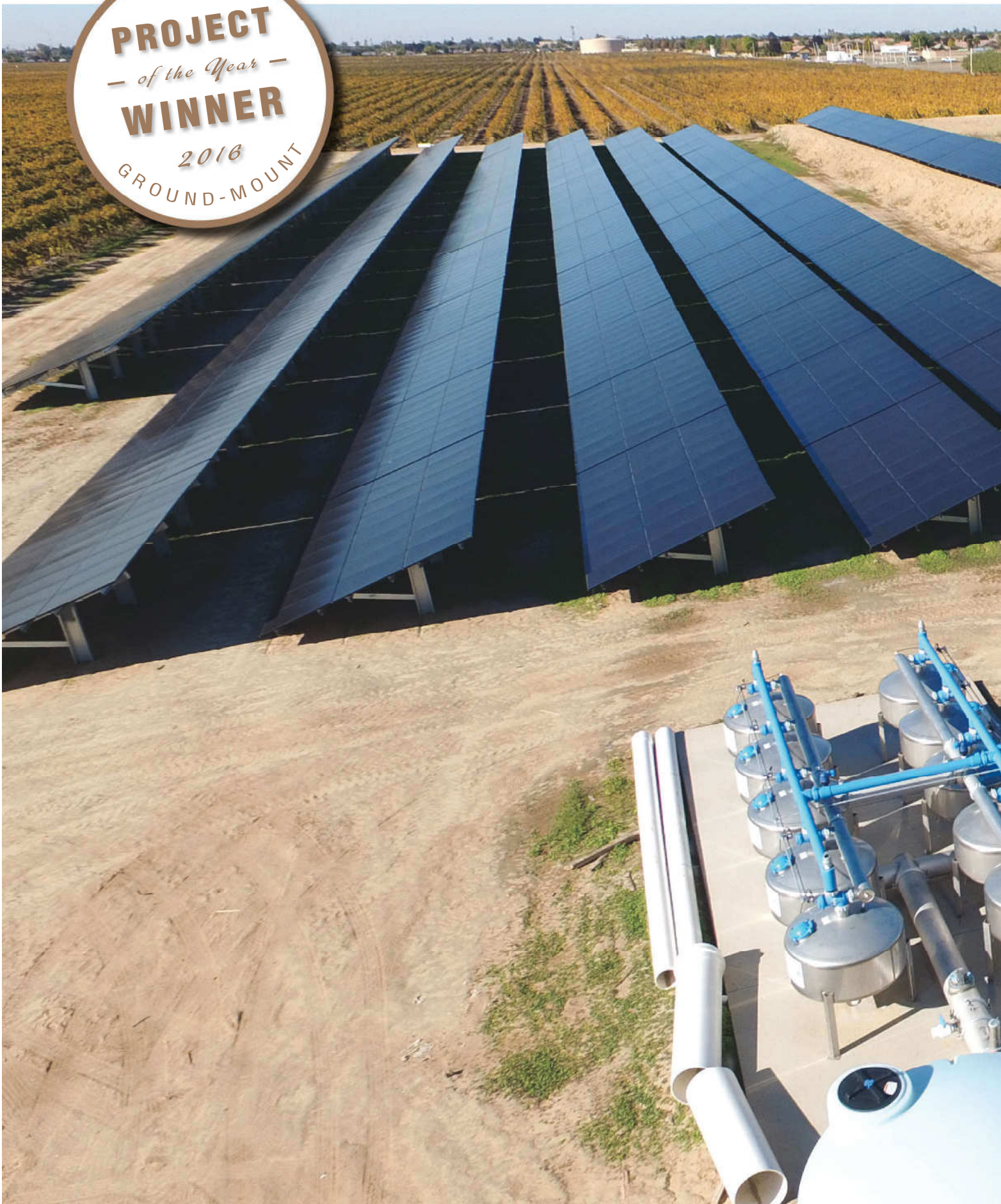


**PROJECT**  
— of the Year —  
**WINNER**  
2016  
GROUND-MOUNT







**Developer:** Staten Solar Corp.  
**Contractor:** Staten Solar Corp.  
**Modules:** Solar Frontier  
**Inverters:** Canadian Solar  
**Mounting:** Staten Solar Corp.

# LEVEE MOUNT

Delano, Calif. | 522 kW

By Chris Crowell

**T**he agricultural segment has a conundrum when it comes to adding solar: it could benefit greatly from the power generation, but dedicating too much land for a sizable enough project will cut too deeply into its revenue. Wasting productive land just isn't an option.

"Typically, farmers love their trees like their children, and they don't want any harm to them or to their revenue," says Sandipan Bhanot, president and CEO of Staten Solar Corp.

The owners of a farm in Delano, Calif., were just the latest example for Staten Solar, which has these conversations time and again since 30 to 40 percent of its revenue comes from agricultural installs. Solving this conundrum would be both a huge deal to its customers and its own business.

So, they solved it.

## ENTER THE LEVEE MOUNT

To avoid using up too much agricultural land, the Staten team looked to an area you'd normally be advised to avoid — a nearby body of water. Farmers construct lagoons to pool water for any sediment to settle so it will not clog sensitive drip irrigation systems. The idea was to install solar panels along the levees of the irrigation lagoons to avoid wastage of more productive space.

In terms of space-saving, it was a no-brainer. Generally, a 500-kW solar system covers about two acres of land, but by strategically placing solar panels along the levees of the lagoon, 20 to 30 percent of the productive land and the associated annual crop revenues are saved. This also helps avoid deforestation. The farmer can now save tens of thousands of dollars every year by harnessing the power of solar energy.





By strategically placing solar panels along the levees of the lagoon, 20 to 30 percent of the productive land is saved.

But obviously, execution of the idea is easier said than done, especially considering no one had done it before.

“There are no off-the-shelf racking systems available,” Bhanot says. “Most of the companies you can think of will not supply anything for a project like this.”

Staten engineered its own solution, dubbed the Levee Mount, that had to be both structurally sound for this unconventional location and meet the stringent approval of the local building department.

### SPECIAL CONSIDERATIONS

Like any project, the Levee Mount started by accounting for regional wind loads, which is why they chose a strong galvanized steel foundation. But given the close proximity to water, this agricultural solar facility was constructed with special designs from Staten’s structural and electrical engineering staff.

Some examples: AHJ requirements called for at least 10 ft of clearance to the back. The structure also required sacrificial steel so that in the event of any corrosion, the integrity of the project would not be compromised for at least 25 years. They also galvanized the steel to improve its resistance to corrosion and weathering.

All of the posts that support the racking system were driven, which required equipment large enough to ram a 19-ft post into the ground. Some areas of the levees went up to 6 ft and had narrow embankments.

“There were lots of construction challenges; we had to build specialty platforms for the machines to stand on to start ramming through the levee into the ground,” Bhanot says. “This took place in Kern County [Calif.], and they have special inspectors that sit on site to watch and make sure that what was drawn is done in the field. So, that was an added source of anxiety, being unsure how they would respond, but it all turned out great.”

Oh, and there’s also the small matter of direct current lines being so close to a pool of water. Staten Solar wanted to use string inverters and try to minimize the DC wiring as much as possible.

“Normally we’d have, let’s say eight tables feeding one inverter, so we’d put that inverter in the middle of a table so that the cabling from all those tables can be minimized,” Bhanot explains. “In the Levee Mount, we didn’t want to do that. Here we have the inverters on the ground, with longer homeruns, which adds to the cost, but in the overall context it’s



a miniscule cost increase for providing more safety because there is no AC voltage on the levees.”

### MORE LEVEE MOUNTS TO COME

This 522-kW Levee Mount project in Delano is just the first of many that have gone through the permitting stage and are awaiting construction as Statens Solar looks to make this strategy a bigger part of its focus going forward.

“We can go out to the customer and, if others say you have to cut down 300 trees, we can say they can preserve maybe 200 of them. Makes a huge difference,” Bhanot says.

In fact, the company is pitching customers as early as it can on the innovation to hopefully influence construction of the lagoons at the outset.

“Typically, we only install south-facing panels, so Levee Mounts can be done on the northern and southern edges of the lagoons,” he says. “We have been working with farmers so that they are now constructing their reservoirs based on our recommendation where the northern and southern edges are much longer than the east and west.”




After climbing this hill and placing PV on top of it, Bhanot thinks the next step to further improve PV’s



The levees went up to 6 ft and had narrow embankments.

value in the ag sector is getting AHJs on board with floating solar on top of the lagoon itself.

“We need to work with the AHJs to get them over the hump on that. We hopefully will have announcements on that next year,” Bhanot says, in what we can only assume is a spoiler alert for the 2017 Project of the Year awards. ■■



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