15MWDC/12.5MWAC RAPTOR RIDGE SAT SOLAR PROJECT

Features

- Civil Design with Retention Basin
- Electrical Design
- SAT and Central Inverters
- Structural Design

Owner

Tucson Electric Power Company

Location

Tucson,Arizona

Challenge

Tucson Electric Power (TEP) requested a state-of-the-art solar facility design incorporating lessons learned from TEP's extensive renewable experience while utilizing the most reliable and cost-efficient equipment available in the market. In the past TEP witnessed poor civil design leading to erosion issues forcing periodic and higher cost Operations and Maintenance (O&M) cost. Design also addressed visible open disconnecting means on both the DC and AC side to meet utility requirments. Covid related supply chain issues were addressed throughout the design and construction. A public viewing station with EV Charging, bike racks, handicap parking stalls, and an interactive single axis tracker was included in the design.

Solution

Strategic planning and creative thinking addressed stormwater management on a site with semi-reverse existing flow patterns. By reversing the grading and balancing the site, flow velocity was minimalized, and the outlet was significantly smaller which reduced the cost of the overall installation. Components of the civil included 20-foot-wide gravel road, minimal grading with a balanced site, structural equipment pads, fencing, soil stabilization methods, runoff managements via collection and transport system, stormwater management report for temporary conditions and long-term maintenance. The structural design included analysis for footings of equipment and wind loading conditions. Ten Ingeteam central inverters were installed under removable rain/sunroof for weather protection with covered trenching to allow flexibility during future inverter replacement. The electrical design integrated Solar Flex Rack single axis trackers with grid powered motors to maximize up-time. Array was set up in 2.5MWAC blocks with Solar Bos DC combiner boxes and DC disconnects.

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