PROJECTS

System Profiles

CalCom Solar and SunLink
Cottonwood Creek Ranch

Courtesy CalCom Solar (3)

Overview

DESIGNER: Tim McDuffie, chief engineer, CalCom Solar, calcomsolar.com

GEOTECHNICAL SURVEYOR: Keith Beisner, field services senior manager, SunLink, sunlink.com

LEAD INSTALLER: Matthew Downey, site superintendent, CalCom Solar

DATE COMMISSIONED: April 2017

INSTALLATION TIME FRAME: 42 days (both sites)

LOCATION: Two sites in Madera, CA, 36.96°N

SOLAR RESOURCE: 5.7 kWh/m²/day

ASHRAE DESIGN TEMPS: 102°F 2% average high, 28°F extreme minimum

ARRAY CAPACITY: 1.1 MWdc per site, 2.2 MWdc total

ANNUAL AC PRODUCTION: 1,804.153 MWh per site, 3,608.306 MWh total

Located in the Central Valley, the 2.2 MW Cottonwood Creek Ranch portfolio in Madera, California, adds two more successful projects to the long-standing CalCom Solar–SunLink partnership to bring solar to agricultural sites in the state. Cottonwood Creek Ranch West and East are subsidiaries of a California-based construction services company that decided to deploy phases 2 and 3 after a successful first project with CalCom Solar. To offset more than 30% of its total electricity usage, Cottonwood Ranch chose to transform a total of 12 acres of its property into two solar farms.

The projects began in 2016 when CalCom's director of field operations and chief operating officer met with SunLink's engineers and project managers to evaluate configuration options available with SunLink's GeoPro system. In an effort to determine the optimal product design to maximize installation and cost efficiencies specific for agricultural sites, the team took a deep dive into CalCom's unique installation approach: an aesthetically pleasing level array utilizing slightly increased pile lengths. The result was two versions of the GeoPro product able to accommodate site challenges common to farms in the Central Valley while also catering to CalCom's specific installation methodologies.

With a site-optimized racking system design ready to go, work began to prepare the Cottonwood sites. The CalCom

installation crew opted to build up the array pad to minimize shading from the surrounding almond trees. SunLink's PowerCare geotechnical team assessed the installation site's soils to inform foundation design and further streamline installation processes.

A common site challenge in the Central Valley involves hardpan soil conditions, where builders encounter very dense soil at variable depths throughout a site. To mitigate this risk, SunLink conducted pile testing in multiple locations around the project sites so that there would be no surprises during foundation installation. On the off chance of finding something unexpected, the GeoPro design allowed for the ability to swap in ballasted foundations in individual locations if needed, without changing the product or project design. Mother Nature did her best to slow things down by swamping construction crews with California's wettest winter in decades. Despite the heavy rain, the team fully installed both sites in only 42 days.

"SunLink was the ideal partner for us to meet our specific installation requirements. The GeoPro system we developed with the SunLink team ensured quick installation and maximized cost efficiencies. Its expert pull testing was also critical to ensure that the foundation design was solid and suitable for agricultural soils, and that we weren't derailed by surprises."
—Jason Smith, president and COO, CalCom Solar

"Our partnership with CalCom represents our ideal collaborative engagement. When you think long-term and work together to develop product solutions that best meet the needs of the end customers you're serving, it translates into more successful projects, more satisfied end customers and more opportunities to grow our respective businesses."
Jon Blachly, account executive, SunLink

Equipment Specifications Per Site

MODULES: 3,240 Canadian Solar CS6U-340M, 340 W STC, +5/-0 W, 8.97 Imp, 37.9 Vmp, 9.48 Isc, 46.2 Voc

INVERTERS: 480 Vac service, 30 Huawei SUN2000-30KTL-US, 30 kWac rated output, 1,000 Vdc maximum input, 560 Vdc–850 Vdc MPPT range, 200 Vdc–950 Vdc operating range

ARRAY: 18-module source circuits (6,800 W, 8.97 Imp, 758 Vmp, 9.48 Isc, 924 Voc), six source circuits per inverter typical (40.8 kW, 53.82 Imp, 758 Vmp, 56.88 Isc, 924 Voc), 1.101 MWdc total per site

ARRAY INSTALLATION: SunLink GeoPro racking system, 180° azimuth, 20° tilt

SYSTEM MONITORING: Also Energy performance and portfolio monitoring