

SEPTEMBER 2011

Tennessee Technology Centers



Top photos courtesy of Bruce Moore at Tennessee Technical College.
Bottom photo courtesy of Tennessee Technical College web site.



Photos courtesy of Bruce Moore at Tennessee Technical College

The Cowan net zero houses and the simulated roof trainer are two of the teaching environments of the Tennessee Technology Centers.

Success Stories of the Southeast Solar Instructor Training Network

Florida Solar Energy Center (FSEC)

The Southeast Solar Training Network (SSTN) has the objective of addressing critical needs for high-quality, local, and accessible training and knowledge in solar energy system technologies. The SSTN is a five-year effort that will establish photovoltaic (PV) and solar water heating and cooling (SWHC) training and training related programs in a seven state and two territory region of the Southeast U.S. The Florida Solar Energy Center is the operator of the SSTN network. The SSTN “Train the Trainer” program has educated 145 individual faculty from 59 different institutions. Twenty-five of the institutions have committed to offering PV and SWHC training in the near term, while the remainder are in the process of developing courses. This short paper highlights “success stories” of a selected few SSTN training institutions.

Tennessee Technology Centers at McKenzie and Pulaski, Tennessee

The Tennessee Technology Centers (TTC) serve as premier providers for workforce development throughout Tennessee. The centers fulfill this mission by providing competency-based training through traditional and distance learning instructional delivery systems, providing high quality training and retraining of employed

workers, and providing high quality training that is economical and accessible to all residents of Tennessee.

Tennessee Technology Center at McKenzie

Mr. Bruce Moore received both PV and SWHC training on October 25-28 and November 8-10, 2010 at FSEC. The following describes how Mr. Moore has applied these skills to his students.

Gainesville Job Corps



Photos courtesy of Erick Green at Gainesville Job Corp

1. The Cowan Houses are two net-zero houses 10 miles from TTC. As a part of the training, Mr. Moore takes his class on tours through the houses explaining the technologies that make a net-zero home. The first house integrated geothermal heat and hot water and the second house uses ICF walls and solar hot water. The second house is still under construction and the class works on the house when the Cowans can use help.
2. Simulated Roof Trainer at TTC McKenzie – This facility consists of three roof structures and a pole mount for PV. The pole mount pictures are from the first installation class, and the system was the first in West Tennessee to use micro-inverters. It is a 540 watt system and at the time TVA did not allow small systems to connect to the grid. The industry partner was Solar and Renewable Power Systems and they used the class for labor. Solar and Renewable Power Systems was proud of the fact they were able to both use micro-inverters and convince TVA to change the policy for minimum size.
3. Sharp Solar plant in Memphis and Solar Farm near Brownsville – At the McKenzie location, the class is taken on field trips to the Sharp Solar plant in Memphis and to a 7 megawatt solar farm near an industrial site in Brownsville, TN.

Tennessee Technology Center at Pulaski, Tennessee

Mr. Clay Luna received PV training on October 25-28, 2010 at FSEC.

The TTC Pulaski Solar Photovoltaic Technology Program is a 12 month class which specializes in the design, installation and maintenance of commercial and residential solar PV systems. Recently, six students participated in internship opportunities which allowed four students to work in Lagrange, Georgia and two others in Knoxville, TN. In Georgia, Clean Green 4 West GA interned 4 students to install a 4.8 kW system for a local residential customer. This project involved both ground and roof mounted arrays implementing inverters and micro-inverters. Pulaski student Steve Spaninger, stated that

Photo comments: The first shows the students doing a thermal install lab. They installed a total of 4 thermal panels and then hooked them up to three different systems types inside – a drainback, an open loop, and a glycol. The photos with the PV panels show the 4 kW system they installed. It is pole mounted according to Florida code and with a licensed contractor's help they made all the electrical connections including those to the inverter. The students also worked alongside a licensed electrical contractor to install the electrical feed back to the grid.

“this internship gave students the opportunity to transfer classroom PV knowledge into real world experience.” The Knoxville project was directed by Energy Source Partners and involved two students installing a 102.9 kW commercial PV system. The system utilized the latest technology in PV and provided power to executive office suites. Pulaski student Kevin Brown stated that “we enjoyed our real world experience and our class is looking forward to our future in the Solar PV field.” The current class at TTC Pulaski is the second group of students to enroll in the new Solar Photovoltaic Technology Program.

Gainesville Job Corps

Job Corps is a no-cost education and career technical training program administered by the U.S. Department of Labor that helps young people ages 16 through 24 improve the quality of their lives through career technical and academic training. Gainesville Job Corps supports the program's mission of teaching eligible young people the skills they need to become employable and independent and placing them in meaningful jobs or further education. Solar energy is one of the technical areas used.

Mr. Erick Green received both PV and SWHC training in June 21-22, 2010 and August 17-19, 2010 at FSEC. Since the training, Erick has applied these skills to his students.

“I have formed a bond with the students and I will miss them when they leave. They all graduated today and will be leaving in the middle of August. I spoke about the training at the graduation and told them how when I came into the job I was worried and apprehensive since I felt that I did not have the skills to teach them. Then I told them one of the most important things I wanted them to take away from me was having the ability to ask the people around you for help. False bravado or pretending you know something is worse than useless. When I needed to learn I was able to reach out to John Harrison and the rest of the FSEC staff and you helped me. Leave your ego at the door and let people help you build upon what skills you already have and the sky is the limit. I cannot thank you any more!”

- Erick Green

St. Thomas, Virgin Islands



Photo courtesy of Linda Sibilly at Career and Technical Education, USVI Department of Education

Solar Training Kicks Off on St. Thomas, VI

People of the Virgin Islands (VI) have opportunities to get solar water heaters – VI Governor John P. deJongh Jr. pointed out recently that there will soon be three separate programs which will allow residents to receive financial assistance for the purchase and installation of solar water heaters. The funds are being administered by the VI Energy Office and residents interested in getting a solar water heater with no money down and willing to finance the purchase and installation costs may be eligible for an instant \$1,000 rebate, and up to \$3,500 in loans. This program will target 1,000 residents to benefit from a combination of renewable energy rebates and revolving loans. One million dollars has been set aside in rebates and \$3.5 million in revolving loan funds.

According to Energy Office Director Bevan Smith, “Another program being initiated by the Energy Office is the Solar Thermal in Moderate Housing Communities. This program offers incentives for the VI Housing and Finance Authority to install solar water heaters in 130 units.” Up to \$600,000 is budgeted for this program which is presently being finalized.

Smith adds, “Besides these stimulus funds, there is another \$401,000 in our regular rebate program that can be tapped for all renewables and energy efficient appliances.” These programs will run in concurrence with mandates established in Act No. 7075, which Governor deJongh signed into law earlier this year.

Mr. Bevan Smith, VI Energy Office Director, Chris Frederick, VI Energy Office, and David Fleming received both SSTN PV and SWHC training in 2010 at FSEC. Since the training, the following describes how they have applied these skills to the students in the VI program.

The Solar Water Heater Installation Program was sponsored by the United States Virgin Islands Energy Office and the Department of Labor in collaboration with the VI Department of Education’s Raphael O. Wheatley Skill Center on St. Thomas. A total of 29 students out of 31 successfully completed the program. Two students did not complete the program because they got full time jobs and were unable to continue. The program was divided into four phases: Core Curriculum (NCCER), ProTrain Online training, Hands-on, and on-the-job training. Students were issued three certificates: NCCER for the Core Curriculum, ProTrain Online, and a certificate of completion from the VI Department of Education.

Daytona State College

The Daytona State College School of Technology is dedicated to providing high quality, affordable degree programs in the latest technologies that



lead directly to successful employment. The School of Technology Programs include: (1) certificate programs designed to be completed in 2-3 semesters (one year or less) and give students the skills necessary to be ready for the workplace; (2) Associate of Science programs which can be completed in 4-5 semesters; and (3) Bachelor’s Programs that build on Associates programs as a full 4 year degree.

Mr. Larry Pivec and Jim Cox received SWHC training on March 22-24, 2011 at FSEC. Since the training, Daytona State College has become a NABCEP Entry Level Exam Provider and has taught PV and SWH courses.

“We have copied part of the email we received from NABCEP today. We could not have accomplished all this without you. Thank you, thank you, thank you!!!!”

-Larry Pivec and Jim Cox of Daytona State College

“It is my pleasure to include in this e-mail an approval letter for Daytona State College to become a registered NABCEP PV Entry Level Exam Provider. You can now call Daytona State College a Provider of the NABCEP Entry Level Exam. ... Congratulations and I look forward to working with you.”

-Chad Wolf, Entry Level Program Coordinator, NABCEP

PV Course

The PV Entry Level course was completed in May 2011 and the solar water heating course began in June.

Daytona State College



Entry level photovoltaic course was completed in May 2011

Photos courtesy of Larry Pivec at Daytona State College

Smart North America

Ms. Ruth Page-Nelson received PV and SWHC training on October 25-28, 2010 and November 8-10, 2010 at FSEC and attended the PV Technical Sales course in Atlanta on July 12-13, 2011. The following describes how Ms. Page-Nelson has applied the training skills.

1. Smart North America (SNA) has received a State Energy Sector Partnership Grant to develop green jobs training at Chattahoochee Valley Community College (CVCC). Solar training has not commenced, but they are submitting curricula to NABCEP so that the persons trained will be certified. This fall CVCC will offer a 1 credit hour course called Introduction to Renewable Technology. In the spring CVCC will offer a 3 credit hour solar thermal course, which was developed by SNA. CVCC will add a PV course in Fall 2012, which SNA is also developing. Supporting companies include AET Solar, Power Partners, Grundfos Pumps, and Rheem Solahart. CVCC will also be utilizing unique learning deployment techniques such as real life gaming technology interspersed in the training to allow for both deployment and simulation of the installation and performance.
2. SNA's main focus has been the development of solar training with 3D imagery for colleges. Partnerships are key and SNA is convincing companies to release their solar drawings in exchange for training and advertisement. SNA has helped establish corporate partners who have provided 3D models to be interspersed in the Solar Thermal and Solar PV training. Where SNA has not been able to locate 3D models, they are working to create them in conjunction with a team of developers. CVCC has agreed to become a Dealer Authorized Trainer for several manufacturers.

3. SNA met with the new director of the Auburn University Sustainability Institute. They are working together to partner with CVCC as the training arm for university students in renewable technology. Auburn's Sustainability Institute, in conjunction with facilities, is planning an on-campus pilot program for solar thermal and PV and SNA will provide the training. The first project is solar thermal on a greenhouse.

Sample of Course Listings

Solar educational programs are becoming available throughout the SSTN region. The following is list of websites of solar programs from various institutions. All these programs have received SSTN training for their faculty.

1. Moultrie Technical, Moultrie, GA
www.moultrietech.edu/acad/program.php?id=930
2. Calhoun Community College, Huntsville, AL
www.calhoun.edu/Acrobat/Programbrochures/RenewableEnergy.pdf
3. Broward College, Ft. Lauderdale, FL
www.broward.edu/ext/DepartmentCourseList.jsp?Name=ETE
4. Chattahoochee Valley Community College, Phenix City, AL
www.cv.edu/documents/catalogs/2011_2012_catalog.pdf
5. Withlacoochee Technical Institute, Inverness, FL
www.wtionline.cc/solarthermal.htm

Smart North America



Ruth-Page Nelson, SNA, and Dr. Janet Ormund, Dean of Workforce Development at CVCC, receive donations from Deborah Purcell of Power Partners (Solar Thermal Company)

Braden McNeal, a junior developer for CVCC, is in charge of converting images into 3 dimensional images for training models which can be deployed, suspended in mid air and rotated to make very real depictions.