

PROJECT PROFILE / **SUBSTATION UPGRADE PROGRAM**

MASSIVE GRID IMPROVEMENT PROGRAM POSITIONS INDIANA FOR THE FUTURE

When our client received regulatory approval to proceed with a massive transmission and distribution grid upgrade, it was a classic “good news/bad news” situation. Funding for the \$1.4 billion program had been approved, but internal resources to perform the work were insufficient.



GRID MODERNIZATION PROGRAM CREATES TEMPLATE FOR LARGE-SCALE UPGRADES

There are two keys to success for any large-scale capital improvement program: resources and consistent standards.

With any large-scale transmission and distribution program, consistent engineering standards are a prerequisite for success. A high level of standardization leads to process efficiency. This is foundational for meeting financial, performance and regulatory expectations for every utility embarking on large, complex, multiyear capital programs.

In 2015, when our client launched its Transmission and Distribution System Improvement Charge (TDSIC) program, the primary challenge was related almost solely to staffing. Our client had a small engineering team in-house but would need nearly four times that number at the peak of program activity. Our team quickly ramped up to 30 within 12 months, then to more than 60 by the end of year two.

TDSIC is a true like-for-like asset replacement-and-upgrade program that includes major modifications such as ring bus conversions and even complete rebuilds. Applications and installations vary by substation, depending on voltage, configuration of the site and accessibility for crews and equipment. Other challenges include the varying approaches needed for brownfield versus greenfield sites as well as outages that need to be scheduled in tight sequence so that customers see no loss of service.

A core feature of the program has been conversion of more than 150 vintage distribution substations full of oil circuit breakers with electromechanical relays and no communications systems, to smart facilities equipped with vacuum breakers fitted with fiber/Ethernet- capable relays and primary and backup communications networks. With new communications and control systems in place, faults and outages are detected instantaneously and reset with a couple of keystrokes at a control center. Instead of waiting hours for service to be restored, faults are detected, verified and corrected within seconds.

One of the most notable features of the program has been development of a trust-based relationship in which we work as an extension of the utility's staff. Activities such as substation and protection and controls design, maintaining or updating standards, managing portfolio schedules, or coordinating outage plans are performed by our team members with no need for lengthy reviews and approvals by the client. From scoping individual substation projects to ordering materials and facilitating construction prebids and kickoffs, our team has served as an extension of the utility's in-house team.

By ramping up engineering resources quickly, we have refined a model for transmission and distribution system upgrade programs that is easily scalable and transferrable.

PROJECT STATS

CLIENT
Confidential

LOCATION
Indiana

PROGRAM EXECUTION YEAR 1
2016

ANTICIPATED COMPLETION
2022

350
SUBSTATIONS UPGRADED

60
MEMBERS OF TEAM
AT PEAK ACTIVITY

90%+
SCHEDULE ADHERENCE