient integration of customer-owned resources. Utilities can use the roadmap and action plans to inform implementation of future operational capabilities, while addressing the challenges on their system. Participants may also use results to engage internal and external stakeholders on the need for operational upgrades and decision support for when those investments are best initiated.

Project Approach and Summary

EPRI proposes a two-part member engagement for this project. The following tasks are envisioned:

Workstream 1 – Collaborative

Conduct virtual workshop(s) with all participants to:

- Develop a standard industry framework for distribution control center of the future (CCOTF) capabilities covering technology, facilities, people, and processes.
- Develop a decision support tool to provide guidance as to when key new technologies and capabilities should be deployed.

Workstream 2 – Individual Utility

Conduct virtual workshop(s) with key stakeholders in operations to:

- Apply the standard framework to develop a company-specific roadmap, action plan, and decision support as to when to deploy key CCOTF capabilities. Workshops are intended to review company objectives; assess current and desired future state of capabilities; and identify gaps, barriers, and risks to achieving the future state.
- Develop requirements for future operational technologies, equipment, simulators, facilities, organizational changes, and staffing/roles.

Deliverables

Workstream 1 participants will receive the following:

- Regular update webcasts.
- Summary report (PPT) documenting the CCOTF capability framework and decision support tool for when technologies and capabilities should be deployed.
- Tech transfer workshop (virtual).

Workstream 2 participants will receive the following:

- Company-specific CCOTF roadmap, action plan, and decision support tool in PPT format.
- List of capability gaps and risks in collated and tabulated format.
- Requirements document.
- Tech transfer workshop (virtual).

The non-proprietary results of Workstream 1 will be incorporated into EPRI's R&D programs and made available to the public for purchase or otherwise.

Price of Project

Workstream 1 – Collaborative: $45,000

Workstream 2 – Individual Utility Application (optional): $95,000

Project Status and Schedule

Workstream 1 requires a minimum of 6 utilities to begin and is anticipated to take 6-9 months to complete. Workstream 2 will commence upon completion of Workstream 1 and should last approximately 6 months.

Who Should Join

Any distribution system operator, in particular DCCs that are planning for upgrading operational capabilities or anticipate needs for operational control enhancements over the next 5-10 years.

Contact Information

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