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Certification for Small Wind Turbine Installers: What's the Hang Up?

Preprint

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To be presented at the 2012 World Renewable Energy Forum
Denver, Colorado
May 13-17, 2012

Conference Paper
NREL/CP-5000-54411
March 2012

Contract No. DE-AC36-08GO28308

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CERTIFICATION FOR SMALL WIND TURBINE INSTALLERS: WHAT'S THE HANG UP?

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ABSTRACT

Several programs have been implemented to support the advancement of a professional, mature small wind industry and to ensure that this industry moves forward in a sustainable direction. The development of a standard for small wind turbine systems and the creation of the Small Wind Certification Council are both geared toward supporting small wind technology that is reliable and safe. Consumers and incentive programs will ultimately rely on certification to differentiate among systems sold in the U.S. market.

Certification of small wind installers is yet another component deemed necessary for this industry to expand. The National Renewable Energy Laboratory (NREL), under the guidance and funding support of the U.S. Department of Energy, supported the development of small wind system installer certification provided via the North American Board of Certified Energy Practitioners (NABCEP). However, the level of support within the small wind community for installer certification is undetermined. There are currently only nine certified installers in the U.S. pool.

1. INTRODUCTION

To support the growth of the small wind industry in the United States, a three-pronged approach was identified: 1) develop a process for certifying the small wind turbines (currently managed by the Small Wind Certification Council), 2) develop a small wind turbine installer certification program, and 3) develop a small wind site assessor certification program (under discussion). NABCEP manages a photovoltaic (PV) installer certification program and, in response to interest from the small wind community and public benefit program administrators, developed a parallel small wind installer certification.

The activities required to develop the installer certification program were partially funded through a subcontract with NREL; other funding came from the New York State Energy Research and Development Authority (NYSERDA) and NABCEP monies from more successful programs (primarily PV Installer Certification and Entry Level Program). Southwest Windpower donated contributions for lodging and meals for the program development team.

Several documents were developed, including: 1) Objectives and Task Analysis for a Professional Small Wind Energy System Installer "to define a general set of knowledge, skills, and abilities typically required for small wind system practitioners, and to help ensure safety, quality, and consumer acceptance of small wind installations throughout the United States"; 2) Requirements and Education criteria to establish eligibility to sit for the test; and 3) a Resource Guide for potential test candidates.

NABCEP conducted the first small wind installer certification test on September 11, 2010. Since NABCEP's system only tracks applications that are completed and accepted, the total number of submitted applications is unknown. Of the individuals who submitted completed applications that were accepted, 10 were deemed eligible candidates, and eight ultimately passed this first test. NABCEP conducted a second test on September 24, 2011, resulting in one additional candidate who passed the exam and four who took the exam and failed. Thus, as of December 31, 2011, nine candidates have successfully passed the test and received certification.

To be clear, the NABCEP installer certification is not a professional license. Its purpose is to help consumers distinguish among installers who have demonstrated a level of competency of the material contained within the test and those who have not, or those who chose not to take the test. Further, the certification does not guarantee that a certified individual is more experienced than someone who has not been certified. In fact, some manufacturers have developed training programs for installers of their specific turbines, which may be a requirement for being a qualified dealer/installer for the company. These individuals may have no need to obtain the NABCEP installer certification. Regardless, in general, public benefit program administrators have enthusiastically supported past NABCEP installer certification for PV. In some states, funding for a PV system is contingent on using a certified installer.

This case study provides a better understanding of why more small wind turbine installers are not pursuing this certification. In this paper, we summarize the perspectives of those who 1) took the certification test and passed, 2) signed up for the test but did not meet the requirements to take it, and 3) took the test but did not pass. The future of the NABCEP installer certification program is in jeopardy. The results of this research shed light on how NABCEP, and the industry, should proceed with regards to installer certification.

2. CURRENT EXAM REQUIREMENTS

To better understand the issues that may exist within the NABCEP Small Wind Installer Certification program and aspects that past participants may perceive as problematic, one must first understand the requirements to qualify to take the Small Wind Installer Certification exam. The following excerpt is from the NABCEP small wind installer requirements and education Web page:

"To qualify to sit for the NABCEP Small Wind Installer Certification examination, the candidate must demonstrate that he/she meets at least one of the following minimum entry requirement tracks:

a) Four wind system installations within 4 years of submitting the application; AND a minimum of 70 hours cumulative training (see installation and training definitions below or in Sections 5.2.2 and 5.2.3 of the Candidate Information Handbook); OR

b) Three years experience as a contractor with relevant experience in concrete, foundations, electrical, or tower construction; AND four installations within 4 years of submitting the application (see installation definition below or in Sections 5.2.2 of the Candidate Information Handbook); OR

c) Three years in a government- or trade union-approved apprentice program with training relevant to wind systems and their installation; AND four installations within 4 years of submitting the application (see installation definition below or in Sections 5.2.2 of the Candidate Information Handbook); OR

d) Two-year or 4-year construction-related, engineering technology, engineering, or renewable energy technology or technician degree from an accredited educational institution with training relevant to wind systems and their installation; AND four installations within 4 years of submitting the application (see installation definition below or in Sections 5.2.2 of the Candidate Information Handbook);

e) Be an Institute of Sustainable Power Quality Small Wind Instructor or have instructed a minimum of 400 hours of training that cover core competencies of the Job Task Analysis at an acceptable training institution; AND four installations within 4 years of submitting this application."
For more information pertaining to exam requirements, visit the NABCEP website or the Candidate Information Handbook.

Fig. 1: A Skystream turbine in front of the U.S. Capitol. Photo from Southwest Windpower. NREL/PIX 19410

3. CURRENT INSTALLATION EXPERIENCE FOR CERTIFICATION

Following the first round of examinations, NABCEP changed its installation experience requirement for potential small wind testing participants to increase the number of applicants and thus possibly increase the number of certified installers. The new and current standards are divided into three categories and are defined in the following statement from a 2011 NABCEP Press Release :

"Experience Level 1 – No minimum height restriction; installation utilizing a tilt-up tower required; installation using

a crane is required; minimum rotor size or swept area not required.

Experience Level 2 – Installation utilizing a tilt-up tower not required; experience with crane-installed towers at least 80 feet high is required; at least two installations of wind generators that have minimum swept area of 100 square feet.

Experience Level 3 – Installation utilizing a tilt-up tower at least 80 feet high is required; experience with crane-installed towers at least 80 feet high is required; at least two installations of wind generators that have minimum swept area of 100 square feet."

4. RESEARCH METHODOLOGY

To identify factors hindering the growth of the NABCEP Small Wind Turbine Installer Certification program, NREL asked NABCEP to contact former participants from both testing rounds. Those interested in contributing to the study were asked to email the authors. The NREL team designed a questionnaire that respondents completed and emailed back or answered during a phone interview. With a sample totaling 10 individuals (out of 11 contacted), responses to 14 questions were utilized to gauge various details and opinions pertaining to the NABCEP Small Wind Installer Certification process, as well as the respondent's current status, location, and experience in the small wind industry.

The NREL team developed the following questions in consultation with Mick Sagrillo (Sagrillo Power and Light) and sent them to the 10 participants:

1) Where is your business located? What part of the country/states/world do you work in?

2) Describe your past experience installing small wind systems. How many turbines over how many years?

3) As installers, do you work with specific turbine models or do you install a wide range of small wind systems?

4) What made you interested in seeking certification?

5) How did you hear about the certification?

6) Did you qualify to take the test?

7) When did you take the test (date)?

8) If you have not been certified, what would motivate you to try again?

9) If you have been certified, what advantages has it brought? What exactly is the "value" of certification to you or your company? (Intangibles, not dollar amount)

10) Do you think the cost of certification is equal to the value that it has contributed to your business, if any?

11) If you have not been certified, have you seen any disadvantages? Please describe.

12) Do you feel that certification is supported by the small wind industry? Why or why not? If not, how could it be better supported?

13) Do you feel that consumers, including state agencies that provide incentives, are interested in having the option of using certified installers? Please explain.

14) Is there anything else concerning small wind energy installer certification that you would like to share?

Fig. 2: Skystream 3.7 at the Shorebird Park Nature Center, Berkeley, CA. Photo from Southwest Windpower. NREL/PIX 15337

5. RESULTS

Of the ten respondents, four were currently certified NABCEP small wind installers; one qualified for the test but did not pass; and five did not qualify to take the test, either due to incomplete applications or not meeting the criteria to qualify for the exam. The results are summarized below based on these three categories.

5.a. CERTIFIED

The four certified individuals who participated in the survey averaged 17.75 years of wind installation experience (ranging from 8 to 31 years of installation experience). They represented various regions of the country, including the Great Lakes, Northeast, and Rocky Mountain states. Two of the four currently install a wide range of turbine models, while one does not currently work as an installer and another is attempting to re-establish a relationship with a single turbine supplier. Each took the exam during the first round of testing on September 11, 2010.

Three of the four certified installers believe that the NABCEP Small Wind Energy Installer Certification has brought recognition and pride on a personal and professional level, but for reasons that have not been determined it has not impacted sales or potential customers.

In terms of the cost of the certification versus the value it has contributed to their business, half said that it currently has no value, while one said that value was not as important as the certification itself, and the last referred to it as the "only credential that is out there."

When asked about whether the certification was supported by the small wind industry, three of the certified respondents said no, while one said yes. Of the three no respondents, one stated that suppliers support many uncertified dealers due to their utilization of an internal dealer approval process. Another felt that manufacturers could give credence to the certification through a preferred relationship, in which certified installers would be able to realize a value that could reduce operation costs.

None of the certified respondents believed that consumers, including state agencies that provide incentives, were currently interested in having the option of using certified installers. Respondents identified numerous explanations for why this might be. The lack of consumer knowledge about certification may be attributed directly to a lack of advertising/marketing of the program by NABCEP. At the same time, consumers may be more attuned to a traditional system of relying on licensed contractors and electricians. Thirdly, the lack of interest from consumers and state agencies may be tied to the current state of public benefit programs. The vast majority of today's public benefit programs do not require certified installers for the project to be eligible for incentive funds.

The responses to Question 14 brought multiple topics to light. One respondent believed that it was a well-written test. Another reiterated a belief that small wind manufacturers should participate and support the certification beyond their current effort. A third respondent brought up two notions: 1) most small wind installers are fully qualified to install solar photovoltaic systems as well as wind and as such should be afforded recognition to work in that area as well, without the requirement of additional certifications; and 2) the fees and hassles involved with certification renewal are problematic. This respondent has multiple certifications and is concerned with rising costs that may be difficult to justify in the future. A fourth respondent reiterated the idea of involving grant providers to require certified installers prior to the release of funding.

5.b. QUALIFIED BUT DID NOT PASS

Only one survey respondent qualified to take the test but did not pass. This individual worked in the Great Lakes region and had 7 years of workshop and hands-on installation experience, with a total of five turbines installed. The individual is currently willing to work with a variety of small wind certified turbines and was interested in seeking certification because of a possible increase in work, as well as an enhanced reputation in the eyes of potential customers. The participant took the exam during the first round of testing on September 11, 2010.

When asked what would motivate this participant to retake the certification exam, the individual responded: a solution to the lack of in-state locations for testing. In this participant's opinion, many cannot afford travel and hotel expenses due to limited testing locations. Although this respondent has not been certified, he/she believes that certification, as it currently exists, would not bring any advantages or value to his/her company due to the fact that he/she has not experienced any disadvantages in not being certified. While this respondent believes that when the certification program was first developed consumers and state agencies expressed interest in working with certified installers, this may no longer be the case.

Though the respondent still believes in small wind installer certification and would like to see the program succeed, he/she feels that the cost to take the test (including travel, hotel, and fees) is too expensive. The respondent also feels that installers without certification but with jobs will not seek certification because they already have work. The respondent feels that the program could be better supported if installers took the initiative to take the exam and if NABCEP was willing to further modify the requirements to allow more candidates to qualify to sit for certification.

5.c. DID NOT QUALIFY

Of the five individuals who participated in the survey but did not qualify to sit for the exam, the average number of years in terms of wind installation experience was 7.6 years, ranging from no experience to 37 years of installation experience. They represented various regions of the country, including the Great Lakes, Northeast, and Rocky Mountain states. Only one

participant in this category installed a single type of turbine model for all project installations, while the remaining participants installed a wide range of turbine models. None have taken the exam.

Fig. 3: A Bergey wind turbine at Cross Island Farms, NY. Photo from Cross Island Farms. NREL/PIX 19923

Four of the five participants in this category were interested in seeking certification to demonstrate to customers that they were trustworthy and professional. One mentioned this specifically in comparison to his/her competition but has since found certification to be less valuable as time goes on because it has not been needed to continue installing wind turbines. The fifth participant stated that his/her interest in certification was due to the state certification requirement for projects to qualify for rebates.

In terms of what would motivate the individuals in this category to seek certification again, three would not until changes were made to the certification requirements. Suggested changes include general modifications for more installers to qualify, specifically concerning the 80-foot/tilt-up/crane requirement and lack of acknowledgement toward one participant's previous experience. An additional participant stated that he/she would not seek certification again, believing that certification is becoming less needed.

Of the five who did not qualify to take the exam, three see no disadvantage to not being certified. One attributes this to a lack of customer sophistication. The remaining two participants believe that certification is essential, especially in terms of reassuring customers that the installer is competent.

When asked whether, in their opinion, the small wind industry supports certification, participants in this category were divided. Two believed that the small wind industry could do more, with one suggesting suppliers of small wind turbines only utilize certified installers.

Of the five, four believe that consumers and states are interested in having the option of using certified installers, though one believed that if installers were required to be certified, there would be ways to manipulate the system by finding a certified installer to sign off on the project for a fee.

The responses to Question 14 brought multiple topics to light. One suggested that NABCEP develop a new format of proctored tests by local community colleges and technical colleges so that tests could be conducted at more locations. Another felt that in the past, the small wind installer certification would have set installers apart from each other, but this has changed as traditional businesses have become more savvy in renewable energy. Another stated that there is something intrinsically wrong with having installed more than 200 turbines but not being qualified to take the test, while another considered the program a "failure in its lack of appeal to the installer community."

6. CONCLUSION

Much work is needed to improve the current status of the small wind installer certification program and to expand the number of certified installers in the United States. While the sample size for this analysis was relatively small, additional effort will be invested in contacting other certified installers as well as installers who have not been certified. An expanded analysis is being conducted, and the findings will be published in 2012. At this time, common themes among the respondents seem to suggest 1) Most states do not require that turbines be installed by certified personnel to qualify for state incentives, so installer certification does not seem necessary; 2) Consumers do not seem to differentiate between certified and non-certified installers, and this also minimizes the need for certification; 3) Manufacturers' training programs for their installers confuses the need for an independent certification program; and 4) The apparent difficulty in qualifying to take the test has reduced the number of certified installers and impacted the interest of others to reach out for the certification.