



Guide for



Wind Turbine Service Technicians in California

May also be called: Electro-Mechanical Wind Turbine Technicians; Field Engineers, Wind Technicians; Wind Energy Technicians; Wind Field Service Technicians; Wind Field Technicians; Wind Turbine Mechanics

Specialties within this occupation include: Blade Technicians; Small Wind Installers

What Would I Do?

Wind Turbine Service Technicians inspect, diagnose, adjust, or repair the external and internal components of wind turbines. They perform regular service and maintenance on the equipment including oil changes and gearbox lubrication. Technicians adjust electrical or electronic equipment and repair any non-working mechanical devices. They also help with the construction and installation of wind turbines. Wind Turbine Service Technicians should be able to understand manuals, blueprints, schematics, and diagrams so that they can troubleshoot any electrical, mechanical, or hydraulic malfunctions. They document all work performed on computer-based reporting programs and maintain a detailed parts list.

Wind is a renewable energy resource. Wind turbines convert the energy from the wind into mechanical or electrical energy. The electrical energy that is generated from the wind turbines can be used to power homes, businesses, or sold to utility companies. The placement of wind turbines is determined by the wind speed, prevailing weather patterns, obstructions, aesthetics, and size of the area. There are two different types of wind turbines: the egg-beater and propeller style. The most common is the propeller style, which consists of two or three turbine blades. Wind turbines also come in various sizes and kilowatt capacities. Larger turbines with 100-kilowatt capacity or more are grouped together into wind farms, which supply the electrical grid. Smaller wind turbines rated below 100 kilowatts are used for homes, telecommunication sites, or to pump water out of the ground.

Blade Technicians inspect, service, repair, or replace wind turbine blades. They perform regular service on the blades, nacelle (the case that contains the mechanical parts of a wind turbine), and nose cone by inspecting them for cracked, chipped, and warped areas. Additionally, Technicians monitor the speed of the blades to make sure they are working at their most efficient level. Most wind turbine blades are manufactured from fiberglass; therefore, Blade Technicians should have extensive fiberglass training to perform their job properly. Technicians also need to be able to keep service records, read and follow written instructions, and understand blade schematics.

Small Wind Installers construct and install small wind turbines which have a 100-kilowatt capacity or lower. Most of these installations occur at private residences, businesses, or telecommunication sites. The Small Wind Installer should be familiar with the equipment and system design; many times adjustments are required to fit the customer's needs.

Tools and Technology

Wind Turbine Service Technicians use a variety of tools, including computers, cordless drills, grease guns, harnesses, hammers, multi-meter testing kits, torque wrenches, welding equipment, and wire cutters.

Important Tasks and Related Skills

Each task is matched to a sample skill required to carry out the task.

<i>Task</i>	<i>Skill Used in this Task</i>
Inspect or repair fiberglass turbine blades.	Operation Monitoring
Troubleshoot or repair mechanical, hydraulic, or electrical malfunctions related to variable pitch systems, variable speed control systems, converter systems, or related components.	Troubleshooting
Climb wind turbine towers to inspect, maintain, or repair equipment.	Multi-limb Coordination
Diagnose problems involving wind turbine generators or control systems.	Problem Sensitivity
Perform routine maintenance on wind turbine equipment, underground transmission systems, wind fields substations, or fiberoptic sensing and control systems.	Equipment Maintenance
Start or restart wind turbine generator systems to ensure proper operations.	Operation and Control
Test electrical components of wind systems with devices such as voltage testers, multimeters, oscilloscopes, infrared testers, and fiberoptic equipment.	Equipment Selection
Test structures, controls, or mechanical, hydraulic, or electrical systems according to test plans and in coordination with engineers.	Engineering and Technology
Assist in assembly of individual wind generators or construction of wind farms.	Installation
Collect turbine data for testing or research and analysis.	Quality Control Analysis

Source: U.S. Department of Labor [Occupational Information Network \(O*NET\)](http://onetonline.org) at onetonline.org

Working Conditions

Wind Turbine Service Technicians may work in a variety of settings, such as desert and mountainous regions and manufacturing and power industry facilities. Regardless of the setting, most Technicians work outside in all types of weather conditions. Their work consists of climbing wind towers at heights greater than 100 feet, lifting heavy tools and equipment, and working in cramped quarters on top of towers. Some towers may require Technicians and equipment to be air-lifted by helicopters.

Wind Turbine Service Technicians should be in good physical condition. They may risk suffering injuries from tools or falls; however, risks are usually minimized by following proper safety procedures. Technicians may work a standard 40 hours or a rotation shift schedule. Wind Turbine Service Technicians may also travel extensively due to a shortage of experienced Technicians.

Unionization is not common in this occupation. However, some Wind Turbine Service Technicians may belong to the International Brotherhood of Electrical Workers.

Will This Job Fit Me?

The job of Wind Turbine Service Technician may appeal to those who enjoy working outdoors at extreme heights or activities requiring practical, hands-on problems and solutions. This occupation usually interests those who are attentive to detail and thorough in completing work tasks with minimal supervision.

Wind Turbine Service Technicians also work as part of a team. Some Technicians train other Technicians on mechanical and testing procedures.

What Wages and Benefits Can I Expect?

Wages

A formal salary survey is not available; however, according to an environmental study conducted by the California Community College Centers of Excellence for Wind Turbine Technicians in California (September 2009), hourly wages range from \$15 per hour to \$25 per hour. All salaries depend on the pay structure established by each employer for work performed, the nature of the project, and the skill of the Technicians. Generally, workers in large cities earn higher wages than those who work in small towns and rural areas.

Benefits

Wind Turbine Service Technicians may receive benefits that include health and life insurance, sick leave, vacation and retirement plans.

What is the Job Outlook?

As this is an emerging occupation, the number of Wind Turbine Service Technicians in California is unknown at this time. Employment opportunities should increase in the future considering society's growing interest in environmental protection and the development of alternative energy sources. However, like many other occupations, employment may be sensitive to the fluctuations of the economy.

How Do I Qualify?

Education, Training, and Other Requirements

Many employers prefer to hire individuals with a high school diploma or the equivalent and some mechanical or electrical experience. Entry-level Wind Turbine Service Technicians generally receive on-the-job training by working with an experienced Wind Technician. Entrants into this occupation frequently transfer into wind occupations from related construction or mechanical fields. Entry-level Technicians may have attended wind energy programs at community colleges or vocational schools to acquire the technical skills needed for the wind industry. Some employers may require Occupational Safety and Health Administration (OSHA) safety guidelines training. Also, physical examinations, background checks, and drug tests may be required by the employer.

Early Career Planning

High school courses in English, mathematics, physical and life sciences, computer technology, mechanical drawing and computer aided drafting, and shop are helpful for students interested in becoming Wind Turbine Service Technicians.

Preparatory training programs for Wind Turbine Technicians are also available through Regional Occupational Programs (ROP). Programs include Electrical Technician; Heating, Ventilation and Air Conditioning (HVAC); Wind Turbine Technician; and Wiring Methods. To find an ROP program near

you, go to the California Association of Regional Occupational Centers and Programs Web site at www.carocp.org/carocps.html.

Continuing Education

Continuing education is required to maintain the North American Board of Certified Energy Practitioners (NABCEP) certification for Small Wind Installers. Applicants must complete 18 hours of continuing education within three years of their initial certification. The education requirements consist of 12 hours covering the NABCEP task analysis for Small Wind Installer and 6 hours of small wind installation instruction. In addition, Installers must provide evidence for completing the installation of three small wind systems during the three-year certification period.

Licensing and Certification

There is currently no license required to be a Wind Turbine Service Technician in California. However, some licensed electrical contractors will often transfer into wind occupations.

While there is no certification required to be a Wind Turbine Service Technician, NABCEP offers an optional certification for Technicians to specialize in Small Wind Installation. Candidates must be at least 18 years of age, meet the prerequisites, such as having installed four wind systems during a four-year period prior to submitting the application, and pass a written exam. For more information, go to the U.S. Department of Labor's Career InfoNet Web site at www.acinet.org and scroll down to "Career Tools." Click on "Certification Finder" at www.acinet.org/certifications_new/default.aspx and follow the instructions to locate certification programs.

Where Can I Find Training?

There are two ways to search for training information at www.labormarketinfo.edd.ca.gov/?Pageid=1013:

- [Search by Field of Study](#) to find what programs are available and what schools offer those programs. You may use keywords such as: Wind or Wind Turbine.
- [Search by Training Provider](#) to find schools by name, type of school, or location.

Contact the schools you are interested in to learn about the classes available, tuition and fees, and any prerequisite course work.

Where Would I Work?

According to results from the 2009 *California Green Economy Survey*, the largest industries employing Wind Turbine Service Technicians are Utilities, Fabricated Metal Product Manufacturing, and Specialty Trade Contractors, which includes electrical contractors.

Finding a Job

Direct application to employers is one of the most effective job search methods. Jobs may also be found through classified advertisements in newspapers and online job boards. **Online job opening systems** include JobCentral at www.jobcentral.com and CalJOBSSM at www.caljobs.ca.gov.

To find your nearest One-Stop Career Center, go to [Service Locator](#) at www.servicelocator.org. View the [helpful job search tips](#) at www.labormarketinfo.edd.ca.gov/ocguides/JobSearchTips.pdf for more resources. (requires [Adobe Reader](#)).

Yellow Page Headings

You can focus your local job search by checking employers listed online or in your local telephone directory. Below are some suggested headings where you might find employers of Wind Turbine Service Technicians.

- Renewable Energy
- Wind Energy
- Wind Energy Technicians

- Wind Power
- Wind Turbine Maintenance
- Wind Turbine Repair

Find Possible Employers

To locate a list of employers in your area, use “Find Employers” on the LaborMarketInfo Web site at www.labormarketinfo.edd.ca.gov/aspdotnet/databrowsing/empMain.aspx?menuChoice=emp.

- Select the search for employers by occupation.
- Select a geographic area.
- Search for an occupation by keyword, occupation, or category.
- Select one of the top industries that employ the occupation.
- This will give you a list of employers in that industry in your area.
- Click on “View Filter Selections” to limit your list to specific cities or employer size.
- Click on an employer for the street address, telephone number, size of business, Web site, etc.
- Contact the employer for possible employment.

Where Could This Job Lead?

Advancement in Wind Turbine Service Technician occupations usually translates into higher wages. Opportunities for advancement are greater for those working for large contractors. Technicians may advance into positions such as wind power developers or supervisors or sales and marketing. Others with strong business skills may become self-employed by opening their own business.

Related Occupations

Below is a list of occupations related to Wind Turbine Service Technicians.

- Electric Motor, Power Tools, and Related Repairers (49-2092.00)
- Wind Energy Engineers (17-2199.10)
- Wind Energy Operations Managers (11-9199.09)
- Wind Energy Project Managers (11-9199.10)

Other Sources

- California Department of Consumer Affairs
www.dca.ca.gov
- Contractors State License Board
www.cslb.ca.gov
- California Wind Energy Collaborative
cwec.ucdavis.edu
- California Wind Energy Association
www.calwea.org
- Occupation Safety and Health Administration (OSHA)
www.osha.gov
- United States Department of Energy
www.energy.gov
- American Wind Energy Association
www.awea.org
- North American Board of Certified Energy Practitioners
www.nabcep.org
- Centers of Excellence, California Community Colleges
www.coecco.net/wind

These links are provided for your convenience and do not constitute an endorsement by EDD.

For the Career Professional

The following codes are provided to assist counselors, job placement workers, or other career professionals.

System	Code
SOC – Standard Occupational Classification at www.bls.gov/soc	
Wind Turbine Service Technicians	49-9081.00
O*NET – Occupational Information Network at online.onetcenter.org	49-9099.02

The California Occupational Guides are a product of:
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