The Modesto Bee

Big battery at Stanislaus-Merced line called a game changer in solar-energy storage

BY J.N. SBRANTI
jnsbranti@modbee.comMay 22, 2014

DENAIR — In the middle of a remote almond orchard near the Stanislaus-Merced county border, a revolutionary “battery” was unveiled Thursday.

Energy experts are calling it a game changer that will help stabilize California’s electrical grid.

It’s the world’s largest iron-chromium redox flow battery, and it can store the electrical power generated by the adjoining photovoltaic solar panel array.

That’s apparently never been done before on such a large scale and for such a long duration, which is why energy industry bigwigs took the long drive out to see it.

“It’s big, it matters, and it’s going to be very, very important,” assured Jim Pape, chief executive officer of EnerVault, the Silicon Valley startup that designed it.

That company invested $30 million in developing the technology, and taxpayers contributed $5.5 million toward the effort.

A chunk of that money ended up being spent in Stanislaus County because Turlock’s JKB Energy built the facility in the orchard, hiring dozens of local construction workers to do the job.

JKB’s owner, James K. Brenda, is optimistic about building many more of the towering contraptions now that the technology is proven to work.

The technical description of what the massive battery does and why it’s special is mind-numbingly complicated.

But here’s how Pape describes it in laymen’s terms: “In these tanks, we can store the energy from the sun safely in saltwater for use when we need it.”

The trick is being able “to store electricity when the wind is not blowing and the sun is not shining,” explained Robert Weisenmiller, chairman of the California Energy Commission. “Storage is the real game changer.”

The battery is designed to hold electrical current – up to 250 kilowatts – for four hours. Weisenmiller said that’s enough to power 50 to 100 homes.

“What they’re doing is bottling sunshine, and that’s what we really need at this point,” said Weisenmiller, whose state agency contributed $500,000 to the project. “We look forward to seeing many more of these built in the Central Valley.”

Almond orchards, oddly enough, are a pretty perfect place for them.

After the region’s housing market collapsed at the start of the Great Recession, Brenda’s JKB Homes construction business dried up. So his energy company began focusing on installing solar arrays for agricultural operations, such as powering groundwater pumps in orchards and creating the energy needed for food-processing facilities.

Brenda said EnerVault representatives approached his company four to five years ago about connecting its prototype battery to one of JKB’s agricultural solar arrays.

Brenda convinced almond growers Steve Zeff and Kenfield Alldrin to allow the demonstration project to be built on their 583-acre Valley View 5 ranch off East Keyes Road. That orchard is about 20 miles east of Turlock, just inside Merced County.

The project was named EnerVault Turlock.

“I didn’t realize it was this big of a deal,” Alldrin said during Thursday’s dedication ceremony, which attracted dozens of visitors from as far away as Europe.

“Pretty much all our ranches have solar panels already” to power irrigation systems and other needs, Alldrin explained. To make room for the giant battery, about four acres of trees were removed. “They’re compensating us. It’s a fair trade.”

Before the battery was installed, excess electricity from the ranch’s solar panels was sent to PG&E for use throughout the power grid.

But that energy pretty much had to be used immediately, before it dissipated. Because all solar panels produce energy during daylight hours, that’s a problem. “California is poised to be overproducing energy in the middle of the day” from solar, wind and other renewable sources, said Matt Roberts of the U.S. Energy Storage Association. That’s why an electric storage solution is so important. “What they’re doing here today is being watched around the world.”

That also is why the U.S. Department of Energy contributed $5 million to fund the battery's development.

"I'm pleased this stimulus project is playing an important role in making our electric grid greener and more resilient," said Imre Gyuk, the DOE's energy storage manager.

Brenda said he hopes the technology's success will stimulate more opportunities for his company and local workers.

"We created some jobs and hopefully we're going to create some more," Brenda said. The demonstration project used "local vendors, local suppliers and local contractors," including electricians, plumbers, cement workers and painters.

EnerVault's Pape expressed optimism about installing additional batteries with JKB Energy: "We might be able to do a little business together as we put in systems around the Central Valley."