

Techren 2 Solar Power Plant: A Model for Solar Trackers and Bifacial

Project Overview

The 251 MW Techren 2 solar power plant, located 25 miles southeast of Las Vegas, taps into one of the most innovative new solar technology pairings: bifacial modules and solar trackers. Using Nextracker's NX Horizon™ smart solar tracker solution with a combination of Canadian Solar and LONGi bifacial modules, engineering, procurement and construction (EPC) partner Swinerton Renewable Energy (SRE) and developer Clenera are taking solar PV yield gain to the next level by optimizing system design in response to site conditions and environmental factors.

Delivering at Scale

The arid El Dorado Valley is home to numerous utility-scale solar power plants, including one of the largest projects in the United States, the Techren Solar complex — five plants totalling over 400 MW. For the Techren Solar 2 project, Nextracker's supply chain and logistics team had to keep to a tight schedule, orchestrating the delivery of more than 700 containers of components from Mexico and Portugal at an average pace of 25 MW per week during a two-and-a-half-month period. The systems were then distributed by SRE across more than 1000 acres of land divided into 80 individual blocks.

Name of Project	Techren II
Location	Boulder City, Nevada
EPC	Swinerton Renewable Energy (SRE)
Offtaker	NV Energy
NX Horizon Tracker Rows:	8,385
Inverters	Sungrow
Modules	LONGi and Canadian Solar



Pairing for Performance: NX Horizon and Bifacial

Techren 2 features advanced bifacial technology which significantly enhances the solar yields and output of the plant. NX Horizon's design is well-suited for integration with bifacial modules, because of the tracker's optimized mounting rails, large height-to-width aspect ratio, and gaps between the bearing and piers that eliminate shading. When paired with NX Horizon, bifacial technology can generate significant energy gains. NX Horizon can attain rotation-axis elevations of up to 100% of the total PV panel width, so its large height-to-width aspect ratio maximizes module rear-side irradiance and helps maintain consistent irradiance along the underside of the modules — something which is more difficult and costly to accomplish with larger-format trackers. With the increased distance between the PV panels and the torque tubes, the added clearance minimizes backside shading and ensures that in the case of center junction-box modules, no contact occurs, even in severe wind conditions.

Features & Benefits

571.9 GWh

of power generated per year

322,849 tons

of CO₂ emissions avoided per year

Solving Site Challenges & High Wind Conditions

Taking full advantage of the region's prodigious irradiance, NX Horizon's robust independent-row architecture adapts to the changing slope of the terrain across the plateau and enhances energy production. Nextracker's design engineering team worked closely with SRE on project design, putting in over 200 hours of value engineering work and quality review. Crucial for the region was that the system also needed to withstand 115 mph (185 km/h) wind speeds. Sungrow's 1500 V central inverter was selected because it's easy to install and commission, and performs well in desert environments.



SRE at work constructing 251 MW in the Nevada desert.

More Clean Energy for Nevadans

Techren II is expected to supply 572 GWh of reliable solar power annually — equal to the average annual electrical usage of more than 48,000 Nevada households — and will contribute greatly to NV Energy's plan to double its renewable energy commitments by 2023 and diversify the state's energy mix. Representing an expansion in the utility's Green Energy Rider program for larger customers that want to replace their utility delivered electricity with renewable generation, Techren II will have the additional benefit of offsetting nearly 323,000 tons of CO₂ annually, equivalent to "removing" 66,311 cars from the road. Beyond providing a boost in capital investment, the project also employed 250 local workers at peak construction with eight permanent jobs created and helps accelerate the booming market of the fourth-largest solar state in the country.