CASE STUDY
POWER SYSTEMS SERVICES

S&C ELECTRIC COMPANY
Excellence Through Innovation

S&C Provides Expedited Delivery of a 90-MW Wind Plant

S&C Featured Solution: Engineering, Procurement, and Construction (EPC) Services

Location: Northern United States

CUSTOMER CHALLENGE

A major wind developer needed to design, construct, and begin operating a 90-MW, 50-turbine wind plant in the short timeframe of approximately 12 months. They required engineering, procurement, and construction services for the collector system, collector substation, and interconnection transmission line. The developer faced two major deadlines . . . substation transformer and collector system energization within six months for turbine commissioning, and plant completion and commercial operations within 12 months. Significant work needed to be done during winter months, further compounding their challenges.

Wind plant collector substation.

S&C SOLUTION

The developer sought assistance from S&C to meet their tight schedule, which required a Commercial Operation Date (COD) by the end of December 2011. Using their extensive experience in wind plant delivery, S&C immediately began providing EPC services for the collector system, substation, and interconnection transmission line. S&C also retrofitted the existing interconnection substation.

The project required installing four 34.5-kV collector circuits totaling 275,000 linear feet, constructing a step-up substation, expanding an existing substation, and installing 63,360 linear feet of 120-kV transmission line.

S&C's EPC approach enabled overlapping of the design and construction phases, shortening the timeline. To further expedite the project, S&C quickly identified equipment and materials with long procurement lead time and leveraged preferred supplier relationships to move resources into the production pipeline fast.

"This project shows how S&C adapts and works with our customers to overcome multiple challenges to meet their project schedule."

Vice President—Power Systems Services

Trencher installing collector circuit.

S&C brought a leading wind developer's first commercial plant online fast to provide clean energy to more than 30,000 homes.

Because construction began during a February thaw, frost laws applied. Soft ground restricted axle weight, speed, and vehicle operation times. It also limited working hours. S&C compensated for conditions by bringing in a second trencher to help install the underground collector system on schedule.

The retrofit, which required an outage, connected the existing substation to the new one, and tied the plant to the grid. S&C installed two 138-kV breakers, two 138-kV switches, 138-kV metering equipment, protective relaying and SCADA, and an H-frame deadend structure for the new transmission line. To minimize customer impact, S&C quickly planned and completed the project retrofit within an 11-day outage.

During substation construction, S&C subcontractors worked in parallel to wire the yard equipment to the control house, while testing was conducted in the yard. As a result, they met the substation's energization date.

S&C also found that the steel transmission poles required additional support. Because the landowner did not want to use guy wires, S&C provided concrete foundations. They even adjusted the spacing between poles, so farm equipment could navigate around them.

VALUED OUTCOME

S&C met all of the wind developer's expectations . . . and all of the project's challenges by employing innovative solutions that allowed on-time project completion. In addition, use of a comprehensive safety education and training manual helped ensure no lost-time injuries. The wind plant became operational on December 31, 2011, and provides 90 MW of clean energy to the electric grid.

Installing transformer in new substation.

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