



Investor-Owned Utility Outsources Substation Engineering to S&C

S&C Featured Solution: Engineering services

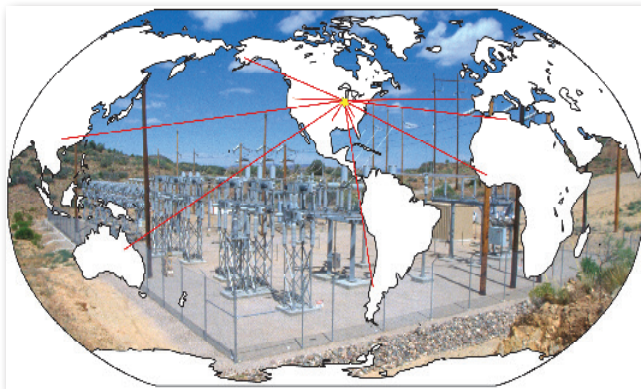
Location: Southeast United States

Customer Challenge

With a General Service Agreement in place, a large investor-owned electric utility in the southeastern United States began outsourcing a significant portion of its substation engineering work to S&C's Power Systems Solutions division. The utility had three major objectives for entering into this agreement with S&C, specifically:

- To allow its engineering staff to be re-directed to high priority system operation and maintenance issues
- To effectively increase its project engineering department's capacity
- To allow its engineering department to meet aggressive project schedules

In the past, the utility had been reluctant to outsource such services out of concern consultants would not be able to perform engineering services meeting or exceeding current in-house design quality standards, nor would they be able to conform to the utility's drawing and inventory management systems.



S&C Solution

S&C worked with the utility's engineers to develop design standards and a communication plan to ensure consistent, repeatable, and high-quality performance on all projects. S&C's engineers easily adapted their design approach to conform to the utility's requirements, integrating S&C's computer systems with those of the utility.

A substation project task is initiated when the utility issues a document defining the project scope and desired package release date, along with relay and instrumentation single-line diagrams. The project scope covers details such as electrical equipment, foundations, and structures to be installed. The single-line diagrams indicate the desired microprocessor-based relay and auxiliary control device logic.

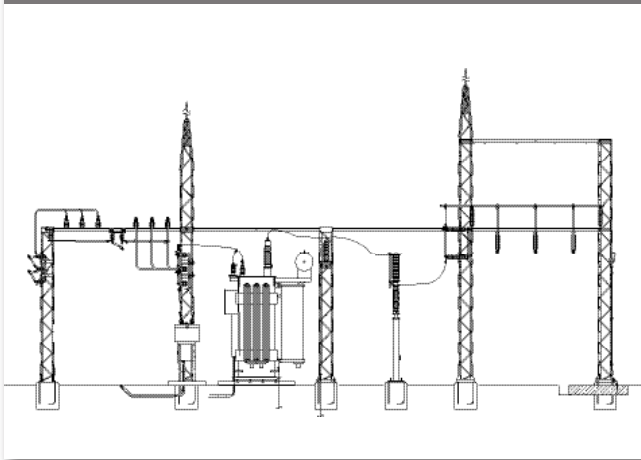
Upon receipt of this information, S&C engineers provide engineering services in the areas of protection and control design and physical design for transmission and distribution substations. S&C's project engineers, electrical and structural designers, and CAD personnel work closely with the utility's primary contact to issue complete electrical and structural design packages needed to construct the substation as designed.

For the electrical design package, S&C engineers use the utility's design and CAD standards to develop elementary diagrams detailing the operation of the protection and control equipment. These elementary diagrams are then used to create panel layout and connection drawings, and apparatus drawings. S&C accesses the utility's substation materials application program to produce the bills of material and cable pull lists, and updates the existing cable pull list, if applicable, to indicate the cables to be removed, those to be re-terminated, and those to be added. The electronic files are then transmitted to the utility's administrative staff, who issues the drawings and specifications to their construction work force.



To create the structural design package, S&C engineers use the utility's standard foundation, lattice and tubular structure, and grounding details to revise existing or create new foundation drawings, grounding plans, and structural details. S&C again accesses the utility's substation materials application program to request the necessary material from the database of approved materials. The electronic files are again transmitted to the utility's administrative staff, who issues the drawings to their construction work force.

Structural drawing.



Results

The utility's primary objective was to allow its engineering staff to be re-directed to high priority system operation and maintenance issues. Over the last several years, S&C has helped the utility achieve this goal by providing more than 40,000 hours of project engineering design work, eliminating the need to maintain a project-based engineering staff.

The utility's second objective of effectively increasing its project engineering capacity has also been met. S&C has provided more than 200 substation electrical and structural design packages. These design packages have ranged in complexity from the simple addition of distribution feeder breakers to the creation of a "greenfield" distribution substation to upgrading 230-kV transmission line relaying

And their objective of improving the ability to meet aggressive project schedules has been fulfilled as well. S&C has delivered 100% of the desired design packages on or before the requested release date.

S&C's Power Systems Solutions' breadth of experience has allowed the utility to turn to S&C for all types of substation projects. Based on the excellent results seen to date, the utility will continue to entrust S&C with more than 10,000 hours of project engineering work per year for new and existing transmission and distribution substations.