North American Board of Certified Energy Practitioners

PHOTOVOLTAIC (PV) ENTRY LEVEL CERTIFICATE OF KNOWLEDGE

OVERVIEW, PROCESS & POLICIES

About NABCEP

The North American Board for Certified Energy Practitioners, Inc. (NABCEP) is a national voluntary, non-profit, professional credentialing organization lead by industry stakeholders. NABCEP certifies qualified practitioners in the fields of renewable and sustainable energy, and energy efficiency technologies, who have met the professional knowledge standards established by NABCEP. The purpose and goal of NABCEP is to assess and measure objectively the professional knowledge of renewable energy industry practitioners, and to promote the advancement of the renewable energy industry. NABCEP is dedicated to the implementation of appropriate professional standards designed to protect consumers and the profession.

Career Outlook

Photovoltaic devices generate electricity directly from sunlight. PV or solar electric systems can power small devices such as road signs, can be placed on rooftops for homes, businesses or schools, can provide "building-integrated" devices in commercial buildings, and can be placed at other point-of-use locations. All sectors of the photovoltaic market continue to grow. Global PV market growth has averaged 25%+ annually over the last 10 years, with worldwide growth rates for the last 5 years well over 35%. Significant state incentives are growing the domestic market. Successful candidates achieving the PV Entry Level Certificate of Knowledge will have the basic knowledge of solar electricity suitable for a supervised, entry level position with a dealer and/or installer or other PV industry company.

Description of the PV Entry Level Certificate of Knowledge Program

In the scope of this program, providers are approved as administrators of the Entry Level Certificate of Knowledge (COK) exam. This Certificate will be a way for a student to demonstrate basic knowledge, comprehension and application of key terms and concepts of photovoltaic (solar electric) system operations. Schools and Training Programs will offer a course during a semester or other defined time period and then administer a NABCEP-issued exam. A candidate for the Certificate will have to complete this course and pass the test. While the Certificate of Knowledge by itself will not qualify an individual to install photovoltaic (PV) systems, it does recognize understanding of the basic terms and operational aspects of a PV system. Courses accompanying the NABCEP Entry Level Certificate of Knowledge exam cannot claim that they have been approved by NABCEP or that they prepare students as PV installers.

Learning Objectives

The PV Entry Level Certificate of Knowledge program is based on a set of learning objectives developed by Committee of PV subject matter experts. The Learning Objectives include ten (10) skill sets:

- PV Markets and Applications
- Safety Basics

- Electricity Basics
- Solar Energy Fundamentals
- PV Module Fundamentals
- System Components
- PV System Sizing
- PV System Electrical Design
- PV System Mechanical Design
- Performance Analysis and Troubleshooting

See the "Learning Objectives" document for the full description of these skills and tasks.

The skills identified in this analysis do not replace electrical trades, technician, technologist or engineering training.

NABCEP will periodically review the learning objectives and make any changes according to changes in the National Electrical Code or any technology changes. NABCEP will notify the provider of any modifications to the learning objectives.

Criteria for Provider Participation

Educational providers must complete the NABCEP "Provider Application" and send it to NABCEP with the initial $300 annual fee. Educational provider should not advertise themselves as providers or schedule an Entry Level exam until they have received formal approval. The approval is good for three years at which time, the provider must reapply with NABCEP.

The PV Entry Level COK exam can be offered by any university, college, community college, or vocational-technical institute accredited by an agency recognized by the U.S. Department of Education ; or offered by any Joint Apprenticeship & Training Committee or U.S. Department of Labor approved apprenticeship program; or offered by a training program accredited by the Institute for Sustainable Power or similar accrediting body.

Accompanying course(s) are required to have an interactive teacher-learner structure. This implies a connection between a learner and a learning source. It can include classroom time led by an instructor and/or discussion leader. It can also include activities in which a learner is engaged in a planned learning event in which he/she is separated from faculty and other students but where the learner receives some sort of feedback and the learner's progress is monitored. Examples include computer-assisted instruction, interactive video/CD/DVD and/or web site learning

As of July 1st, 2009, new applications must provide NABCEP with a CV, resume or summary of experience for each instructor showing a minimum of 40 hours of board-recognized training[1] in advanced solar PV. All installation or equivalent installation experience should also be documented.

Providers are required to provide students with the necessary information covering the NABCEP-issued learning objectives. This material shall be presented in a well developed way. Courses can include more than the learning objectives but must include a comprehensive review of them. Students passing the course(s) before the Provider has received formal approval from NABCEP will not be eligible to sit retro-actively for the Entry Level Certificate of Knowledge Exam.

All providers must provide a copy of the appropriate Certificate of Insurance(s) showing that professional liability and general liability policies are maintained with respect to the administration of examinations.

All providers must provide special testing accommodations and comply with the provisions of the Americans with Disabilities Act and with Title VII of the Civil Rights Act and other applicable laws.

The Entry Level Certificate of Knowledge exam must be made available by the Provider to any student passing the accompanying course.

Providers must sign and adhere to the **Terms of Agreement** and **Code of Conduct** from the application.

[1] Definition of board-recognized training available at the end of this document

NABCEP has the right to make changes to these Criteria for Provider Participation and will notify the provider of any modifications.

Student Eligibility Rules

There is a two-step process for a student to achieve the Certificate. A candidate first has to successfully complete a course (or courses) offered by an educational provider who is registered with NABCEP. The candidate then has to pass the NABCEP-issued exam.

Candidates will have to fulfill the course requirements and meet any prerequisites determined by the provider. Unless otherwise directed by NABCEP, registered providers will apply their standard policies and procedures related to the provider's courses and exam administrations.

Teachers and instructors must notify NABCEP if they have taken the Entry Level Exam.

The Exam

Providers will be required to sign a ***NABCEP Entry Level Certificate of Knowledge Provider Agreement Form***, agreeing to comply with NABCEP examination administration policies, including those related to maintaining the security of the examination, confidentiality of the test items and other related issues.

The NABCEP Entry Level Examination is aligned with the learning objectives devised by content professionals (Subject Matter Experts) who are recognized as experts in the field of solar photovoltaic energy. The NABCEP Entry Level examination is developed according to accepted psychometric standards of measurement; the items are written and reviewed by Subject Matter Experts. The NABCEP Entry Level Examination is a confidential and secure measurement of knowledge that not meant to be read, studied, discussed or taught by Providers or their instructors.

Preliminary packages containing the requisite agreement forms and administration manual will be sent to the Provider within 5 business days of notice of their approval. Within 10 business days of receipt of their agreement forms at the testing company, NABCEP's professional testing company will send the examination and administration forms in an encrypted electronic file to the Provider designed staff member. Examinations are printed, administered and proctored by Provider personnel at the expense of the Provider, and at a time and location determined and announced by the Provider. Answer sheets are returned to the professional testing company for scoring via a traceable carrier at the expense of the Provider. Successful candidates will receive the PV Entry Level Certificate of Knowledge.

Course tuition will be set and collected by the course(s) Provider. The exam/Certificate fee is set by NABCEP but collected by the Provider who will be invoiced by NABCEP once the answer sheets have been scored. At their discretion, Providers may tack on an administration fee to the exam fee to cover the cost of the exam printing and administration expenses, to be retained by the Provider.

Upon grading of the answer sheets, NABCEP will send candidate scores directly to each candidate to the mailing address provided in the Exam Scheduling Form and Release of Scores. A candidate passing the examination will receive the official NABCEP PV Entry Level Certificate of Knowledge. Providers will be sent a listing of the scores of each candidate who signed the release.

NABCEP Basics: Students must be walked through the short NABCEP Basics presentation before <u>each</u> exam administration. Providers are encouraged to contact NABCEP if they have any questions about our programs.

Exam Time/Length: Candidates will be given up to two (2) hours to sit for the examination. The exam will consist of sixty (60) multiple choice questions.

Items Provided at the Exam: The exam is **NOT** an open book exam. The only material to be provided to candidates will be any formulas necessary to answer questions. These formulas will be provided in the Exam Booklet by NABCEP. Candidates should bring their own calculators to the exam.

NABCEP Exam/Certificate Fees: $75.00 per exam.

Passing Score: The passing score for the exam is determined by NABCEP in consultation with our testing contractor in accordance with appropriate psychometric guidelines.

Viewing the Exam: The exam, or any details pertaining to specific questions and their answers, will not be distributed to students.

Rescoring and Comment Policy: It is NABCEP'S policy for this exam not to permit any rescoring of exams. This is because exams are computer-scanned by the exam contractor multiple times to ensure accurate scoring. If candidates have a particular issue with a question, they will be provided with a comment form to list and explain such issues in writing.

Retaking the Exam: Students may take the exam an (1) additional time at a scheduled, organized testing site without repeating the course. Students will be required to pay another exam fee. The student will need to make arrangements with a provider offering the course and may be required to pay an additional administrative fee set by the provider.

Use of the Certificate

THE CERTIFICATE DOES NOT CONFER THE TITLE OF NABCEP CERTIFIED INSTALLER™. Certificate holders may represent that they have been granted the PV Entry Level Certificate of Knowledge issued by the North American Board of Certified Energy Practitioners (NABCEP). All references to the credential must indicate the date the Certificate was issued, and may only be displayed in association with the credential holder. The Certificate is personal to the credential holder and may not be transferred, assigned to, displayed or used by any other individual, organization, business, or entity. Replacement Certificates are available from NABCEP for a small fee.

Board-recognized training:

Training must meet the following criteria to be considered board-recognized training:

a) A minimum of 40 hours cumulative (can include product training)

b) Have a formal training format, with a teacher-learner structure. This implies a connection between a learner and a learning source. It can include classroom time led by an instructor and/or discussion leader. It can also include activities in which a learner is engaged in a planned learning event in which he/she is separated from faculty and other students but where the learner receives some sort of feedback and the learner's progress is monitored. Examples include computer-assisted instruction, interactive video/CD/DVD and/or web site learning.

c) Covers core competencies from the PV Installer Task Analysis, including the National Electrical Code® and OSHA safety standards relevant to PV installation

Types of training programs may include but are not limited to:

1. Offered by any accredited university, college, or community college (i.e., Lane Community College, San Juan College,)
2. Dedicated independent training programs (e.g. Florida Solar Energy Center, Solar Energy International, Great Lakes Renewable Energy Association, etc.)
3. Apprenticeship training programs (e.g. National Joint Apprenticeship Training Committee, Department of Labor approved apprenticeship programs)
4. Those approved by State Contractor Licensing Boards
5. Vocational/Technical training programs (e.g. Board of Cooperative Educational Services/New York, British Columbia Institute of Technology)
6. Industry in-house training programs (i.e. Manufacturers)

If you have any questions about NABCEP, please contact

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