



## Otay Mesa Energy Storage

### UTILITY POWER PLANT

#### Business Needs

A major Southern California utility has committed to one of the largest energy storage projects ever built – a 250 MW facility constructed entirely of lithium-ion battery energy storage systems (BESS) to provide grid stabilization services and “peaker” capacity within the utility’s transmission network. The project will interconnect to the Otay Mesa switchyard near San Diego at the transmission voltage of 230 kV. The plant has Federal Energy Regulatory Commission (FERC) approval to be operated and controlled by the California Independent System Operator (CAISO).

#### Solution

McCalmont is contracted and has completed Issued For Permit (IFP) electrical design drawings for this utility scale ES power plant, including the medium voltage interconnection design to the substation. The plant is being constructed during 2019 and will be completed in 2020.

McCalmont has designed an energy storage system with a nameplate AC power rating of 250 megawatts (MW-AC), consisting of 2,500 Li-ion battery racks connected to 98 SMA 2900 kW Sunny Central Storage inverters. Each of the inverters connects to a 3MVA transformer that steps up voltage and delivers power into one of eight 34.5 kV medium voltage connections to a 275MVA substation for interconnection to the utility transmission grid.

Each battery rack can deliver about 225 kW of peak power and 100 kWh of usable energy before being recharged. The battery racks operate at between 800 and 1000VDC depending on their state of charge (SOC). To reduce fire risk, the batteries are distributed throughout five separate building structures. In addition, the electrical design for each building includes approx. 454 tons of cooling capacity and its own fire suppression system.

The entire system is to be controlled by a SCADA system interoperated with CAISO. All equipment in the facility, including batteries, fire suppression system, and electrical controls is data-connected via a fiber optic system and associated networking.

#### Benefits

As one of the largest energy storage projects ever conceived, when completed the Otay Mesa facility will have immense reserves of both power and energy to provide grid stabilization and peaking capacity for Southern California’s electrical grid. The design of this system required bringing together many diverse aspects, including large scale electrical design, utility expertise, new UL and Code requirements for battery systems, IT and networking expertise, and civil and mechanical design. The resulting project will significantly lower regional carbon emissions and reduce the need for fossil fuel power plants.

#### Project Specifications

Location:	Otay Mesa, San Diego, CA
Size:	250MW / 275MWh Battery Energy Storage System (BESS)
Designed:	2018-2019
Completion:	February 2020
Inverters:	98 x SMA 2900kW Sunny Central Storage Inverters
Batteries:	2500 x Li-ion Battery Racks