EMPLOY FLORIDA
BANNER Center
Alternative Energy


Volume 1, Number 2 Winter 2009

STEPS to a Career in Solar Energy

1. Do a self assessment – Ask yourself:

- *What are my strengths and interests?*
- *How soon do I want to be working in the field?*
- *What background and training do I have already that can be transferred to a new trade?*
- *What kinds of jobs are available?*
- *What skills do I have or need?*

This part involves being honest with yourself. There are a variety of careers in the renewable energy field. Some require much more knowledge and training than others. Some are far more physically demanding and require strength and agility. For example, installing solar on a rooftop involves climbing a ladder and moving around on an angled surface at least 15 feet off the ground in all types of weather. In Florida, it gets very hot up on a roof. If you are afraid of heights or don't like to sweat, this is probably not the job for you.

2. Select an area of focus

The demand for trained practitioners and professionals in renewable energy is growing rapidly. There are many career paths to choose from, including the following:

- *System Design and Installation (Architecture and Engineering)*
- *Maintenance (System Technicians and Service Personnel)*
- *Sales and Marketing*
- *Research and Development*
- *Finance and Accounting*
- *Policy and Planning*

Design

System design is the process of selecting sizing and configuring components to form a complete system. For small, simple systems such as a solar thermal system for residential applications or a stand-alone photovoltaic system for lighting or water pumping applications, the required knowledge can be obtained fairly quickly and easily by taking one or two courses. For larger or more complex systems, more training will usually be required, and may range from a certificate program consisting of three or more courses, to a two-year or four-year program.

Architects and engineers (A&E) are the design professionals responsible for preparing the plans and specifications used by contractors on large construction projects. Consequently, A&E firms often assume the responsibility for designing and managing large renewable energy projects. Examples of such projects include large commercial PV systems on buildings, and utility-scale PV systems and large wind farms.

Installation

Currently, the greatest demand in solar and small wind systems is for installation practitioners. This career path is especially attractive to individuals who enjoy hands-on construction work. Apprenticeship programs to train

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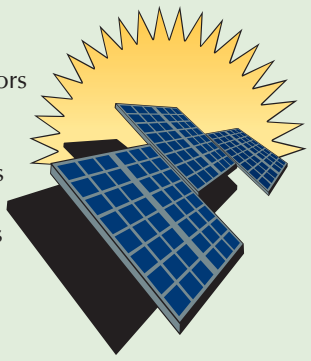
Want to Go Green?

A Sample of Jobs in a Green Economy

Solar Power

- Construction equipment operators
- Construction managers
- Electrical engineers
- Electrical equipment assemblers
- Electricians
- Industrial machinery mechanics
- Installation helpers
- Laborers
- Metal fabricators
- Welders



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electricians, plumbers, roofers, etc., provide an excellent entry into this career path. In addition to traditional apprenticeship programs offered by trades groups, many community colleges and vocational-technical schools offer such training. For experienced construction workers, such as journeyman electricians and plumbers, often a recognized workshop or short course in one of the renewable energy technologies will suffice to steer their careers in a new and greener direction.

Maintenance

Once renewable energy systems have been installed, technicians and service personnel are required to monitor performance, ensure proper operation, perform scheduled maintenance, and repair or replace components as needed. Two-year technician programs at community colleges, such as electronics or computer science provide good backgrounds for technician careers. Technicians are also heavily involved in testing components and complete renewable energy systems.

As markets for renewable technologies expand, so does the demand for marketing personnel, entrepreneurs and sales professionals. Often the individuals responsible for selling renewable energy systems are also responsible for assessing the suitability of sites for renewable energy installations, and for estimating construction costs. Many renewable energy companies are recruiting marketing majors and training them in site assessment and construction cost estimation.

Research and Development

Research and development is absolutely necessary to advance science and engineering, develop new materials and processes, and identify technological breakthroughs that will have profound effects on our lives. Students interested in R&D should plan on science and engineering undergraduate programs followed by graduate studies that address significant energy and environmental challenges.

Finance and Accounting

Meeting the ever-increasing energy demands of the country will require not only a large number of small renewable energy applications, but also many very large systems. These large systems require professionals that understand the very important and necessary role that financing plays in project implementation. Likewise, because of their complexity, these large projects will require professionals with expertise in construction cost accounting. An undergraduate major in finance and accounting, coupled with a minor or a certificate in a technical field, will provide a strong foundation for a career in renewable energy.

Policy and Planning

Renewable energy technologies and government policies change rapidly. Professionals who can analyze and anticipate the effects of changing policy are of value to both industry and government. The renewable energy industry is becoming more crowded and highly competitive. Industry executives need policy analysts and planners who can help develop business strategies that will help them succeed. Government needs professionals with similar skills to meet the needs of their citizens. Backgrounds in political science, computer science, and business administration should prove useful to individuals seeking careers in policy and planning.

3. Determine what degrees, certifications or licenses are required to do the job you have selected.

- *Solar or Electrical Contractor*
- *NABCEP Certified PV, Solar Thermal or Small Wind Turbine Installer (NABCEP: North American Board of Certified Energy Practioners)*
- *Graduate of an Electrical of Other Construction Trade Apprenticeship Program*
- *Certificate Program Recipient (3-6 Courses)*

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Alternative Energy Banner Center Newsletter

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- *NABCEP Entry Level Certificate of Knowledge in PV*
- *Architecture or Engineering Degree*
- *A.S. or A.A.S. Degree in Electronics, Building Sciences, Electrical or Mechanical Construction, Energy Management, or Renewable Energy Technology Program*
- *BET Degree in Construction, Mechanical Design or Electrical Systems (BET degree: Bachelor's degree in Engineering Technology)*
- *Two or Four-Year Degree in Computer Science, Business, or Political Science*
- *Post-Graduate Degree in Science or Engineering*

4. **Investigate schools and training programs, such as Banner Centers, Colleges, etc.**
5. **Determine time and costs of training**
6. **Look for grants and special workforce programs (JATC, Apprenticeships, etc.)** ***(JATC: Joint Apprenticeship and Training Committee)***
7. **Contact your local Job Link or workforce office for support**
8. **Enroll in and complete training**
9. **Update your resume and get it out to appropriate businesses**
10. **Network with industry professionals**

Get the word out that you are looking for a job. Get to know those in the professions where you want to work.

Network with industry professionals

The Florida Solar Energy Industries Association (FlaSEIA), founded in 1977, is a nonprofit professional association of companies involved in the solar energy industry. Members include manufacturers, distributors, contractors, retailers and consultants who provide solar water heating, pool heating and solar electric systems. Research organizations, allied trades and trade groups and utility companies also are members.

As the industry has grown, so has the pride and professionalism of its practitioners. The Florida solar industry is among the most highly skilled and qualified workforces in this country, due in large part to the support of the Florida Solar Energy Center and its long history of education, training and equipment quality control programs. As the demand for solar energy has grown, so has the need for trained and trainable employees to supplement the current workforce. Studies have indicated that the solar industry will grow exponentially as the demand for solar energy explodes, driven by financial incentives, greenhouse gas reduction strategies and energy security concerns.

Employment categories within the industry are far ranging, and include executives, middle managers, sales and marketing personnel, and administrative support staff, in addition to trained installers. The best way to find your dream job in the solar industry is to network with others in the field. State and national meetings of the solar industry are a great way to see first-hand what advances have been made in the technology, as well as which companies are poised for growth. FlaSEIA is the Florida chapter of the national Solar Energy Industries Association (SEIA). Both organizations have Web sites that can provide an initial resource. Member directories are accessible and provide contact information for each company. While FlaSEIA has been known to forward resumes from jobseekers to its membership base, personal contact via letter or e-mail directly to the firms that are of interest is a better approach.

Many solar companies also offer training for their particular product line.

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Brevard Workforce Development Board, Inc.

The Brevard Workforce Development Board, Inc. (BWDB) and its Aerospace Transition Team is continuing to make strides in providing tools and services to those aerospace workers impacted by the conclusion of the Space Shuttle Program. The latest undertaking is the Aerospace Workforce Transition (AWT) Outreach Development Services Project.

Life Long Learning is the core message that has been developed and will consistently be repeated to the workforce. One of the vehicles that the Outreach Development Services will use to deliver this message is a hard-copy aerospace newsletter specifically targeted toward the segment of the workforce that does not utilize computer communication on a normal basis.

The Aerospace Workforce Transition Outreach Development Services serves the low to moderate income populations throughout Brevard County by reducing the number of aerospace workers that will be unable to make a successful transition once the Shuttle Program concludes.

Workforce *- continued on back cover*

Broward College Offers Solar Electricity Courses Photovoltaic Systems Installation and Design

Renewable Resources and Going Green are both hot topics today. Global warming, high energy costs and shrinking natural resources are causing us to rethink our usage of resources and the environment and to develop alternate sources of energy.

Leading the way to make alternative energy training available to students throughout Florida are the Alternative Energy Banner Center partners. With the assistance of the Florida Solar Energy Center (FSEC) as the lead organization of this workforce program, Broward College Continuing Education is now offeing two renewable energy courses. The *Installing Photovoltaic (PV) Systems and Designing Photovoltaic Systems* courses introduce solar contractors, architects, engineers, general contractors, inspectors and other professionals to solar electric technology or "photovoltaics", as it is known by industry professionals.

The word "photovoltaic" is a combination of two terms - "photo" means light and "voltaic" means voltage. A photovoltaic system uses photovoltaic cells to directly convert sunlight into electricity. Solar (photovoltaic or PV) panels are used to gather solar radiation from the sun. After collecting sunlight, the panels convert the energy into electricity by the means of the photovoltaic effect.

The first training workshops were held at Broward College North Campus in November 2008. Participants in the *Installing Photovoltaic (PV) Systems* class were introduced to topics such as electrical components, operation and wiring, system siting and structural considerations, working safely with PV installations, system commissioning and programming, permitting and paperwork. Attendees in the *Designing Photovoltaic Systems* class learned about site selection, battery and non-battery backup systems, structural considerations and permitting and paperwork. Dr. Roger Messenger, nationally recognized for his expertise in photovoltaics training provided instruction for both programs. Additional workshops will be held in early 2009.

To sign up for a Broward College Continuing Education course go to: **http://www.broward.edu/ce.** Select the desired subject and follow the prompts to register for the course of your choice. If more course or schedule information is desired, contact **Sue Mattson at smattson@broward.edu** or 954-201-2459.

Westside Tech Training for Green

Westside Tech recently completed training 83 students in Solar PV and Solar Thermal. The training consisted of instruction in basic photovoltaic installation and solar thermal theory and installation. Each training session consisted of classroom instruction and practical hands-on applications. The classes are offered as part of the Banner Center grant in conjunction with the Florida Solar Energy Center at the University of Central Florida. This training will prepare students to enter the workforce as entry level solar installers.

Westside Tech is partnering with Progress Energy to increase the solar thermal capabilities of the center. An additional solar thermal unit will be installed in the Cosmetology Department to monitor passive and active production of hot water. The data derived from this project will help Progress Energy determine the economic feasibility of solar hot water on commercial buildings.

Westside Tech will begin offering Solar PV and Solar Thermal classes Spring semester.

TCC Classes Shedding Light on Alternative Energy

In an era when energy conservation is becoming more than just a great idea, TCC's Economic & Workforce Development Center has begun offering classes in renewable energy technologies. The first two courses being offered are Photovoltaic Systems and Solar Thermal Hot Water.

Both classes are designed for building or skilled trade contractors, electricians, plumbers, HVAC mechanics, architects, engineers and others interested in learning more about renewable energy devices.

"Ultimately, these renewable technologies will help everyone conserve energy and decrease their utility bills," stated Rick Frazier, Director of Economic & Workforce Development.

Alternative energy is becoming ever more popular as a valuable option for consumers; however, training for professionals in these areas is just emerging.

To meet this challenge, TCC and the University of Central Florida have partnered to provide classes in both photovoltaic systems and solar thermal hot water to anyone in the Big Bend and Panhandle regions. Four classes have already been conducted in both fields and as enrollment was robust, the College will offer additional training sessions in Winter/Spring of 2009.

Ben Bloodworth, who co-owns Sol Verde Renewable Energy Solutions with his brother Michael, attended both classes with three Sol Verde team members. "Everyone can benefit from these classes," Bloodworth said. "From a building contractor to a professional trades-person to a stay-at-home mom, if you're curious about alternative energy, this is the class for you."

Sol Verde is currently setting up a 30-acre farm for a customer who will grow organic produce to sell to area restaurants. This entire farm will use photovoltaic systems to grow a variety of fruits and vegetables.

Tallahassee *- continued on page 6*

Courses Offered

Brevard Community College will offer 16 contact hour courses on solar powered installations.

Saturdays,
9:00 a.m. - 5:50 p.m.

Palm Bay Campus
January 31 and February 7, 2009

Cocoa Campus
February 7 and February 14, 2009

For more information or to register, call (321) 433-7514

BREVARD COMMUNITY COLLEGE

A constant challenge at the community college level is not only recruiting and graduating students, but teaching what is needed and required by students and the industry that will be hiring them. One of the most recent ways Brevard Community College is attempting to combat this problem is with continuing education classes that focus on photovoltaic energy and solar water heating.

These classes, which are funded by the Florida Solar Energy Center's Banner Center for Alternative Energy and taught through the Institute for Business Training and Community Education at BCC Cocoa campus, are sixteen hours of instruction held over the course of two Saturdays or four weekday evenings. Twenty nine people have participated so far, with one coming from as far away as Ft. Myers.

Bill Fletcher, the instructor of the two courses, said people were surprised about how little they knew and how much the course had to offer. The courses include instruction on installations, maintenance for homes and small commercial buildings, retrofitting existing structures, available incentives, designs, and a variety of other information, including a comprehensive manual.

Fletcher said these students are now informed consumers. They will know what to look for in a certified solar contractor and will be informed enough to ask the right questions before and during installation. The classes are creating a market flow because informed consumers become informed buyers.

The second class, Introduction to Solar Water and Pool Heating Installation, does not have any more offerings this semester, but classes will soon be announced for Spring semester. For more information about either class, please call (321) 433-7514.

Tallahassee *- continued from page 5*

Another photovoltaic attendee, Maria Rodriquez, took the class to better understand how she and her husband can use some recycled solar panels they acquired. Rodriquez, who reviews architectural plans for the City of Tallahassee Building Inspections Department, also thinks this training will enable her to better understand the PV systems that are becoming commonplace in new buildings and add-ons.

"With the information I learned in class, I am better able to understand the limits and possibilities of the 20-year old panels my husband and I got from the medical building he works in," said Rodriquez. "I am also better at creating checklists for the Inspection Department's plan surveys."

"TCC's cutting edge approach to stay ahead of the curve in alternative energy deliveries will allow the workforce to train in emerging technologies so that our homes and businesses will be as energy efficient as possible," stated Dr. John Chapin, Vice President for Economic and Workforce Development.

For more information or to register for the course, call (850) 201.8760 or e-mail Trades@tcc.fl.edu.

Steps *- continued from page 3*

Supplementing your education with these additional training opportunities is not only another networking option, but will also give you first-hand experience with a variety of products and an introduction to the companies that manufacture or distribute those products.

There are also a number of civic organizations that have advocates on behalf of solar. The Florida Renewable Energy Association is the Florida Chapter of the American Solar Energy Society, whose members include researchers, academicians, and consumers, as well as those involved in the solar industry. The Sierra Club, Audubon Society and other environmental organizations also are supportive of solar energy. In addition, virtually every community has home and garden shows and "green" events that will surely include solar companies as exhibitors.

Finally, those of you with an entrepreneurial spirit, be advised that setting up a sales and installation company requires compliance with a number of regulatory mechanisms that have been instituted to assure the quality control referred to above. All solar equipment sold or manufactured in Florida must be certified by the Florida Solar Energy Center. Typically, the manufacturer handles this process, so the contractor can use the system approval on file for the products they choose to offer customers. A contractor's license is required for companies who install solar energy systems. Only properly licensed solar, plumbing, pool heating and electrical contractors are authorized to install solar equipment, and may only install those systems that are within their scope of work. Detailed information can be found at the Web sites of the Florida Solar Energy Research and Education Foundation and the Department of Business and Professional Regulation.

Web sites:

- **www.flaseia.org**
- **www.flaseref.org**
- **www.seia.org**
- **www.cleanenergyflorida.org**
- **www.myflorida.com/dbpr/pro/cilb/index.html**
- **www.EEBA.org**
- **www.ases.org**

For more ideas about Green Jobs checkout:

Careers in Renewable Energy,
by Gregory McNamee

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

Workforce *- continued from page 4*

This will happen by ensuring the workers are kept updated and educated with tips and tools for taking advantage of all the opportunities for career transitioning and Life Long Learning. The goal is to keep as many of those transitioning personnel in the workforce as possible. We will do that by making available Brevard Workforce services, training, and motivation to ensure those low or outdated skilled workers are able to transition to meaningful employment. This training will include positions in the area of alternative energy.

BWDB anticipates the first issue of the newsletter to hit the streets early in 2009. The newsletter will contain pertinent information such as:

- Articles on the next steps to take including: use of Brevard Job Link/ Brevard Workforce services to include what is available and how to access the services, career transition, coping with change, anger/ stress management, decision making during transitions, career development, in-demand and cross-walk career options, aspects of life long learning, testimonials on those who have successfully accessed services and experienced positive results, etc.
- Features complimentary to the Life Long Learning message that was previously developed (Own your Career, Own your Future…)
- Calendar of upcoming seminars, workshops and events, Brevard Job Link Express site locations
- Resources including transition counseling services, career development services, web site links, training opportunities and providers, indemand career opportunities, Cool Space Web site, etc.
- Schedule of Upcoming Recruiting Events

Additional information on Aerospace Transition can be found on the Brevard Job Link web site **http://www.brevard-joblink.org/home/pages/AerospaceWorkforceTransition.cfm**