Case study

Indoor Water Park (McGaheysville, VA)

Terrasmart continues to raise the bar by delivering customized fixed-tilt solutions that drive faster installation

Background

Making a splash with solar energy

Massanutten Resort is home to an award-winning indoor and outdoor water park, which boasts a water fortress, inflatable attractions, body slides, pools, and lazy river floats. As the facilities are located on 6,000 acres of mountainous woodland, the owners believe that going green is the best way forward for the tourist attraction. The solar site at the Massanutten Resort is owned and operated by Secure Solar Futures, a commercial-scale solar developer with a reputation for building up their communities through customer-driven solar solutions.

As the project EPC, Got Electric selected Terrasmart to design, engineer, and install a full racking and foundation solution for the four-acre solar farm behind Massanutten Resort's indoor water park. Terrasmart was proud to partner with Virginia natives, Got Electric, and Secure Solar Futures on this project with a goal of providing up to 25% of the water park's power through the 1.12-MW solar site.

Challenge

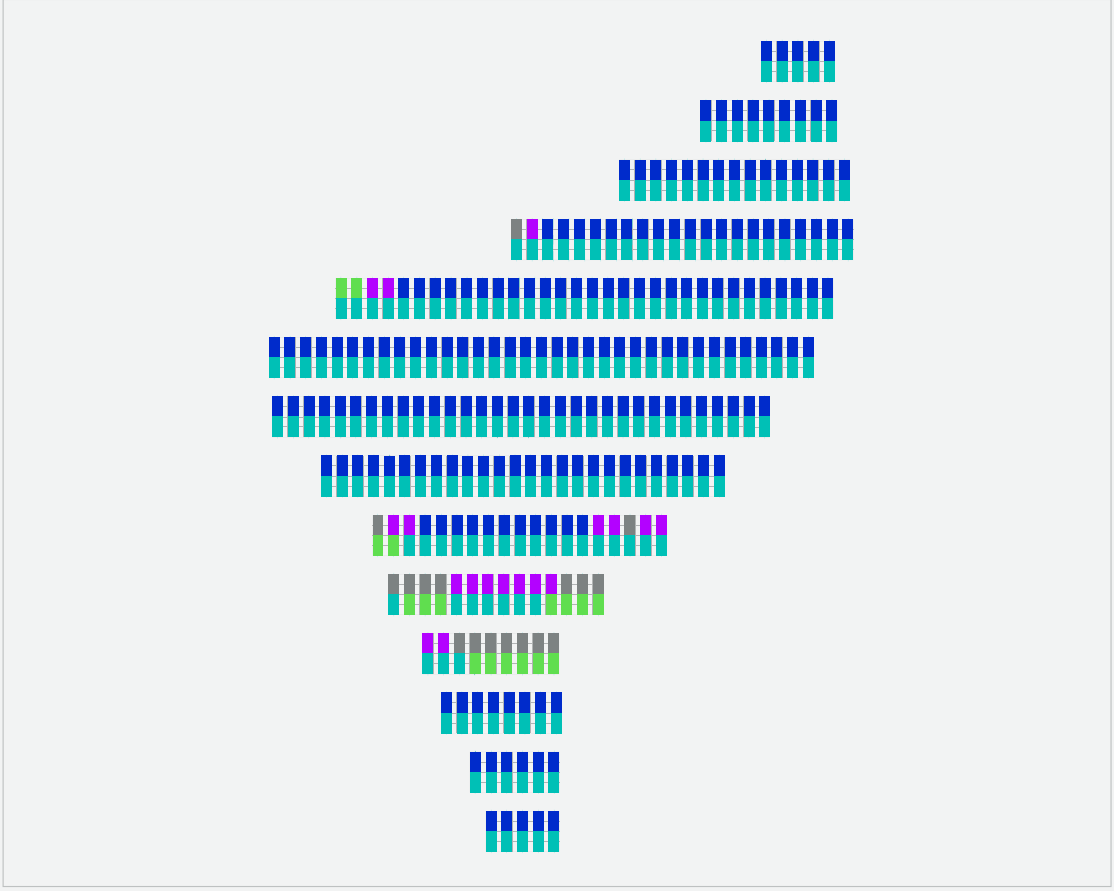
Tackling unexpected challenges with experience and out-of-the-box thinking

The initial pull test and geotechnical report showed no traces of underground rock. However, during the installation, our crew found a vein of shale approximately two to three feet down on certain segments of the site. Given our extensive experience in tough terrain, the installation team was able to drill through the shale rock without incurring any delays to the project's schedule.

A four-in-portrait configuration and dual post foundation were selected for this site. Utilizing a dual post foundation meant that the installation team had to ensure that both the front and back heights of the posts were placed within half an inch of the target. Without this accuracy, the module tilt would be incorrect. If module tilts vary, it can result in twisted bays.

Even a small amount of undulation or slope on a site can impact the racking design, as well as energy gains. Due to the presence of undulating slopes, our team calculated and determined the need for five different lengths of pile foundations to counteract the slopes and ensure that an accurate tilt angle could be achieved. To mitigate installation risks and expedite the overall process, our crew color-coded the different post lengths and aligned them with their respective foundation locations to ensure that the right post lengths were used across the site. This type of proactive planning and staging is what differentiates our field team and ensures that we deliver projects on time and on spec.

The project site map below shows the different foundation lengths needed to counteract the undulating slopes. With mixed post lengths across a total of 476 foundations, improper installation could easily result in time-consuming mistakes or longer installation schedules.



Post	Foundation Length
	12'6"
	8'6"
	13'6"
	9'6"
	16'6"

Solution

Seasoned pros deliver two weeks ahead of schedule

The site owner wanted a higher ground coverage ratio (GCR) to not only maximize the full potential of the land, but also heighten solar energy production for the site. Our GLIDE Fuse fixed-tilt system was selected as the best-fit solution due to its low-tilt angle and low clearance height—both of which allowed for the minimizing of row spacing so that the project site could accommodate more PV modules.

In this case, a total of 2,496 solar modules were installed and each array was customized to be four-high in portrait orientation at a 12.5-degree tilt angle. Additionally, the arrays were designed to withstand wind speeds of up to 105 mph and snow loads of up to 43 psf.

The value-engineered design of our GLIDE Fuse racking allows for a lower total part count and simplifies installation in the field, making it a highly cost-effective, energy-efficient option. Our smart design, paired with our installation expertise, allowed us to complete the project two weeks ahead of schedule.

Result

Achieving sustainability through solar longevity

The energy generated by the solar facility feeds directly into the water park, accounting for approximately 50% of its total electricity usage. In fact, the solar array is expected to produce more than 1.9 million kilowatt hours annually—with a projected operational lifespan of 30 to 40 years.

Leveraging Terrasmart's unique beginning-to-end expertise allowed the asset owner to kickstart their long-term sustainability efforts, while also maximizing the full potential of their site. With a reputation for getting things done, the Terrasmart team was proud to complete the project both ahead of schedule and within budget.

Conclusion

Deliver reliable results on unique sites with an experienced solar partner

With more than 15 years of successful solar projects on the books, we have a long track record of delivering racking and foundation solutions of every type, at every scale—on time and within budget. Whether you are facing unique terrain challenges, harsh snow and wind conditions, or tight deadlines, you can rely on our team's in-field experience and advanced design and engineering capabilities to ensure the successful deployment of your solar projects. Work directly with a reliable racking solution partner that has the expertise to help you accelerate your project timeline, achieve your solar energy goals, and maximize the full value of your site.

Our team of 180 in-field experts are ready to help you get your project started. Contact us today.

terrasmart™

About Terrasmart

Terrasmart, the renewable energy portfolio of Gibraltar (NASDAQ: ROCK), is a leading provider of solar racking technologies, electrical balance-of-system products, installation services, and project optimization software. Serving the commercial and utility sectors across North America, Terrasmart integrates products and solutions across the PV lifecycle to minimize risks and maximize returns. With over 19 GW of solar deployed across 4600 PV systems, Terrasmart creates unique value for more profitable solar anywhere. Visit **terrasmart.com.**

Secure Solar Futures

Secure Solar Futures is a commercial-scale solar developer serving the Mid-Atlantic and Southeastern United States. They have built a reputation for benefiting their communities, neighbors, and economies through uniquely optimized customer-driven solar solutions. Committed to community-based partnerships, they serve as leaders in making solar energy affordable for schools, government, hospitals, and local enterprises.

Got Electric

Got Electric is a leading commercial and utility-scale solar EPC and electrical contractor. They have installed over 200 MWs of solar since 2008 throughout the Mid-Atlantic. Got Electric manages the entire solar process from their construction-driven engineering, diversified procurement channels, and safety-focused power plant construction, making solar easy and simple to implement for their clients and hosts.