



S&C Ties California Utility's 20-MW Solar PV Project to the Grid

S&C Featured Solution: Renewable Energy Integration

Location: Southern California

Customer Challenge

A leading solar energy services provider wanted to develop a 20-MW solar photovoltaic (PV) project on a 265-acre site in Southern California and connect it to the grid. The project, which required development of a solar farm and substation, would provide enough energy to power nearly 5,000 homes and would help reach the state's renewable energy goal of 33 percent by 2020. However, to meet a tight project schedule, the customer quickly needed to deliver a conceptual substation design package that would comply with the interconnection utility's requirements.

Completing the interconnection on time was crucial to maximizing plant production and return on investment. However, solar projects can be delayed if design requirements do not meet the standards established by multiple project stakeholders,

including the independent system operator (ISO) and the interconnecting utility. These delays can cause projects to miss Commercial Operation Dates (CODs), run over budget, and significantly impact the return on investment for developers and investors.

The California project was particularly challenging because it had two power purchase agreements (PPAs), one with the interconnecting utility and another with a major utility in the region. This created an unusual situation in that the substation design had to be coordinated with both utilities and had to meet their standards, installation specifications, testing, and commissioning requirements. Because of the unusual requirements, the project ended up with at least 10 revenue meters, and the metering challenges had a significant impact on the schedule.

The project involved interconnecting the energy generated from a 265-acre solar farm.



As the prime contractor, S&C met strict deadlines complicated by two power purchase agreements having their own compliance requirements.



S&C Solution

S&C Electric Company, which had worked previously with the solar energy services provider and had an existing Master Service Agreement (MSA) with one of the local interconnecting utilities, was selected to serve as the prime contractor for the project's 23-MVA substation. The MSA provided the S&C team with additional insight into the requirements for the California substation.

S&C began the design work early to ensure the provider's completion deadline would be met, and it provided the engineering, procurement, and construction (EPC) support for the solar generation plant's collection-point substation and interconnection point with the local utility. The EPC process involved engineering from various disciplines: civil, structural, and electrical. The engineering and design aspects included submitting the required construction drawings and equipment specifications, securing the required grading and building permits, and overseeing all testing and commissioning activities, including SCADA points commissioning for the substation and field devices.

S&C took the lead in managing all equipment suppliers, from specification through installation and commissioning, and it secured the needed structural steel, circuit breakers, metering equipment, and communication lines. It also managed the construction testing and inspections, as well as all necessary training.

Results

S&C was able to coordinate with other project stakeholders efficiently to design and complete the interconnection substation ahead of schedule. S&C's quick actions and ability to take the lead in discussions on metering, substation design, and permitting with the local Authority Having Jurisdiction (AHJ), the interconnecting utilities, and the local county helped address potential issues early on in the design process. This helped all stakeholders to avoid costly changes and delays in the construction and commissioning phase of the project. Today, the solar PV project contributes to the more than 7.8 GW of solar energy currently installed in California.

A view of the nearly completed substation for the 20-MW PV project in Southern California.

