

CASE STUDY / BANDERA ELECTRIC COOPERATIVE SUBSTATION UPGRADES

# EPC DELIVERS MODERN REFRESH FOR TEXAS SUBSTATIONS

After Bandera Electric Cooperative updated a 50-year-old transmission line, the next step required upgrading its substation facilities. Based on the scope of the project, engineer-procure-construct (EPC) delivery was the preferred method to complete the work.



# CREATIVITY KEEPS CUSTOMERS CONNECTED

A special configuration to the construction had to be done to prevent community members from losing power.

## PROJECT STATS

### CLIENT

Bandera Electric Cooperative

### LOCATION

Texas

### COMPLETION DATE

2020

## CHALLENGE

An existing 18-mile Bandera Electric Cooperative (BEC) transmission line was upgraded after more than 50 years in service. The updated line allows BEC to reduce its footprint and any visual clutter in the area as well as lays a foundation for fiber broadband in the future. Additionally, the line improves reliability and provides growth opportunities for BEC's members in the area.

After the new transmission line was put in place, substation facilities along the line needed to be upgraded, and done so in a way that wouldn't cause power outages.

## SOLUTION

BEC chose Burns & McDonnell and its direct-hire subsidiary, Ref-Chem, to serve as the engineer-procure-construct (EPC) team on the substation project. The work involved upgrading transmission substation facilities from 69-kV to 138-kV at the Leakey, Utopia and Tarpley substations. Between the new transmission line and substation upgrades, the overall project is the largest in BEC's history.

For the substation upgrades, the team provided engineering and construction oversight services, which were integrated with

# 138-kV

SUBSTATION FACILITY  
UPGRADE

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POINT OF RESPONSIBILITY,  
THROUGH EPC DELIVERY





high-voltage substation construction work. The construction team set up and installed the equipment, followed by the wiring, switchgear and control panel work.

The Leakey substation required replacement of two distribution power transformers with new dual-rated 138/69-kV transformers. The scope of work included a new gas circuit breaker, a new aluminum bus and new relay panels in the live control house. These upgrades had to be extensively planned and coordinated because the work was completed near in-service panels.

Construction of electrical upgrades was also provided for the Utopia and Tarpley substations, which were

upgraded from 69-kV to 138-kV. For both of these substations, an existing distribution power transformer was relocated and circuit breakers were added.

All three substations were tied from one end to the other, leaving no redundant feed options for a secondary side. Creativity was necessary to perform the work in a way that would not take any members offline. This involved sequencing the construction with the installation of substation mobiles that were used to keep electricity online.

## RESULTS

Using the EPC delivery method, the integrated design and construction team had early and constant

collaboration with the owner in addition to offering a single point of accountability, better cost certainty and quicker delivery.

The team was able to perform the work in a way that didn't disrupt service to BEC's members, and the grid can now support transmission up to 138-kV.

**“ This project allows BEC to maintain reliable service while promoting electric growth as our system continues to expand.**

**BILL HETHERINGTON**  
CHIEF EXECUTIVE OFFICER  
BEC



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