**Introduction**

This document presents a Job Task Analysis for small wind professionals who qualify the customer, pre-qualify the site, evaluate the site, estimate wind resource, identify additional project considerations, determine system options, and generate site assessment reports. This Job Task Analysis was created by a committee of subject matter experts representative of the small wind field.

**Purpose and Scope**

The purpose of this Job Task Analysis is to define a general set of knowledge, skills, and abilities typically required of small wind professionals who are responsible for site assessment. In this context, a small wind energy system is defined as being a grid connected or off-grid system with or without batteries rated at 100 kW or less.

A job task analysis is a foundational document for the development of certification programs, and helps define the requirements for the assessment and credentialing of practitioners. It also helps establish the requirements for accrediting training and educational programs and in developing curricula. These tasks, or modified versions thereof, may be used by states or organizations that wish to develop requirements for education or training to qualify existing or new workers to be involved in Small Wind Site Assessment.

This job task analysis is intended to be all-inclusive of the skills and knowledge expected for any qualified Small Wind Site Assessor. In general, these tasks include fundamental site analysis and educating customers.

NABCEP certification is not a license to practice, nor does it supersede any licensing requirements. NABCEP Certificants are expected to comply with all applicable federal, state, and local laws and regulations concerning the profession.

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**Primary Objective for the Small Wind Site Assessor**

Given a potential site for a small wind installation, the Small Wind Site Assessor will: qualify the customer; pre-qualify the site; evaluate the site; estimate wind resource; identify additional project considerations; determine system options; and generate site assessment reports.

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NABCEP Small Wind Site Assessor Certification Examination Specifications

Content Domain
- Qualify the customer (10%)
- Pre-qualify the site (12%)
- Evaluate the site (32%)
- Estimate wind resource (13%)
- Identify additional project considerations (10%)
- Determine system options (10%)
- Generate site assessment report (13%)

Job Description:
A Certified Small Wind Site Assessor is a person who, when given a potential site for a small wind installation, will: qualify the customer; pre-qualify the site; evaluate the site; estimate wind resource; identify additional project considerations; determine system options; and generate site assessment reports.

NABCEP PV Installer Content Outline

A. Qualify the Customer
- Quantify customer’s energy consumption
- Identify customer’s motivation, goals, objectives, and expectations
- Evaluate client’s knowledge of wind
- Determine client’s economic situation, budget, and financial incentives
- Determine budgetary authority
- Educate client about the realities of wind energy generation
- Educate client about energy consumption
- Educate client about energy costs

B. Pre-qualify the Site
- Identify site type (urban, suburban, rural, single family, residential, commercial)
- Determine lot size, acreage
- Determine property ownership
- Determine nearest airport
- Make preliminary wind speed estimate
- Establish relative elevation or topography
- Identify proximity to neighbors
- Identify vegetation, trees, and obstructions
- Identify energy source or utility service provider
- Identify customer’s location (e.g., lat/long coordinates, address)
C. Evaluate the Site

- Ensure safety while on site
- Identify sources of turbulence
- Estimate turbulence intensity
- Determine fixed obstructions’ height, type, and location
- Determine current and mature vegetation height, type, location, and density
- Determine tower site elevation(s)
- Identify potential tower locations
- Determine space needs for tower construction and erection
- Identify potential locations for balance-of-system components
- Identify environmental indicators of wind intensity and direction
- Locate aboveground and underground utilities, well, and septic
- Estimate wind shear
- Assess need to incorporate displacement height
- Determine site accessibility for construction
- Identify possible interconnection locations, determine wire run length
- Identify property boundaries
- Evaluate soil conditions
- Identify conflicting land use
- Determine near future changes near and around the site
- Inquire about depth to bedrock
- Inquire about customer’s site preference
- Locate obstructions to wind resource
- Assess electrical service type and capacity
- Photograph the site
- Photograph the electrical infrastructure
- Educate consumer about site observations

D. Estimate Wind Resource

- Identify sources for wind resource estimation
- Estimate annual reference wind speed or wind power density
- Research wind direction(s)
- Apply displacement height
- Interpret wind map
- Determine appropriateness of onsite measurements
- Determine impact of topographic features (including orography)
- Apply appropriate alpha to calculate hub-height wind speed
- Apply turbulence intensity

E. Identify Additional Project Considerations

- Identify potential policy, zoning, or ordinance limitations
- Identify extreme environmental considerations (e.g., tropical storms, marine, sand, cold weather)
- Inquire about relationships with neighbors
- Identify utility interconnection requirements/agreements
- Determine if site is under FAA authority
- Identify nearby sensitive or protected areas
- Educate client about factors affecting the project (including insurance, taxes)
- Educate the client about safety, operation, and maintenance

F. Determine System Options

- Determine minimum tower height
- Recommend tower height
- Recommend tower types for site
- Provide wind turbine options
- Apply de-rate metrics (e.g., turbulence, system efficiency, availability)
- Calculate energy production estimate for system options
- Compare production estimates with consumption or client system goals
- Align system recommendations with client goals and budget
G. Generate Site Assessment Report

- Educate client about efficient use of energy
- Integrate information from photos, aerial, topographical and wind resource maps
- Diagram a site plan
- Recommend tower and system options
- Educate client about system options (turbine, balance-of-system, towers)
- Illustrate turbine performance based on tower height and location
- Detail the financial incentives and impact
- Present financial metric (e.g., cost of energy, ROI, IRR, payback)
- Highlight potential barriers to installation
- Identify educational resources for client
- List the next steps for the client to follow

Knowledge Required

Listed below are a wide variety of subjects that a Certified Small Wind Site Assessor must have knowledge of:

| Basic mathematics, including basic algebra and geometry |
| Use of spreadsheets (wind speed calculators, output calculators, economic calculators) |
| Computer skills (e.g., Excel, Word) |
| Basic drawing skills |
| Listening, writing, and verbal communication skills |
| Organizational skills |
| Internet use (e.g., Google Earth, wind maps, incentives) |
| Reading and comprehension skills |
| Map interpretation skills (e.g. topography, location, terrain) |
| Compass or GPS use |
| Digital photography |
| Basics of towers and foundations |
| Interpret reports (e.g., utility bills, wind reports, manufacturers’ specifications) |
| Basic electricity |
| Fundamentals of wind energy and wind behavior |
| Basic tree identification and mature height |
| Height and distance estimations |
| Energy policy and regulations |
| Wind turbine technology, performance, and technology |
| Basic financial knowledge |
| Small wind installation process |
Eligibility Categories

To qualify to sit for the NABCEP Small Wind Site Assessor Certification Examination, the candidate must demonstrate that he/she meets at least one of the following minimum entry requirement tracks. Definitions for experience, education, and training and how to document these requirements can be found after the eligibility categories.

A. Be a Certified NABCEP Small Wind Installer™ AND one (1) year of professional experience (see definition) AND a minimum of twenty four (24) cumulative hours of wind energy training covering the Small Wind Site Assessor (SWSA) Job Task Analysis (JTA).

B. A minimum of sixty (60) cumulative hours of wind energy training covering the SWSA JTA of which at least four (4) hours are supervised in the field AND one (1) year of professional experience.

C. A minimum of seventy (70) cumulative hours of wind energy training covering the SWSA JTA of which no more than twelve (12) hours are mentored (see definition) AND one (1) year of professional experience.

D. A minimum of twenty four (24) cumulative hours of wind energy training covering the SWSA JTA AND two (2) years of professional experience.

E. Wind Site Assessor Certification (current or lapsed) from the MREA AND one (1) year of professional experience.

F. A degree from a 2-year accredited community college or university renewable energy program that includes wind energy training covering the SWSA JTA AND one (1) year of professional experience.

G. Instructor of wind site assessor, technology, and installation program, workshops, and/or courses with a minimum of 400 student contact hours.

Definition of “year of professional experience”

One year of professional experience is defined as completing two (2) qualified wind site assessments (see definition) in the two (2) years prior to the submittal of an application.

Two years professional experience is defined as completing four (4) qualified wind site assessments in the previous two (2) years, with at least two (2) of these having been completed more than twelve (12) months prior to the date of application.

Definition of a “qualified wind site assessment”

A “qualified wind site assessment” must be completed for pay (see definition below) by an individual as an independent consultant, a sole proprietor, or as an employee of a company that offers wind site assessment services. Practice assessments performed as part of a workshop, course, or other training programs do not qualify towards the required professional experience. In order to qualify:

• Wind site assessments must be for actual sites, for actual customers, and must have resulted in actual reports that were submitted to the customer(s). Mock or practice assessments or reports are not eligible. A final and complete assessment report must be included in the application for each required qualified wind site assessment.

• “For pay” means that the assessment was commissioned and/or paid for by a customer, company, state public benefits program, granting agency, or other entity or services institution.

• A completed “Wind Site Assessment Report Checklist” must be submitted with each wind site assessment report.
• A signed letter from the customer acknowledging the receipt of the full report and date of receipt must also accompany each wind site assessment report.

• Official letterhead is required for assessments done for or paid for by companies, state public benefit programs, granting agencies, or other entities or services institutions.

**Education Requirements**
For category F, the degree must be for a 2-year (minimum) renewable energy program from an institution accredited by an agency recognized by the U.S. Department of Education (i.e. university, community college, vocational-tech program).

**Training Requirements**
The exam is such that some level of training is necessary for most applicants to achieve a passing score. NABCEP recommends that applicants refer to the Small Wind Site Assessor Job Task Analysis (available at www.nabcep.org) to identify any knowledge or skill gaps, and seek additional training as needed.

NABCEP will accept training to meet eligibility requirements when the training, workshops, and/or courses meet the following outcomes:

• Meets the minimum cumulative hours required by the eligibility category
  - A minimum of sixty (60) hours for eligibility category B.
  - A minimum of seventy (70) hours for eligibility category C.
  - A minimum of twenty four (24) hours for eligibility categories A & D.

• Teacher/learner classroom and hands-on field experience OR 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 instruction, interactive video/CD/DVD, and/or Web site learning.

• Training programs, courses, or workshops must cover the core competencies from the Small Wind Site Assessor Job Task Analysis.

**Acceptable training providers include but are not limited to:**
• Institutions accredited by an agency recognized by the federal Department of Education (i.e., Universities, Community Colleges, Vocational-Tech Programs)
• Programs accredited by ISPQ for Small Wind Training (visit www.irecusa.org for full listings)
• An ISPQ Certified Master Trainer or Instructor for Small Wind Training
• Independent training providers recognized by a state renewable energy public benefits program
• Manufacturer’s training that specifically covers the Small Wind Site Assessor Job Task Analysis.

**Mentoring / Supervised Field Training**
Applicants may seek mentors for supervised field training ahead of the NABCEP Certified Small Wind Site Assessor Exam. In-field mentoring by a NABCEP Certified Small Wind Site Assessor™ or NABCEP Certified Small Wind Installer™ may qualify for up to 12 hours of training.
Documenting Requirements

Documenting a Qualified Wind Site Assessment
The applicant will be required to provide information for each wind site assessment submitted, including a detailed description of responsibilities and contact information for the customer. The final wind site assessment report that was submitted to the customer must be included in the application along with two additional documents:

- A signed letter from the customer confirming their receipt of the report on the date indicated in the application, or

- If the customer is a state public benefits program, company, granting agency, or other entity or services institution, NABCEP requires documentation on official letterhead.

- A completed “Small Wind Site Assessment Checklist.”

Documenting Training & Education Requirements
If education and/or training are included in the applicant’s Qualifying Category, then copies of official transcripts, diplomas, certificates, or letters from the instructors attesting to attendance and/or degrees earned must be submitted with the application form.

Trainer’s Documentation of Instruction or Training
If qualifying as a trainer under eligibility category G, documentation of the accumulated minimum four-hundred (400) student contact hours for training covering the Small Wind Site Assessor Job Task Analysis is required. If employed by others, a letter from the employer(s) or organization(s) that sponsor(s) the training(s) or confirmation by a credentialing organization (such as ISPQ) is required to confirm the accumulated minimum four hundred (400) student contact hours for training covering the Small Wind Site Assessor Job Task Analysis.