

# Electric Power Line Workers



## Occupational Brief Title Codes:

- D.O.T.: 821.361.026
- G.O.E.: 05.05.05
- S.O.C.: 49-9051
- O\*NET™ 3.1: 49-9051.00
- N.A.I.C.S.: 234920
- H.O.C.: RES

## Occupational Subtitles:

- Line Erectors
- Line Supervisors
- Tower Erectors

## Work Classification Based Related

### D.O.T. Occupations:

- Cable Television Line Technicians
- Electric Meter Installers
- Power Transformer Repairers
- Railway Power Workers
- Safety Inspectors
- Streetlight Wires
- Utilities Service Investigators

## Interests Based Related

### G.O.E. Occupations:

- Airplane Electricians
- Cable Testers
- Central Office Installers
- Electricians
- Electronics Assemblers
- Elevator Repairers
- Field Engineers
- Plant Maintenance Technicians
- Powerhouse Mechanics
- Telegraph Plant Maintainers

## Skills Based Related

### O\*NET Occupations:

- Aircraft Structure Assemblers, Precision
- Aircraft Systems Assemblers, Precision
- Electric and Electronics Repairers, Powerhouse, Substation, and Relay
- Electric Meter Installers and Repairers
- Helpers-Electricians
- Rail Car Repairers
- Signal and Track Switch Repairers
- Transformer Repairers

*Electric power line workers* (e'lec-tric 'pow-er 'line 'work-ers) install, maintain, and repair power lines that carry electricity from generating plants to users.

A network of power lines carries electricity across the United States. These lines begin at power plants that produce electricity. The lines then go to substations that control the voltage of the power. From the substations, lines carry power to factories, schools, stores, and homes. People push buttons or flick switches to turn on lights, to heat their homes, or to start appliances.

Electric power line workers install poles and power lines to carry electricity to new places or to increase the power to others. They install underground or overhead power lines. They also repair power lines damaged by storms, earthquakes, overloads, and accidents.

Electric power line workers may have many jobs and titles. They may be called line erectors, tower erectors, line mechanics, line technicians, troubleshooters, ground helpers, cable splicers, or line repairers. Many electric power line workers work in construction. Many do routine maintenance. Others do emergency repairs.

## Work Performed

Some companies have several crews of electric power line workers. They may work exclusively on maintenance and repairs, or they may install new lines. In other companies electric power line workers do not specialize. They are capable of doing all line-associated tasks. They build, set up, repair, and maintain lines and equipment.

To install new electric power lines, *line erectors* put up poles, install new lines and equipment, and maintain these networks. They may dig holes with a mechanized



*Line workers install, maintain, and repair power lines that carry electricity from generating plants to users.*  
Photo by CGP Staff

digger truck and raise the poles with the help of a crane truck. They help the climbers by tying tools and equipment to a rope and pulling them within reach of the workers in the aerial bucket or up on the poles. They may also assist in stringing cables.

Electric power line workers climb the poles or work from a truck-mounted bucket to string the cable. They may fasten insulators onto the crossarms before they attach the cable. They may add other equipment such as arresters, transformers, reclosures (circuit breakers), or switches. With the help of the ground crew, line workers string the cable from pole to pole or from pole to building. They leave a certain amount of slack in the cable so that it will not break in a high wind or under other stress. They splice or crimp cables and attach the wire from auxiliary equipment to the power line.

**Tower erectors** work on the steel or aluminum towers that support high-voltage electric lines. These lines carry power between generating stations and substations. Workers set up the towers, install lines, and repair lines and damaged towers. Sometimes they put a tower together on the ground. They use a crane or a helicopter to take it to the site and put it in place. Tower erectors may work more than one hundred feet above the ground to erect the upper part of a tower, or to install insulators and cables.

In cities where power lines are underground, or in newly developed residential sections, electric power line workers place cables in underground conduits. To dig trenches and fill them in later, workers use trenchers, backhoes, and other power equipment.

After the cables are installed in position, line workers complete the connections. They place insulation over the conductor and seal the splice with a lead sleeve or with some other protective cover. Line workers work on poles, in buckets, in manholes, or in the basements of large buildings.

Electric power line workers also maintain and repair electric lines. Some line workers do routine maintenance and service work. They make sure lines are clear of tree limbs or other obstructions. They check lines for damage or trouble spots. They change equipment such as crossarms, braces, fuses, broken lightning arresters, and insulators.

To replace weak or broken poles, they set new poles next to the old ones and move the wires. They splice broken ends of fallen wires and reconnect wires to insulators. They may install new wire. In most parts of the United States companies use helicopters to inspect lines.

**Line supervisors** answer emergency calls and go from one special job to another. They may work alone, in pairs, or in crews. A central service office or a service supervisor sends them to jobs. Line supervisors know all the company transmission and distribution systems. They know the circuits and switching points.

When they find the cause of any trouble, they report it. If possible, they make repairs to restore service. Sometimes

they set up emergency power service until they can make repairs. They may disconnect a defective component to allow safe operation of the rest of the system.

Line supervisors may replace transformers and lightning arresters to restore service. They may clear shorts or grounds from lines, restore downed wires, or trim trees that create a hazard to working. They may make temporary repairs to poles and fixtures.

Electric power line workers use hand tools, power tools, and heavy equipment. The trucks they drive have a two-way radio so that line workers in routine repairs can answer calls for emergency work. Line crews typically use shortwave radios and cell phones.

### **Working Conditions**

Working on power lines is hard work. At times it may be dangerous. Electric power line workers are outside in all weather. They work in storms, in freezing temperatures, and under a hot sun. They spend most of their time high in the air on utility poles, in aerial lift equipment, or in insulated aerial buckets.

Safe work habits, the right tools, protective equipment, and good training reduce the risk of falls, electrical shock, and other accidents. All the voltages that line workers come in contact with can cause death if the workers do not follow safety procedures. They wear heavy rubber gloves and other protective equipment to prevent electric shock. Further protection includes rubber line hose on wires, and rubber blankets over the equipment.

Line workers and cable splicers must wear safety equipment when entering manholes. They must test for the presence of gas before going underground. They may be exposed to hazardous chemicals from solvents and compounds they use when splicing cables.

### **Hours and Earnings**

According to the Bureau of Labor Statistics, the workweek for electrical power line workers is slightly longer than the forty-hour week. During storms, floods, and other emergencies they may work long hours to repair damage and to restore service. New workers may start on the night shift. Line supervisors may be on call to work any hour of the day or night, seven days a week.

In the year 2000, electric power line workers earned an average of \$22.01 an hour. Wages ranged from a high of more than \$30.35 an hour to a low of less than \$12.36 an hour. Earnings vary depending on geographic location, employer, and years of experience.

Electric power line workers earn time and a half for overtime on regular working days or double time for Sundays and holidays. If they work on off days or on holidays, they may earn double pay for each hour. The pay for line installers usually depends on union contracts. These contracts set wage rates, wage increases, and overtime rates.

Most utility companies pay a portion of their workers' medical and life insurance plans. Many line workers receive three weeks of vacation after five to ten years of work, and four weeks after fifteen to twenty years. Some companies pay for the further education or training of their workers.

### **Education and Training**

Employers prefer to hire high school or technical school graduates with some related work experience. Students will find courses in electricity, shop, mathematics, and physics useful.

Electric power line workers for electric utility companies generally complete a formal apprenticeship. These are often conducted jointly by the employer and the union representing the workers. These apprenticeships last several years. They combine on-the-job training and hundreds of hours a year of formal instruction. Apprentices study electrical, construction, and maintenance standards. They also study blueprint reading, mathematics for electricians, basic electrical theory, and transmission and distribution methods.

Many employers augment training with computer-assisted instruction, videocassettes, movies, or programmed workbooks. Some training centers have equipment such as poles, cable supporting clamps, and other fixtures of the work. Employers may have a special outdoor practice field. Students learn to climb poles and to work at the top of the poles. Strong safety programs are an essential part of the training and instruction. Trainees learn safety practices preventing falls and contact with live wires.

On the job trainees hand tools and equipment to line workers. They help set up poles, string wires, and do other tasks. After a basic training period they start doing routine line work under the direction of a skilled line worker. They work on low-voltage lines, make simple repairs, and learn to climb poles. Gradually they learn to do skilled tasks. Line workers continue to learn throughout their career.

After they finish an apprenticeship and pass a final test, these workers may then fill job openings that come up. They may have to move to a different town or city in the company's service district.

### **Unions and Professional Societies**

Many electric power line workers are union members. Most employees of electrical utility companies belong to the International Brotherhood of Electrical Workers. Some belong to Service Employees International Union. Members of this union include electric, water, and wastewater employees.

### **Personal Qualifications**

Line workers must be intelligent, dependable, and careful. Motivation, self-discipline, and the ability to work

well as members of a team are important. Some employers test for physical ability such as balance, coordination, strength, and mechanical aptitude. Because the work entails a lot of climbing, applicants should have stamina and must be unafraid of heights. The ability to distinguish colors is necessary because wires and cables are usually coded by color.

Occupations can be adapted for workers with disabilities. Persons should contact their school or employment counselors, their state office of vocational rehabilitation, or their state department of labor to explore fully their individual needs and requirements as well as the requirements of the occupation.

### **Where Employed**

According to the Bureau of Labor Statistics, in the year 2000, there were about 98,000 electric power line workers in the United States. Nearly all line workers are employed by telephone, cable television, electric power, or construction companies. Line workers may be found wherever there are power lines, though cities tend to have more than rural areas.

### **Employment Outlook**

The employment of electric power line workers will grow slower than average for all occupations through the year 2010. Although electric power needs are increasing, the building of new power plants and high-voltage lines has slowed. An ongoing decline in the employment of these workers is expected to continue.

Wireless technology such as satellites and microwave towers, and advanced equipment such as fiber optic cable has increased the efficiency of power transmission. These installations are less susceptible to weather, and fewer workers are needed to keep them in repair.

The job turnover among these workers is low. Once established as regular workers, line workers tend to remain in the field. Replacement needs, therefore, are low.

### **Entry Methods**

People interested in becoming line workers should visit a local electric or telephone office to ask about job training or apprenticeships. They may get information from a local branch of the International Brotherhood of Electrical Workers. State employment offices may also have job leads.

### **Advancement**

Experienced line workers may become cable splicers or line supervisors. Others are tower line supervisors or emergency crew supervisors. Service supervisors direct some line workers and voltage testers.

### **For Further Research**

**Utility Workers Union of America**, 815 Sixteenth Street, NW, Washington, DC 20006. Web Site at [www.uwua.org](http://www.uwua.org)  
Write for information on apprenticeship programs.

**International Brotherhood of Electrical Workers,**  
Telecommunications Department, 1125 Fifteenth Street,  
NW, Room 807, Washington, DC 20005. Web Site at  
[www.ibew.org](http://www.ibew.org)

Write or e-mail IBEW for information on training  
and apprenticeship in your area.

### **Acknowledgments**

Chronicle Guidance Publications appreciates the  
cooperation of the individuals who reviewed the informa-  
tion in this brief.

O\*NET™ 3.1 is a trademark of the U.S. Department of Labor,  
Employment and Training Administration.

H.O.C. codes adapted and reproduced by special permission of the  
publisher, Psychological Assessment Resources, Inc., Odessa, FL  
33556, from the *Dictionary of Holland Occupational Codes-Third  
Edition*, by Gary D. Gottfredson, Ph.D., and John L. Holland, Ph.D.  
Copyright 1982, 1989, 1996 by PAR, Inc.

### **Briefs Related to This Title**

*Aircraft Technicians.* **Brief 182.**  
*Cable Television Systems Technicians and  
Installers.* **Brief 244.**  
*Electrical and Electronics Industry Workers.*  
**Brief 318.**  
*Electrical Engineers & Technicians.* **Brief 158.**  
*Electronics Engineers & Technicians.*  
**Brief 166.**  
*Electricians, Construction.* **Brief 21.**  
*Electricians, Maintenance.* **Brief 395.**  
*Elevator Constructors (Mechanics).* **Brief 286.**  
*Railroad Industry Workers.* **Brief 14.**

For a complete list of brief and reprint titles  
with current pricing information call:

**Chronicle Guidance Publications, Inc.**

66 Aurora Street

Moravia, New York 13118-3576

Phone 1 800 622-7284 FAX (315) 497-3359

Visit our Web Site at

[www.ChronicleGuidance.com](http://www.ChronicleGuidance.com)