

**Certified Installers in Action:** NABCEP is in the business of certifying individuals who demonstrate the necessary knowledge, skills and abilities in installing, maintaining and troubleshooting PV and solar thermal systems. In this section, we'll highlight these individuals and their accomplishments in the field. We encourage our PV and Solar Thermal Certificants to provide their stories and pictures for inclusion in upcoming newsletters.

Leaving a successful electrical contracting business on hold, NABCEP Certificant Walt Ratterman decided it was time to help spread the benefits of renewable energy to people in very difficult situations around the world. Walt began his humanitarian work with Knightsbridge International – a Humanitarian aid organization based in California. Still part of Knightsbridge International, Walt is now a founding member of SunEnergy Power International, <http://www.sunenergypower.com/home.asp> a non profit organization whose mission is to promote and support renewable energy projects in remote developing world locations with revenues generated from commercial solar installations in the United States.

SunEnergy Power International is dedicated to installing PV systems, micro hydro systems, and other renewable energy projects in developing world countries where they are critically needed for water pumping, establishing electrical service to support medical facilities and other off-grid uses. On a number of occasions his crew was escorted through dangerous territory by armed guards as they transported the modules and other system components to the medical station where the system was installed.



NABCEP Certificant Walt Ratterman takes part in a briefing with the Solar Electric Light Fund, including Mr. Bill Gates regarding the economics and design of the solar / hybrid systems being installed in remote Rwandan hospitals.

SunEnergy Power works by developing investment portfolios of distributed rooftop solar electric power projects in the U.S. to directly fund and implement these charitable renewable energy projects in the third world. This is in addition to funding provided by generous donors who provide the base support for this work.

Walt and SunEnergy Power also provide services for other organizations working to provide training and renewable energy systems in the developing world, such as Solar Energy International, and Solar Electric Light Fund.

As part of their work with Solar Electric Light Fund, in Rwanda, Walt had the opportunity to

participate in a renewable energy briefing session with some very influential people who are well positioned to help support these projects. See photograph.

**NABCEP Central Office Updates and Issues:**

*Exam Results Update:* The ninth NABCEP PV Installer Certification exam AND inaugural Solar Thermal Installer exam was administered on September 30, 2006. NABCEP welcomes 36 new NABCEP Certified PV Installers been to its ranks of certificants, bringing to 291 the number of NABCEP-Certified PV Installers in 37 states, Honduras and Canada. NABCEP also welcomes 14 inaugural Certified Solar Thermal Installers in seven states. The next date for both PV and Solar Thermal certification exams is **Saturday, March 24, 2007**. Applications for the exam will be released in mid December. For those who would like to be placed on **NABCEP's Email Reminder List** to receive periodic reminders of the open application period for the March exams, send an email including your telephone number to: Karen Christopher at: [kchristopher@nabcep.org](mailto:kchristopher@nabcep.org)

*Recertification:* There's been no shortage of work for NABCEP. The first **batch of Applications for Recertification** from the initial group of 62 certified in 2003 are in. Though the deadline was **November 18<sup>th</sup>**, there is a **30-day extension (to December 18, 2006)**, along with a \$50 fee. **The recertification application fee is \$200.**

*Certificant Issue - Review of Installations:* A situation regarding services provided by a NABCEP Certificant has been brought to our attention through the *Wrenches* list sponsored by our colleagues and friends at *Home Power* magazine. It appears a homeowner had his PV system installed by master electrician. To obtain a rebate in this state, if the master electrician is not NABCEP Certified, he/she must "work in conjunction" with one. The owner therefore contacted one of our Certificants to review the system and provide a type of formal sign off and approval. The Certificant used a formal checklist (apparently created by the Florida Solar Energy Center) to guide his inspection accordingly.

*Our View of This Issue: Signing off on others' work after a thorough inspection and commissioning is legal, and comports with our minimum ethics, but is not recommended.*

NABCEP Certification is designed for those who install and/or specify and adapt the PV system and ensure it is installed in a safe and code-compliant manner. We do not believe a review/inspection of this type permits the Certificant to be familiar enough with the installation to place the NABCEP Certificant name and NABCEP reputation on the line.

A potential serious legal matter is that this NABCEP Certificant could be liable for any damages or injuries resulting from this installation. Typically, anyone remotely involved in the installation could potentially be drawn into a resulting law suit. For these reasons we DO NOT condone this practice and advise our certificants not to sign off on any PV system they have not been directly involved with.

NABCEP may address this issue directly with regulatory officials within the state if necessary.

**NABCEP's PV Entry Level Certificate of Knowledge Program**

(<http://www.nabcep.org/news.cfm?pr=40>) was the recent recipient of the Interstate Renewable Energy Council (IREC) Innovation Awards for the certificate program which provides students an opportunity to demonstrate their knowledge of basic PV system operation through coursework and administration of NABCEP's nationally recognized PV Entry Level Exam.

To date, more than 250 students have voluntarily paid \$70 to sit for the exam, after completing the typical 40 hour class. In the U.S., nineteen Provider Institutions

(<http://www.nabcep.org/news.cfm?pr=45>) teach the Entry Level Objectives established by a committee of NABCEP's subject matter experts. If you're associated with an institution that provides PV system operations training and would like to participate in the PV Entry Level Certificate of Knowledge program, contact Pete Sheehan at: [psheehan@nabcep.org](mailto:psheehan@nabcep.org)

**NABCEP Presence at Midwest Renewable Energy Association and Solar Power 2006.**

If you haven't noticed, participation at these renewable energy gatherings is on the rise each year. For NABCEP, it's an ideal opportunity to meet our Certificants and other stakeholders, get a sense of the direction of the industry, and find out how NABCEP can be of more value to you. Check our website to find out our next destination. Come visit us at the NABCEP booth.



NABCEP Board members, staff and our Certificants (with new NABCEP T-Shirts) gather at our reception at the Midwest Renewable Energy Association Fair in Custer, Wisconsin in June of this year.

**Installer's Corner:** Each newsletter will feature a topic dealing with a technical aspect of installing or maintaining/troubleshooting a PV system. Join the discussion on these topics. Successive newsletters will post selected responses received.

*This month's topic:* Fastening the PV System on the Roof.

**Discussion Starter:**

The major design consideration when mounting the rack to the roof is usually resistance to uplift from high winds when flush mounted. If the rack is being lag bolted into rafters, most homes would use the SPF (Spruce-Pine-Fur) lower design values, which have the lowest strength of most commercially used timbers. Generally, there is little concern with standard roof construction of 16" on center. The key is putting

enough attachment points from the rack into the rafters.

It is likely that larger companies will come up with fully engineered structural drawings for each region where they are working to address the specific issues of PV array installation that is currently not specifically addressed in codes and standards. This acknowledges that mechanical design - in particular achieving wind load compliance - can be quite a complex task, and is the purview of a structural engineer. Design wind loads for a building can be determined either by analytical methods or by wind tunnel testing.

The structural analysis requires a great deal of prior building construction knowledge and valid assumptions by the engineer, and simply results in design loads which must be countered by the structure and attachment methods. In Florida for example, most designs requiring wind load certification must have that design certified by a licensed Florida engineer in order to get permits (increasingly being required). This is one reason that some have argued the industry needs more standard mounting systems, and some way to have these designs nationally certified for typical building installations - to avoid these added costs and barriers.

**Readers Turn to Comment:**

We've established a type of bulletin board where our Certificants can respond to any or all of the issues raised here. (It will be emailed separately from this newsletter.) Our intention is to raise issues like this and help to establish and foster best practices within the industry. Through this, NABCEP keeps on the cutting edge of technology and related codes and standards.

**Manufacturers Musings:** Those who manufacture PV modules and the balance of system (BOS) components face a host of issues as solar energy transforms itself into a viable mainstream power generating industry. Each newsletter will feature our PV and solar thermal manufacturers and address some of these critical issues. In addition to providing product for our certified installers, manufacturers provide a very valuable training component.

Many have registered their training courses with NABCEP so Certificants who participate can receive Continuing Education Contact Hours. The current list of approved training courses can be found in the PV Recertification section of our website ([http://www.nabcep.org/pv\\_reCert.cfm](http://www.nabcep.org/pv_reCert.cfm))

In this debut issue, we feature Arthur Rudin, Director of Engineering of the Solar Energy Solutions Group of Sharp, a manufacturer of PV modules and systems. [www.sharppusa.com/solar](http://www.sharppusa.com/solar) As the demand for renewable energy continues to increase, new contractors and installers are joining our industry to service the growing consumer demand. Existing contractors have a difficult time finding trained installers. Providing the highest level of customer satisfaction is most important to us as a manufacturer. To help achieve this goal, we train all Sharp contractors and work with them in the field. We find that those who have the most training and education can best handle the challenges and surprises of installations.

PV installations are unique in that they encompass roofing, electrical and mechanical disciplines. NABCEP certified installers have the level of training necessary for exceptional PV installations. We expect that educational institutions will create curriculums that result in trained, certified installers and are working to encourage these activities. Below is an example of inter-array spacing and properly supported conduit.



**Employment Center:** Interested in finding work in the solar thermal or PV industry? Recent Entry Level Certificant? Looking for qualified installers? Here's a place where we'll match employers in the PV and solar thermal industries with those seeking employment. If you're interested, send an email to [info@nabcep.org](mailto:info@nabcep.org), and in the subject area, type "EMPLOYMENT NOTICE." We'll post the ground rules and disclaimers on the site.

### **Board/Technical Committee Member**

**Highlight:** NABCEP is lucky to have a committed group of individuals who volunteer time as a board member or sit on one of our three technical committees. In this column, we'll highlight those folks, and ask them for their industry outlook.

This issue, we highlight **Don Loweburg**, current Chair of the NABCEP Board of Directors and also a NABCEP Certified Solar PV Installer. Don, along with his wife, Cynthia, are the owners of OffLine Independent Energy Systems (<http://www.psnw.com/~ofln/home.html>) located in North Fork, California. Don became NABCEP-certified in May 2004. If that didn't keep him busy enough, he also finds time to write a column for *HomePower* magazine every other month. We caught up with Don recently. Here's our conversation:

*NABCEP: Don, how long have you been in the PV business? And how did you get started?*

**DL:** Cynthia and I started the business in 1983. We started the business, OffLine Independent Energy Systems, when we and 12 neighbors--all off-grid-needed power. The land, remote and available at a good price, were the drivers for us, so we jumped in. We're still there today, some 26 years later. The neighbors are still there as well.

*NABCEP: So you do the design and installations, right? What about Cynthia? What's her role?*

**DL:** Cynthia handles ordering, banking, advertising and fields customer calls.

**NABCEP:** *As a small business PV owner/installer, how have you seen the industry change over the years?*

**DL:** Systems have evolved from strictly small off-grid systems, often 50-150 watts, mainly providing lighting, to larger, full service residential off-grid homes. Within the last five years, grid connected projects have become by far the largest single application. However, OffLine continues to do a strong off-grid business.

**NABCEP:** *So not only do you run a full-time PV business, you're also the current chair of NABCEP. In that role, what do you see as the most pressing issues facing PV installers?*

**DL:** As PV continues to mainstream, installers must adapt and grow their professional expertise and at the same time be aware that business management and practices must adapt to an increasingly competitive and growing industry.

**NABCEP:** *By doing what? Lowering their prices?*

**DL:** Small shops must be competitive, but this does not always mean offering customers the lowest price. Providing exemplary customer service is something the small shop can do well.

**NABCEP:** *So what, in your opinion, has been NABCEP's biggest success?*

**DL:** Certainly the PV Installer Certification, NABCEP's initial offering, was a major accomplishment. The recently developed Solar Thermal Certification adds to that success.

**NABCEP:** *And, of course, I must ask what you perceive as NABCEP's biggest challenges?*

**DL:** Building awareness and demand for NABCEP-certified installers is one of our major challenges. Certainly, with nearly 300 NABCEP certified PV installers in the US, we believe this is a good, respectable beginning. But many, many more qualified installers are needed. Marketing and branding of NABCEP are

ongoing challenges. And finally, developing ongoing consistent, sustainable funding sources for NABCEP and its important work.

**NABCEP:** *It seems that those challenges are intertwined. To build awareness and demand, you must be adept at marketing and branding. Obtaining NABCEP certification is becoming the standard, and as more installers become certified, it seems as though it would be able to support itself. What's the 'tipping point' for NABCEP's sustainability?*

**DL:** I think that at 1,000 certificants NABCEP will be sustainable.

*What's on the NABCEP 'to do' list for '07?*

**DL:** There's no shortage of work for NABCEP. We'll continue to provide value to our certificants while pursuing avenues for additional funding. Of course, we'll promote and expand the demand for certified installers, and continue work on the Small Wind Certification.

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