



## S&C Helps California Wind Farm Rapidly Expand Capacity

**S&C Featured Solution:** Renewable Energy Interconnection

**Location:** Mojave, California

### CUSTOMER CHALLENGE

Brookfield Tehachapi 1\* (BT-1) needed to increase its production capacity to comply with California's aggressive renewable energy initiative, which requires that 33% of the state's energy come from renewable energy sources by 2020. The wind farm's owners, Brookfield, sought to expand capacity by 102 MW in just 10 months. An additional 34 3.0-MW wind turbines would be needed, along with a new collector system, 30-MVA substation, 100-MVA substation, and 69-kV transmission tie-in to the electric grid.

To meet the compressed schedule for the project, the owners needed renewable energy integration experts who could procure and construct a complete wind farm-to-grid interconnection solution, including all necessary electrical systems, and fully integrated with the existing SCADA system. Upgrading the wind farm's infrastructure economically, with minimal downtime, was crucial to meeting financial and renewable energy goals.

### S&C SOLUTION

Brookfield's general contractor, Mortenson Construction, sought assistance from S&C to fulfill these requirements.

S&C immediately began procurement and construction of all the electrical systems necessary to connect the new wind turbines to the grid, including the overhead and underground collector systems, the substations, control buildings, transmission cables, and transmission tie-in. S&C also supplied 38-kV Wind Turbine Style Vista® Switchgear for the collector circuits of the wind turbines.



Aerial view of the BT-1 interconnection substation.

### Customer Quote:

*"The project's location in the Mojave Desert presented a variety of challenges. S&C was able to overcome these and other issues to assure the two substations were energized per our deadline."*

*Travis Dees, Brookfield—Operations Manager*

\* Previously known as Coram Ridge Wind Farm.

**S&C quickly resolved renewable energy integration challenges to boost wind farm capacity by 102 MW.**



S&C provided a detailed commissioning plan, which encompassed NETA testing requirements, energization procedures, SCADA integration, a VAR control scheme, and California ISO (CAISO) requirements. Then S&C worked closely with all project stakeholders and Brookfield to successfully coordinate these initiatives.

S&C provided end-to-end project and construction management and used its preferred supplier relationships to expedite procurement of equipment and materials. S&C also implemented and supervised all quality assurance and quality control functions, plus a comprehensive, full-time site safety program. Experienced subcontractors were used to accelerate multiple facets of the project.

S&C constructed and commissioned the control buildings and the two substations. And S&C installed 13.3 miles of 34.5-kV collector system cables and lines, 1.8 miles of 34.5-kV overhead transmission lines, 3.5 miles of 69-kV underground transmission duct banks, and 9.3 miles of 69-kV underground transmission lines. S&C coordinated all cable testing and commissioning.

To meet the fast-approaching energization deadline, S&C's team stepped in to engineer, integrate, and commission the SCADA system, coordinating with the engineering firm of record. With decades of SCADA experience, S&C developed a SCADA system that ensured secure, reliable communication between the wind farm substations and the utility.

## VALUED OUTCOME

S&C met the customer's expectations by completing the project on time, despite numerous obstacles. S&C fulfilled all the complex technical integration challenges. S&C employees and subcontractors worked 168,000 person-hours with zero lost-day incidents. The project received high marks on all safety and environmental audits.

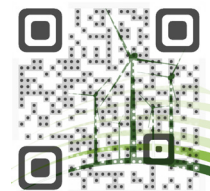
The expanded-capacity wind farm became operational in 2012, supplying an additional 102 MW of clean energy to California's grid . . . enough to power approximately 26,000 homes.



**34.5-kV transmission with 100-MVA transformer.**



**S&C engineers commissioning the BT-1 SCADA system.**



**Scan this code on your smart phone or tablet to watch a video showing the construction of this project.**