“Project DA: Distribution Automation Deployment In Missouri, Kansas, Arkansas, and Oklahoma.”

Applicant: The Empire District Electric Company – a vertically integrated utility with ~177,000 customers, headquartered in Joplin, MO and serving adjacent corners of MO, KS, AR, OK .

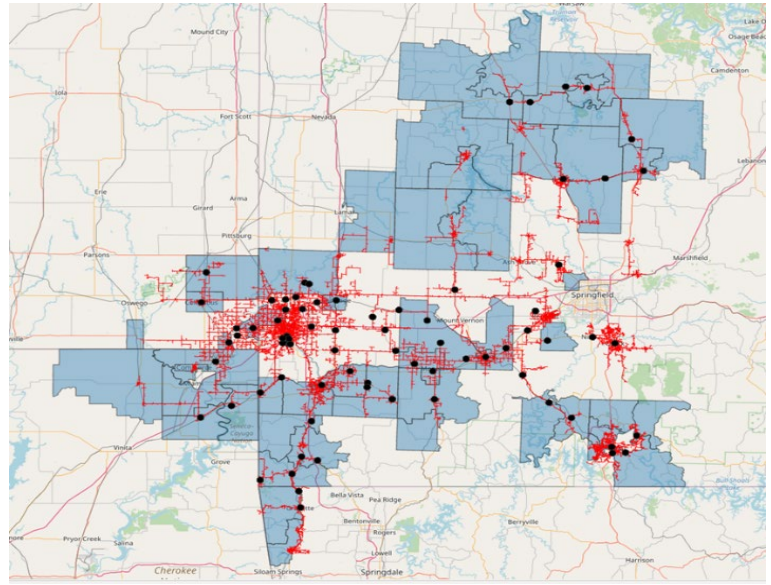
Overview:

- Project DA seeks to install Smart Grid devices capable of automatically restoring system outages in the four adjacent states served by Empire’s continuous service territory.
- 261 new and 49 existing vacuum autoreclosers arranged in 43 clusters across the system would be installed or further integrated, along with telecom, pole and station upgrades.
- The project’s estimated cost is $94.9 million, of which 50% or $47.49 million is requested from the DOE, with the other 50% supplied by the applicant (future rate case recovery).

Technology Summary:

- Autoreclosers are to be placed in “clusters” in strategic locations, with feeders undergoing sectionalization and supporting pole line infrastructure renewal in the vicinity.
- Technology status quo for Empire today is mostly manual gang-operated switches and a small population of Scada-Mate radio switches installed in the 1990s.
- Autoreclosers are a well-understood, commercially tested distribution system component that has been on the market for over a decade, including on Empire’s system.

Example of an Autorecloser Device Proposed : *Empire already operates multiple autoreclosers but seeks to expand the scope vi a focused 5-year sprint to bring a step change in reliability.*



Project Area: *Dots identify recloser locations. Blue shading denotes DAC census Tracts..*

Project DA: Project Goals, Outcomes and Impact

End of Project Goals	Targeted Grid Outcomes	Key Success Factors
1. Deploy 261 new autorecloser schemes and integrate 49 existing ones using local (decentralized) comms protocols into 43 clusters in 4 states.	(a) Enhanced grid flexibility across all major feeder groupings (b) 33%. (c) Enhanced outage location precision and response speed by crews.	(a) Detailed Design Study confirmation; (b) Coordinated deployment planning (c) Equipment & labor force availability
2. Upgrade poletop equipment to standard sufficient to withstand extra poletop equipment being installed across the clusters.	(a) No recordable safety incidents during installation. (b) No physical failures due to support infrastructure post-install.	(a) Timely and sequenced completion of supporting infrastructure upgrades to minimize delays of recloser installs.
3. Conduct targeted reconductoring to uprate line carrying capacity in the vicinity of the proposed DA schemes and add station capacity in 3 critical locations.	(a) Added line carrying capacity to future-proof and expand DERs . (b) Improved resilience during high-wind and snow events. (c) Added capacity for DERs.	(a) Load flow studies as a part of the Detailed Design Studies. (b) Coordination of timing with pole upgrades (above).
4. Design, test and update requisite operating processes and manuals in collaboration with Local 1474 members.	(a) No Human Error-related operations issues during maintenance and restoration after 2 years of operation.	(a) Detailed engagement with Line labor force by Engineering and Planning Staff. (b) Comprehensive change mgmt. plan.
5. Conduct DA-related training and certifications for internal line personnel and external installers (as required).	(a) Acquisition of advanced technical skills by local line crews and other skilled trades (as relevant) in 4 States.	(a) Collaborative development with union leadership and members of course and certification materials.

End Goal: advance a modernized automated distribution system, with reinforced resilience features at the key DA nodes to improve reliability by 33% add flexibility, and capacity for electrification & renewables growth in 71 communities, 39 of which are DACs.

Project DA: Core Project Team & Supporters

Name & Education	Project Accountabilities & Company Title	Years of Sector Experience	Unique Skills Relevant to Project Success
Sam McGarrah *B.S., M.S. Electrical Engineering, PE*	Project Manager and Engineering Lead, Safety Officer (Director, System Performance)	29	Reliability improvement planning and analysis. Asset management, control room operations, capital construction and maintenance staff oversight, vegetation management, community relations. Experience leading cross functional teams. Direct experience with DA projects.
Joshua Clements *B.S. Mechanical Engineering*	Project Planning Lead, East (Manager, System Reliability)	22	Outage Management System (OMS) implementation, reliability planning. Experience with implementation of DA (autoreclosers). Experience as a Standards Engineer.
Kendra Nixon *BA, General Studies*	Project Planning Lead, West (Manager, Engineering Business)	10	Extensive Engineering and Business Analysis (including value-based project prioritization) experience for Generation, Transmission and Distribution. Knowledge of AutoCAD, PowerPlan. Procore software.
Drew Landoll *B.S. Civil Engineering, P.E.*	Design and Construction Lead *(Sr. Director, Engineering & Project Management)*	16	Generation. Transmission, and Distribution Planning, Design and Construction Project Management. Environmental Analysis Expertise. Contractor procurement and management.

Key Project Supporters and Potential Partners:

- Local 1474 IBEW Members
- Wyandotte Tribe
- Missouri Office of the Public Counsel (OPC)
- Freeman Hospital
- 10+ Local Chambers of Commerce & Economic Development Organizations