

EMPLOY FLORIDA BANNER Center Alternative Energy

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FSEC to Lead Alternative Energy Training Program in Florida

A statewide training program for alternative energy technologies, called the Alternative Energy Banner Center, will make alternative energy training available to students throughout Florida.

Workforce Florida, Inc. initiated the training program and awarded a contract to the University of Central Florida's Florida Solar Energy Center (FSEC) in February to establish and lead the training center, along with six other Florida partners.

FSEC's educational partners for this training program – Brevard Community College in Cocoa, Westside Tech in Orlando, Tallahassee Community College in Tallahassee, and Broward Community College in Ft. Lauderdale – cover the majority of Florida's most populated areas. The Florida Solar Energy Industries Association (FlaSEIA) and selected members from Florida's utility and

solar industries will supply the project's business affiliations. The Brevard Workforce Board is also a partner to this program.

Over the next 10 years, Florida utilities will have to produce 75 billion more kilowatt-hours than the current level of energy output to accommodate the future electric energy needs of the state, according to recent projections. And last year, Governor Charlie Crist issued three executive orders on energy usage and climate change, one of which calls for Florida utilities to produce at least 20 percent of their electricity from renewable resources with a strong focus on solar and wind energy.

In addition to Florida facing these energy challenges, educational programs and curriculum in alternative energy technology are limited throughout Florida and the United States. There are some

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Community Colleges Have What It Takes To Train Solar Workforce

A fundamental objective of solar workforce development is to improve the quality of solar products and systems and, hence, increase consumer acceptance. However, in training individuals to meet growing demand, it is critically important to ensure the marketability of their new found skills and talents. In some states, such as California, long-term, progressive policies have produced a market for solar systems that is sufficiently large and stable enough to support a cadre of "solar specialists." However, in most of the country, uncertainties in future state policies and incentive programs call for a more prudent approach to training: one that emphasizes the development of "add-on" rather than "specialty" skills for well-established construction tradesmen and engineering and design professionals.

Community colleges and vocational-technical institutes are ideally suited to address the rapidly growing need for workforce development in solar, renewable energy, building energy efficiency and energy management. For many years, there have been a relatively small number of institutions that have addressed these training needs. These institutions include the Florida Solar Energy Center, Southwest Technology Development Institute, North Carolina Solar Center, Solar Energy International, Lane Community College, and a few others. However, it has become increasingly apparent that training needs to be locally accessible if the solar industry is to mature and adequately meet the workforce needs in a rapidly expanding market. Community colleges offer the best opportunity to meet these workforce needs.

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New Solar Policies Mean More “Green” Jobs

For a number of reasons, the demand for solar technologies has been steadily increasing during the past two years.

Favorable solar policies such as the 2006 Florida Legislature’s solar rebate and incentive program have made buying solar systems more reasonable and affordable for many Floridians. Governor Crist’s executive orders on climate change have also encouraged Floridians to invest in solar systems for their homes or commercial buildings.

Consumer demand is not the only economic factor rising. An increase in the number of applicants for the State Certified Solar Contractor License also shows that entrepreneurship in the solar industry is steadily increasing. The demand for highly-skilled solar system manufacturers, distributors and installers has been driven up as well due to the steep increase in consumer interest in solar technology. For these reasons, solar policies can also be used as an economic tool to increase high-tech, high-paying jobs in the state.

Favorable solar policies are also an effective way to diversify Florida’s energy portfolio. Historically, Florida’s solar industry has been focused on solar thermal systems, including solar water heating and solar pool heating. Florida is home to a number of solar thermal manufacturing

companies, yet only three photovoltaic (PV), or solar electricity, manufacturers have a presence in Florida – none of which include manufacturing facilities.

However, as new solar energy policies take hold in the state, PV systems are being installed at record levels. As a result of the 2008 Florida Energy Bill, Floridians can expect more PV companies eyeing the state for expansion. This bill provides corporate tax credits for new solar panel manufacturers, as well as the creation of a renewable portfolio standard and demand side renewable energy programs. These programs will also stimulate the state’s existing solar thermal industry, with current manufacturers expanding their base and new companies looking to enter the solar market.

The expansion of manufacturing activity will largely depend on continued consumer demand for and satisfaction with solar energy systems. Quality control at the point of installation is critical to the long term operation of any solar product. Trained technicians are the only tool that will ensure this. The Banner Center will provide a much needed vehicle for the solar energy industry to boost its workforce development. The outcome will be new, sustained employment and a boost to the local and state economy.

“The Banner Center will provide a much needed vehicle for the solar energy industry to boost its workforce development.”

Alternative Energy Banner Center Newsletter

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If Children Could Vote, Solar Would Win

While the Florida Solar Energy Center (FSEC) focuses on the research and development of energy-efficient and renewable technologies, passing on those technologies to the public, especially to students, is just as important. One of the goals of FSEC’s education department is to help young people become energy-literate citizens by developing a basic understanding of energy efficiency, energy conservation, solar and other renewable energy technologies.

Students from all over the Space Coast, ranging from fourth-graders to high school seniors, and their teachers visit

FSEC hoping to gain some knowledge about the research and testing being conducted there. On these visits, students are briefed on the history of the center and its research areas, given a tour of the facility, and participate in hands-on renewable energy experiments. They quickly learn that the sun’s energy can heat water to its boiling point, and that solar electric cells, called photovoltaics (PV), can silently power an electric motor with no greenhouse gas emissions. Students and teachers alike get excited about solar power and want to know where to find their own solar cells.

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educational organizations throughout the U.S. that offer courses and workshops in alternative energy, but this training is not routinely available at traditional vocational schools, community colleges or universities, nor is it designed for workforce deployment.

Addressing these needs and concerns, the Alternative Energy Banner Center will offer two core programs in photovoltaic (solar electricity) and solar thermal (solar hot water and pool heating) technologies. Both programs will be designed for students at any level, regardless of previous skill level. The results from the initial program offerings will be analyzed and used as feedback to update and finalize the curriculum. After the first year, the plan will be expanded and offered throughout Florida at other community colleges and technical centers. The initial curriculum program for these two areas will utilize existing resources, but will expand depend-

ing on response from industry and partner feedback.

The Banner Center Advisory Council held its first meeting at the Florida Solar Energy Center on Friday, April 25, where more than 30 representatives from the solar industry, municipal utility companies and educational institutions discussed training methods and curriculum for the program. Instructors for the alternative energy courses started their training at FSEC on May 19, 2008, with courses being offered to students as early as this summer term, depending on the institution.



Photovoltaics course instructor, Donard Metzger, provides instruction on how to test a battery's load.

Community Colleges - continued from cover

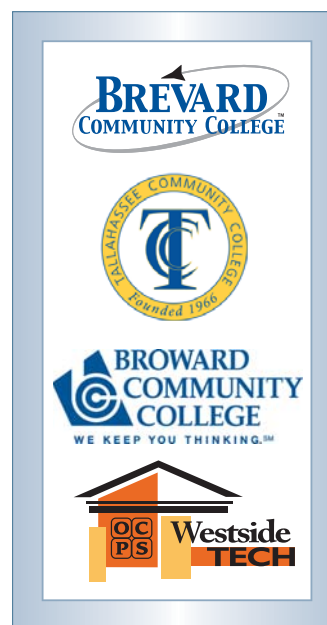
In investigating target groups most in need of training, four groups stand out: system installers, building code officials, system designers, and licensed contractors. Other job categories that have been identified include sales people and site surveyors, engineers, architects and building designers, construction cost accountants, and utility personnel.

Of all the established educational institutions, community college programs match well with workforce development needs. For example, many are actively involved in training the construction trades, including electricians, plumbers, roofers, glazers, carpenters, HVAC specialists, etc. These programs can be enriched fairly easily with new courses in solar and alternative energy technologies to provide add-on skills that broaden their marketability to solar, electrical and plumbing contractors. In addition, many of these institutions have the opportunity to introduce cross training into their curriculum. For example, student or apprentice electricians can be cross trained in roofing and glazing, plumbers can be cross trained

in roofing and electrical, etc. This type of cross training is more easily accomplished by community colleges and vocational technical institutes than by other educational institutions.

Other areas in which community colleges have programs that match well with solar energy workforce development needs include the following:

- Continuing education courses for code officials.
- Associate in Applied Science (AAS) degree courses for solar technicians and building energy managers.
- Associate in Science (AS) degree courses for curriculum enrichment in solar system design, building sciences and energy management. Such courses and associated programs can be structured to interface nicely with Bachelor of Science in Engineering Technology (BSET) degree programs.
- Applied Technology Diplomas as part of new AS or AAS



degree programs for solar system design, building sciences and energy management.

- Post-secondary Adult Vocational Certificate programs for solar sales people and site surveyors, construction cost accountants, and solar technicians.
- Introductory courses in solar energy that are aligned with entry level certification offered through the North American Board of Certified Energy Practitioners (see www.nabcep.org).

“Training directors around the country have added PV installation training to their offerings and approximately ten thousand electricians develop these add-on skills every year.”

One of the best models for training is offered by the National Joint Apprenticeship and Training Committee (NJATC). NJATC is jointly sponsored by the International Brotherhood of Electrical Workers (IBEW) and the National Electrical Contractors Association (NECA). NJATC has over 300 training centers in the U.S. and develops curriculum packages that are available to several thousand trainers nationwide. Consequently, training is offered locally to tens of thousands of apprentices, journeymen electricians and electrical contractors. Most recently, NJATC, in partnership with American Technical Publishers, developed an extremely comprehensive curriculum package photovoltaic (PV) system installation. The curriculum includes a new textbook by Jim Dunlop (formerly of FSEC) entitled Photovoltaic Systems and an accompanying CD-ROM; a Photovoltaic Systems Resource Guide containing PowerPoint presentations for all fifteen chapters of the text, including descriptive notes for all slides; an instructor's guide, instructional outlines and a list of competency skills for each chapter; test development software; video clips of solar installations and other demonstrations; solar radiation data and sun path charts; and a variety of other useful forms and information. Training directors around the country have added PV installation training to their offerings and approximately ten thousand electricians develop these add-on skills every year. They are

still highly qualified electricians and are, therefore, not as susceptible to fluctuations in the solar marketplace as would solar specialists.

Two states, Florida and New York, are conducting pilot programs that replicate in part the NJATC model. Both states are working with community colleges and vocational-technical institutes to assist faculty in developing new PV system installation courses at their institutions. Whereas the NJATC program trains union electricians, the programs in Florida and New York will not be restricted to union personnel.

The Florida program is sponsored by Workforce Florida, Inc., and is administered by FSEC. The New York program is sponsored by the New York State Energy Research and Development Authority (NYSERDA) under contract with the Interstate Renewable Energy Council (IREC). Approximately 35 faculty members from community colleges and vocational-technical institutes in both states will not only be given the curriculum developed by NJATC, but will also be instructed in how best to use it. In particular, faculty will be exposed to the nationally recognized and NABCEP-approved task analysis for PV installers, and they will be encouraged to develop their courses to align with these national training standards. Once the new courses are well-established, faculty will be encouraged to consider applying for course and/or program accreditation by the Institute for Sustainable Power (ISP). ISP is an international accrediting body that not only accredits alternative energy training programs, but also certifies instructors.

Once these two pilot programs have been implemented, evaluated and improved, the U.S. Department of Energy is interested in offering similar programs nationwide, but first in states with the fastest growing solar markets. The local training, comprehensive curriculum and materials, emphasis on “add-on” skills, and quality measures provided through these programs will contribute significantly to meeting the workforce development needs of the solar industry.

Orlando Using Solar to Become “Silicon Valley of the Southeast”

In April, the City of Orlando, along with Orange County Government and Orlando Utilities Commission (OUC), was selected as one of 12 Solar American Cities by the U.S. Department of Energy (DOE). The city received a \$200,000 grant for two years to increase the use of solar technology and renewable energy in Orlando.

With OUC serving as program manager of the project and Orange County Government as an alliance partner, city leaders aim to develop a strategic energy plan with a strong focus on sustainable urban growth policies. These policies will pave the way toward achieving the city's goal of installing 15 megawatts of solar power by 2015 and transforming Metro Orlando into the “Silicon Valley of the Southeast.”

This strategic energy plan will include a Web-based solar resource mapping tool and analysis to identify the region's solar opportunities, as well as a series of collaborative sessions with key community leaders. These sessions will contribute to the development of a list of solar policies and priorities to assist Metro Orlando in meeting its aggressive solar installation goals. Featuring subject matter experts, these

sessions will provide insight to integrating solar technologies within key sectors, such as multi-family housing, new residential buildings and public buildings. Also included in the city's energy plan is the development and implementation of solar education programs that target groups that are integral to the successful development of a sustainable solar technology base in Metro Orlando.

At the end of this project, a master solar plan will be developed to lay the foundation for a viable solar market and provide a model of sustainability for other communities throughout the entire state of Florida.

In addition to funding, the DOE will provide technical assistance to help integrate solar technologies into energy planning, zoning and facilities; streamline local regulations and practices that affect solar adoption by residents and businesses; present solar financing options; and promote solar technology among residents and local businesses through assistance with the expansion of outreach and curriculum development efforts.

“...city leaders aim to develop a strategic energy plan with a strong focus on sustainable urban growth policies.”

Brevard Workforce Development Board, Inc.

Along Florida's Space Coast, the Brevard Workforce Development Board, Inc. (BWDB) is working to help the Space Shuttle program workforce transition to the new aerospace program, Constellation. This transition means a loss of about 3,000 jobs in Brevard County, which are currently filled by highly-skilled workers. The Banner Center and BWDB will merge efforts to develop training programs that can increase job potential for these skilled workers within Brevard County and throughout Florida during the next two to four years. BWDB will help recruit students for these programs from the cur-

rent aerospace workforce, and support the Banner Center in its efforts to meet the growing demand for professionals in the solar industry.



Courtesy of NASA

As the Space Shuttle program comes to an end, training programs will help transition its highly skilled workforce into new jobs.

TCC Partnership with FSEC a “No-Brainer”

As part of the new Alternative Energy Banner Center, Tallahassee Community College (TCC) has partnered with the Florida Solar Energy Center (FSEC) to provide solar thermal and photovoltaic (PV) training in the Big Bend region. This Banner Center will provide training and education in alternative energy technologies for students all over Florida. Beginning in the fall of 2008, TCC will provide training for alternative energy and its applications to building contractors, incumbent construction workers and any other interested parties located in the Big Bend/Panhandle region.

The close connection TCC has with its local workforce and FSEC's long history of being a driving force in alternative energy research and education make the partnership between these two institutions ideal. And Rick Frazier, director of economic and workforce development at TCC, believes that the Big Bend region is primed for solar and PV training.



“Without a doubt, this partnership is just the beginning of a long relationship that will provide new and essential skills to our local workforce,” Frazier said. “Plus, it will provide other economic opportunities in North Florida, and contractors who participate in the training programs at TCC are opening more doors to financial opportunities as ‘green’ building becomes increasingly important.”

TCC's interest in providing alternative energy training can be linked directly to local commitments to alternative energy. The City of Tallahassee strongly encourages the use of solar and PV technologies in residential and commercial applications. For more information on the City of Tallahassee's alternative energy programs visit <http://www.talgov.com/you/electric/solar.cfm>. If you are in the Big Bend region and are interested in taking solar and PV training courses, please contact TCC at (850) 201-8760.

Broward CC Develops Institute for “Green” Jobs

Energy industry professionals are beginning to notice the strong public interest in alternative energy, especially solar energy and “green” building and manufacturing techniques. There is also a strong legislative interest in the development of sustainable energy industries and training programs in Florida. As consumers become more environmentally-conscious, consumer-driven technologies need to be researched and developed in higher quantities, though few companies have knowledgeable personnel when it comes to sustainable energy.

At Broward Community College (BCC), a new Institute for Renewable Resources will serve the residents and

workforce of Broward County and other south Florida communities by providing renewable energy education and training, specifically in the solar energy field. As



the institute develops, BCC will be well-equipped to provide the necessary skills and education in order to meet the growing demand for industry profes-

sionals and train Florida's energy workforce of tomorrow.

“Even though alternative energy has been identified as an ‘emerging industry’, instruction is very limited in this field throughout the state, and is virtually

non-existent in the Southeast region of Florida,” said Mason Jackson, president and CEO of WorkForce One in Broward County. “There is strong evidence from national, state and local municipalities that the need exists, and that in the near future there will be a high demand for these skilled jobs, making solar energy courses what we currently need most.”

Job-seekers as well as those already working in the industry can benefit from BCC’s sustainable energy institute. Utilizing this type of continuing education and credit program identifies students as professionals and equips them with a recognized skill. This allows flexibility and mobility for those who have a certificate or degree, and can provide additional

credibility while instilling consumer-confidence in their work among their customers.

This institute will provide curriculum for certificate and degree programs. For example, an associate degree in sustainable energy would include a course load featuring classes in solar, water, biomass, tracts, or any combination of these. Business and manufacturing components are also integral to these programs for “green-collar” jobs. By combining all of these skill-sets, students will be well-prepared to meet the needs of Florida’s energy workforce demands.

As a leader in education, BCC can meet tomorrow’s needs for sustainable energy and new green jobs through this endeavor.

Calendar

**Solar Thermal
Train the Trainers**
June 11 - 13, 2008

PV Train the Trainers
June 16 - 19, 2008

Advisory Meetings
September 8, 2008
January 2009

Focus Groups
September 8, 2008
January 2009

Westside Tech Going Green



Over the past five years, Westside Tech has been developing alternative energy projects utilizing solar power. The school currently produces clean electricity throughout the campus with its four photovoltaic (PV) systems, and employs the only solar thermal system among Orange County Public Schools (OCPS), which is used to provide hot water to the school’s cosmetology programs.

In conjunction with the OCPS Energy Administration and the Florida Department of Energy, Westside Tech recently completed a bio-diesel demonstration center on campus, where used oil from the culinary program is converted into bio-diesel fuel. This alternative fuel is being used to create clean electricity for

the demonstration center and heat water for the cafeteria kitchen. Westside Tech is currently working to develop an “Alternative Energy Field Trip Experience” for public school students that will involve the PV and the bio-diesel projects on-site.

The overall goal for Westside Tech is to take these alternative energy components and weave them together, developing a complete and unique alternative energy education and training program for OCPS. Westside Tech is favorably positioned to develop educational programs for public schools, as well as training programs for the growing PV industry.



This photovoltaic system at Westside Tech is one of four on campus generating solar electricity for the school.

Courtesy of Westside Tech

Florida Solar Energy Center
1679 Clearlake Road
Cocoa, FL 32922-5703

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One question always asked during these tours is, “Why aren’t we using more solar, especially here in Florida?” When teachers and parents are asked this same question, they usually respond that solar is too expensive, not much is known about it, the technology is still being developed, no one knows where to find solar information, or that it will ruin a rooftop, blow off in a hurricane, or upset the homeowner’s association.

FSEC researchers have spent 30 years working out these issues, and the only legitimate issue with installing solar systems currently is the cost, even though solar thermal systems – for hot water and pool heating – have been made quite affordable. PV is still relatively expensive, but as other energy costs rise, the cost of PV is looking more palatable. Many states promote solar systems as a good investment by offering rebates and tax incentives, which increase the interest and demand for solar systems. Florida is not far behind these states, but due to state budget is-

sues, these rebates are not very timely and consumer confidence is low. Florida not only needs a long-term strategy for deploying solar energy throughout the state, but it needs to educate its citizenry about energy efficiency.

FSEC Director, James Fenton, often says, “The cheapest kilowatt is the one you don’t use or have to produce.” Energy efficiency is the first step toward energy conservation. That means thinking about energy as we go through our daily lives, purchasing things that use less energy, and turning off power when it’s not in use. If you can afford it - go solar. Kids get it, too bad they can’t vote.



Students experiment with solar electric cells while visiting the Florida Solar Energy Center.

Nicholas Waters