

CASE STUDY / **RECLOSER DEPLOYMENT PROGRAM**

ECONOMIES OF SCALE SPEED STUDIES AND DISTRIBUTION DESIGN

Automatic circuit reclosers are valuable equipment to enhance reliability and limit outages on electrical distribution lines. For a large East Coast utility ramping up installations of reclosers, a highly efficient development process was needed to maintain its schedule.



GEOSPATIAL PLATFORMS HELP TEAM CONSOLIDATE DATA AND COORDINATE

Data from more than 1,000 site visits is collected in a GIS map for ease of access and stakeholder management.

PROJECT STATS

CLIENT

Potomac Electric Power Co. (Pepco)

LOCATION

Maryland and Washington, D.C.

PROGRAM COMPLETION

2018

DIVERSE PARTNER

KDM Engineering

CHALLENGE

Pepco is a unit of Exelon Corp., the nation's leading energy provider, with approximately 10 million customers. Pepco provides safe and reliable energy service to approximately 894,000 customers in the District of Columbia and Maryland. To better serve its customers, the utility enacted a comprehensive reliability plan that started in 2010. Among its objectives: improving the utility's SAIDI and SAIFI metrics, which measure the average duration and frequency of power outages across its system.

One aspect of the reliability plan involved ramping up installation of automatic circuit reclosers to enable more advanced Automatic Sectionalizing and Restoration (ASR) schemes. Reclosers act as automatically resetting circuit breakers and thus limit the impact of individual distribution line failures. The plan called for significant increases in the number of reclosers installed, year over year, but the scale of the effort was becoming too large to maintain schedules using only internal resources. Efforts were also complicated due to the permitting requirements across multiple jurisdictions and hundreds of sites.

Based on past project successes, Pepco selected Burns & McDonnell to execute a significant portion of its recloser deployment program.

The utility wanted a trusted service provider that could meet its schedule while handling a large volume of work.

SOLUTION

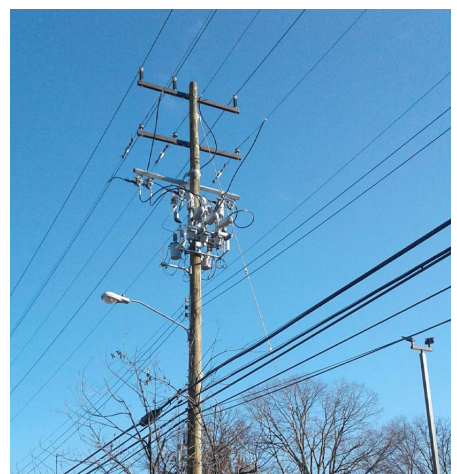
We brought a program management approach to the challenge, looking for efficiencies that would allow more to be accomplished in less time. A combination of circuit modeling, studies and iterative design helped us meet the utility's objectives.

Beginning with the utility's existing GIS data, we used ASPEN OneLiner software to build a model of each distribution feeder for which a new recloser was proposed. We also completed more than 750 fault current studies to evaluate installation locations and equipment ratings. The output helped with siting and sizing across the program territory.

650+
RECLOSERS

750+
FAULT CURRENT STUDIES

1K+
POLES INSPECTED





Depending on the device type, we also ran secondary protection coordination studies. Fault current information and existing protection devices were evaluated within OneLiner and used to design a protection coordination scheme for the affected feeders.

Each proposed location was visited to assess installation feasibility, which involved field inspections of more than 1,000 distribution poles. The collected data and site photography were stored in a web-hosted GIS map, which later supported the development of pole inspection forms in the required formats.

We prepared and submitted permit applications to the relevant jurisdictions; our work included development of drawings and engineered traffic control plans as needed. Efficiencies were achieved through the combined submission of multiple sites simultaneously to save on permitting costs where allowable.

The preparations culminated in preparing distribution designs for each recloser location. Work package preparation included making updates and completing work requests in Pepco's GWD and WMIS design

programs. We were able to gain access, onboard and become effective in using those programs while maintaining the project schedule.

RESULTS

We provided coordination within a wide capacity of system planning, system protection, SCADA, telecom, EMS, OMS, distribution engineering, construction standards and overhead construction. Backed by detailed capture of notes and information, our team achieved smooth integration into Pepco's workflows and processes, enabling the large volume of work to be completed on a compressed schedule.

Through a program management approach, we gained economies of scale by mobilizing one team for numerous projects. Geospatial tools helped us coordinate among a large and diverse group of stakeholders. A bundled approach was critical to meeting the execution schedule.

In just under a year, we completed our scope to Pepco's satisfaction, on schedule, supporting the installation of more than 650 reclosers and helping keep the utility's reliability improvement measures on track.

SUPPLIER DIVERSITY

Pepco has a strong commitment to supplier diversity and seeks to align its capital spend with the diverse makeup of the communities in which it operates. Burns & McDonnell similarly is committed to bolstering diverse businesses. For this project, we partnered with KDM Engineering, which is certified through both the Women's Business Enterprise National Council as a Women Business Enterprise (WBE) and the National Minority Suppliers Development Council as a Minority Business Enterprise (MBE). KDM Engineering was responsible for completing a significant portion of the field data collection, design and work package development. Our partnership with KDM Engineering in support of Pepco reliability projects remains ongoing.



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