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Students brighten Sierra College's day with solar array

Unique program allows real-world practice with advanced tech

By: Andrew Westrope, Staff Writer



Students in Sierra College's energy technology program have applied their knowledge to a unique project over the past three years, and the college is ready to unveil the fruits of their labor.

Since 2010, more than 50 Sierra College students have had a hand in designing and building a 99-panel solar "array," or group of panels, capable of producing 18,000 watts of energy a day on the roof of a maintenance shed in the college's field corporation yard. Program administrators will explain the finished project in an industry advisory board meeting on March 20 before a ribbon-cutting ceremony at 3 p.m.

Michael Kane, associate dean of sciences and mathematics, said the system puts out enough energy to power about five homes and will save the college an estimated \$4,000 a year in electrical costs. It will be a modest cost savings for the college, capable of fueling several electric vehicle charging stations, but he said the point of the project was educational.

As a sequel to beginning and intermediate courses, the energy technology program had developed an advanced course to focus on commercial and "off-grid" standalone systems



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and allow students to work on a project instead of in a lab.

"When we first offered our ESS-34 class three years ago, we had this nice covered structure in our corporation yard, and we took a look at that and decided that would be a project we could get multiple years out of for the class," Kane said. "Effectively, over the last three years, each advanced installation class did one-third of the system."

Course instructor Steve Geiger said each class created an array of 33 panels using three strings of 11 modules. There are now three of those, as the last was completed and combined with the others by the 2012 class in December. Financed through college and grant funds, he said the project would have cost Sierra College \$100,000 if it had paid an energy company to do it.

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Geiger said the course is the only one in the region to let students create a commercial system from conception to completion.

"They designed it, they did the wire sizing of the project, voltage drop calculations, all of the advanced steps to set up a commercial system like this," he said. "A lot of the students ... actually did drawings for the project."

Kane said the college is now in the process of commissioning the system with Pacific Gas & Electric so it can be put to use. By this December, he said, future students will have built solar panels and power outlets for the shade structures around the pond by the student center, and an 18-panel array on top of the pump house buildings that operate the pond's fountain and waterfall.

"The beautiful thing about these systems is they're relatively maintenance-free. Basically once a semester we'll probably have to go out and clean the system, double-check connections and that sort of thing," Kane said. "The plan is, each fall the advanced class will have one of these types of projects to do somewhere on campus."

And thanks to a solid partnership between Sierra College's maintenance and operations department and its instructors, he said, the students can complete ambitious projects that require structural changes to college facilities.

Geiger described the program as a win-win for the college and its students, and a major accomplishment for both.

"I love teaching it, because you can see the light in their eyes, how excited they get to be able to come out there and do a big installation like that. It's really a fun project to work on, and a big opportunity for the students," he said. "In fact, some of those students are now doing lead work for solar companies in the area, and that's really cool. People who have gone through our program and have that experience have gotten some really, really cool jobs out in the local industry."

One of those students, Meleah Cordero, of Newcastle, credited the course with giving her a broad base of real-world knowledge that changed her life.

In 2009, she was a preschool teacher looking for a change, and since completing the program in 2010, she has worked in installation, marketing, sales and design departments at local solar companies. Cordero now works in project management at ES Electrical Construction, Inc. in Penryn and attributes "all of it" to her educational experience.

"When I first said, 'I want to do something with renewable energy,' when I was still teaching preschool, I didn't know what I wanted to do," she said. "Now I've done a little bit of everything, and I wouldn't have been able to do any of it without that class."

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