Leidos Ramps Up to Support Transmission and Distribution Engineering

OVERVIEW
Leidos provides power engineering solutions to one of the largest investor-owned energy companies in the world to help the company further its capital projects and program goals. As measured by this confidential utility, Leidos consistently scores above other engineering firms in quality, performance, responsiveness, budget, and schedule.

Leidos has been providing this large IOU power engineering services since 2011 under a Master Service Agreement (MSA) that includes substation, transmission, and distribution engineering services. In 2015, the utility added project management, distributed generation, and protection and relay engineering services. Leidos has delivered engineered designs for hundreds of transmission, substation, protection and controls (P&C), relay settings, distributed generation and distribution line projects under the MSA.

SEAMLESS STAFF AUGMENTATION
As one of the world’s largest energy companies, the IOU has a wide range of power engineering needs. It owns and operates transmission and distribution facilities across portions of the United States. These operations include more than 100 miles of underground cable, nearly 500 transmission substations, and more than 600 distribution substations.

The utility needed a power engineering service provider that could match its size and scale and provide a full suite of engineering capabilities.

PROJECT SUMMARY
> Project work started in 2008
> Multi-year, multi-discipline MSA in place since 2011
> 75+ protection and relay projects
> 100+ substation engineering projects
> 200+ distribution line engineering projects
> 100+ transmission line engineering projects
> 40+ distributed generation impact studies for solar generation sites
> 45+ project management projects
> Emergency storm restoration support
**A Rapid Ramp-Up**

The IOU first came to Leidos for program management support in 2008. The Leidos team acted as an extension of staff to manage several substation and distribution line projects and quickly built trust within the utility’s engineering division. Then, under the MSA, Leidos was able to prove its ability to meet the client’s need for scale.

In 2011, Leidos had six full-time employees dedicated to helping this confidential client with broader substation, transmission, and distribution challenges. It became quickly apparent that the utility needed more local support. With comprehensive power delivery experience spread across more than 35 offices in the United States, Leidos could provide services where they were needed most.

Leidos rapidly increased its full-time equivalent (FTE) employees dedicated to IOU and relocated key team members to an office closer to the utility. In three years, Leidos nearly quadrupled the monthly man-hours spent working with the utility. In six years, Leidos increased to more than 40 FTEs supporting these engineering projects. Each of these employees have been trained on the utility’s specific processes, safety standards, and proprietary project management playbook.

**Comprehensive Power Delivery Services**

In addition to ramping up the team, the IOU needed project support across power engineering disciplines, including P&C, substation, transmission lines, and distribution lines. Leidos’ breadth of expertise allowed us to provide all of these services under a single MSA. Instead of balancing projects across multiple vendors, the utility has been able to work with Leidos on multi-disciplinary projects. For example, the scope of one project included the reconductoring of four miles of a sub-transmission circuit and the transfer of a distribution circuit attached to the same pole line. The utility’s transmission and distribution departments operated these assets separately, but it was able to turn to Leidos as the sole provider for both transmission and distribution support.

The confidential IOU has appreciated Leidos’ resource breadth in order to provide this full suite of engineering services, and has relied on our depth of technical expertise across our capabilities. We have encountered several projects with unique challenges and applied our extensive knowledge base to deliver successful solutions. For example, during a reconductoring project, we completed conductor option studies and identified proposed design impacts on existing structures. We used analytical methods specified in ASCE 10-97 and AISC to calculate compression and tension capacities. We evaluated the flex towers with the design loads provided by the fabrication drawings and the proposed conductor loads calculated using current National Electrical Safety Code (NESC) 2012 and utility-specific standard loading cases. As a result of the tower strength analysis study, we were able to identify future potential risks and recommend that our client reinforce the steel or replace the existing towers in order to support new conductor loadings.
Other notable projects spanning the breadth of our capabilities have included:

- Substation upgrades, substation retrofits, greenfield substation designs, and system voltages ranging from 4kV to 345kV
- 230kV - 115kV substation rebuild, which included the installation of a 230/115kV 350MVA transformer and the replacement of nine HV circuit breakers
- 115kV substation expansion, which included the installation of a 115kV lattice structural bay
- Installation/replacement of fourteen 115kV circuit breakers and their associated relaying
- 700 foot river crossing line design
- New six-mile 23kV double circuit line to connect a large solar farm
- Conversion of 15 miles of overhead and underground circuits to eliminate two 4kV substations
- Eight circuit reconfigurations/voltage conversions and multiple primary services to facilitate the construction of a major commercial customer
- Development of a streamlined process and compressed schedule for distributed generation impact studies that begins immediately following award to meet regulatory requirements

High Level of Service

Through all of these projects, Leidos has delivered a high quality of service that the utility has acknowledged and appreciated. It has recognized Leidos for excellence in quality, performance, responsiveness, budget, and schedule. In addition, the utility chose to renew the MSA with Leidos in 2016 for two years with several extension options.