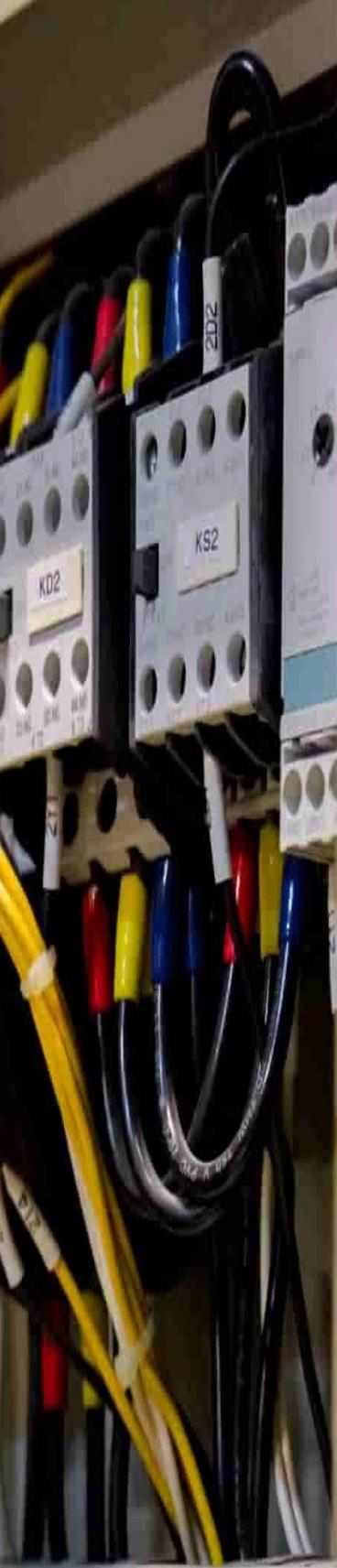


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3G Handy Guide: **2**
Electrician



CHAPTER 1

ELECTRICIAN: ROLES AND RESPONSIBILITIES

An electrician is a tradesperson specializing in electrical wiring of buildings, transmission lines, stationary machines, and related equipment. Electricians may be employed in the installation of new electrical components or the maintenance and repair of existing electrical infrastructure. Electricians may also specialize in wiring ships, airplanes, and other mobile platforms, as well as data and cable lines.

An electrician specializes in the installation, operation, repair, and maintenance of electrical systems. These systems include wiring, circuit boards, and electronics. This profession is incredibly varied, and in some parts of the world it can pay very well, due to the three to five year training period required for an electrician to be successful. Consumers interact with the work of electricians every day in communities with electricity, and many people have a preferred electrician for electrical repair around homes and businesses. Some people like to distinguish between an electrician and a lineman, depending on regional nomenclature.

IN THIS CHAPTER

Life of Electrician

4

Career and Future as Electrician

20

Electrician

In this sense, an electrician works on internal wiring in homes and other buildings, while a lineman works on outside electrical lines and in power generation facilities. Due to the much higher currents involved in this work, being a lineman can be very dangerous, especially when linemen are sent out to respond to downed power lines and other emergencies which can occur in inclement weather.



Electrician specializes.

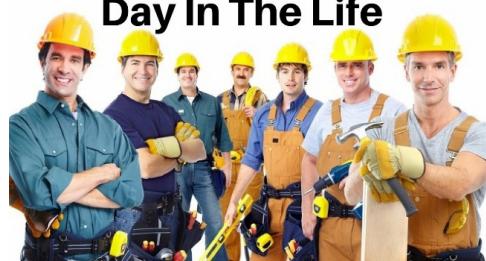
LIFE OF ELECTRICIAN

An electrician trainee is a person who is learning the skills necessary to become a journeyman electrician that can work independently within the field. The term may refer to more than one level of training, however; in some cases, it may refer to an entry level worker who is learning the skills necessary to become an apprentice. In other instances, an electrician trainee is essentially an

apprentice who is actively learning the job. In the former instance, the trainee is essentially a pre-apprentice, whereas in the latter instance, the trainee is a person working toward his or her journeyman certification.

In either case, it is likely that the electrician trainee will need to complete a high school education or be working toward a diploma or equivalent qualification. Basic to moderate math skills will be required, as will moderate communications skills. The candidate will need to apply for an electrician trainee certificate, which usually involves paying an application fee and filling out an application that spells out the candidate's education and experience. Candidates can be selected for a position even if they have little or no experience, but instead have a willingness to learn and a demonstrated work ethic.

Day In The Life



Electrician trainee.

An apprenticeship can be harder to come by, as the positions are fairly competitive and the work is hard. An apprenticeship can last up to four years or more, and during this time, the electrician trainee will work with a journeyman electrician who will teach the apprentice the skills necessary to be

successful in the position. Early on in the apprenticeship, the trainee is likely to perform only low level job functions, such as preparing a work space or basic cleaning jobs. As the apprenticeship progresses and the electrician trainee learns more of the skills necessary to perform various jobs safely and effectively, he or she may be trusted to do more complex work.

The electrician trainee must also complete classroom work during the apprenticeship, and by the end of the apprentice period, he or she will need to pass various exams that will certify him or her as a journeyman electrician. This exam can be difficult, and if the apprentice fails, he or she may need to continue the apprenticeship for an even longer period of time. If the trainee passes, he or she will be considered a journeyman who can work independently as an electrician with no formal guidance.

Training of Electrician

There are four items to consider when looking for electrician training: hands-on learning, equipment, admissions requirements, and faculty. Electrician training is available from a community or career college, as well as by dedicated online schools. Any online school must be affiliated with a traditional college in order to provide access to the hands-on electrician courses required for this program. An electrician is licensed to

work with electrical power, install wiring, and make changes to existing wiring.

Electrician in a skilled trade. As such, the training should be very hands-on, with lots of opportunities to practice the different techniques required in this job. Avoid any school that does not have a dedicated laboratory and testing area. There should be structures in place to mimic a residence, **commercial building**, and high-rise building.

Becoming an Electrician

Electricians install, repair and maintain electrical power systems and equipment for residential, commercial or industrial buildings. They repair or replace old wiring, and they must adhere to all building regulations. Electricians often keep full-time schedules and might work overtime. These workers risk electrical injuries and might have to work outdoors or in cramped spaces. These professionals need little postsecondary education, but still make above the national average salary.

Now let's take a look at some of the steps that can be taken to become an electrician.

Step 1: Complete Electrician Classes:

Many technical schools offer diploma or certificate programs that can prepare individuals for entry-level work as an electrician's apprentice. These programs may satisfy some of the coursework requirements of an apprenticeship program. In many cases, classes can also

Electrician

be credited toward the later completion of a bachelor's degree program. Students will learn the trade through the hands-on application of skills needed to install, repair and maintain electrical wiring.

Step 2: Become an Apprentice: The most common path toward becoming an electrician involves completing an apprenticeship program, which allows workers to learn the trade while earning a wage. The International Brotherhood of Electrical Workers and the National Electrical Contractors Association jointly offer training programs through the National Joint Apprenticeship and Training Committee (NJATC). Professional trade associations, such as the Associated Builders and Contractors and the Independent Electrical Contractors, as well as vocational schools, offer apprenticeship programs.

Typically, applicants to apprenticeship programs must be at least 18 years old and have a high school diploma or equivalent. Apprenticeships last 4-5 years and combine schooling with on-the-job experience under the supervision of a licensed electrician. Training is offered for indoor, outdoor, residential and voice-data-video electricians. Relevant coursework includes safety and first aid, codes and standards, electrical concepts and mechanical skills.



National Joint Apprenticeship and Training Committee (NJATC).

Step 3: Earn a License: Work experience accrued during an apprenticeship can usually be applied toward a license, which is required in many states to work for an electrical contractor. Electricians often must provide proof of work experience and pay a fee to receive a license. Many states also require a qualifying score on an examination to ensure knowledge of local regulations and the National Electrical Code. Licenses are commonly classified by type of electrical work or by level of experience, such as journeyman and master electrician.

Electricians usually must complete a minimum number of continuing education hours every year to maintain their license, as well as periodically pass another examination. In some states, an electrician must also earn certification with approved organizations before earning a license.

To really understand the licensure process, do your research. Every state has different licensing requirements so aspiring certified electricians should

be sure to look into the necessary prerequisites before applying for licensure. Licensure often also comes with a variety of fees, which can vary by state



To really understand the licensure process.

Step 4: Acquire Certification:

Professional certifications can demonstrate an electrician's accumulated knowledge and skills and may enhance employment and advancement opportunities. The NJATC offers certifications for inside craft, cable splicing and instrumentation. All certifications require a qualifying score on a written examination, as well as a performance evaluation.

The National Institute for Certification in Engineering Technologies offers certification for a variety of electrical systems, such as video security systems and industrial instrumentation. Individuals who satisfy the work experience requirement can take a written examination for each type of certification. According to the BLS, electricians with a wide variety of skills and certifications will have the best job

opportunities in coming years.

To recap, with the completion of an apprenticeship, licensing and certification, certified electricians can earn about \$52,000 a year to install, repair and maintain electrical power systems and equipment for residential, commercial or industrial buildings.

Require Specifications for become an Electrician

An electrician is a skilled laborer who specializes in supplying, installing and maintaining electrical wiring systems in residential and commercial buildings. To become an electrician you will need to earn a high school diploma, complete classroom instruction, accumulate a certain number of on-the-job training hours and obtain a state license.

Step 1: Research Electrician

Duties: As an electrician you would furnish and manage wiring in homes, factories and businesses. To do this, you will read blueprints to determine locations of outlets, panel boards, circuits and other types of equipment. Then, you're responsible for connecting wires to transformers, switches and other components. All the work you do needs to comply with local and state building codes to ensure public safety. You can choose to specialize in either construction where you'll install wiring

Electrician

systems or in maintenance where you'll upgrade wiring systems.

Step 2: Take Relevant High School

Courses: Some courses available to you in high school can help prepare you for a career as an electrician. Some possibilities include algebra, geometry, physics, chemistry, workshop, English and mechanical drawing. If you're interested in setting up your own business someday, you should consider courses in business, entrepreneurship and accounting as well. Joining a high school electronics club will provide you with additional background. You could also try to gain experience by volunteering for organizations such as Habitat for Humanity or by working with an electrician during the summer.

Step 3: Earn a Certificate or

Associate's Degree: Community colleges and technical schools offer certificate and associate's degree programs that will train you in the fundamentals of electrical power systems. Program content addresses electrical theory, electrical drafting, wiring techniques, and the national electrical code through a mix of classroom and lab courses. Associate's degree programs also include general education courses. Certificate programs may be completed in a year or less. Associate's degrees may be earned in two years.

Step 4: Complete an Industry-

Sponsored Apprenticeship: Apprenticeships take approximately four years to finish and are composed of 144 hours of classroom lessons. Credits earned in a certificate or associate's

degree program may be applied towards the requirement. Classes cover blueprint reading, safety, mathematics, electrical theory and fire alarm safety. You also need 2,000 hours of on-the-job training with an experienced electrician. Tasks you can expect to perform include drilling holes, testing wires and switches and installing conduit.

The U.S. Bureau of Labor Statistics (www.bls.gov) lists four organizations -- the International Brotherhood of Electrical Workers (IBEW), the National Electrical Contractors Association (NECA), the Associated Builders and Contractors (ABC) and the Independent Electrical Contractors (IEC) as sponsors of apprenticeship programs. The IBEW and the NECA conduct their programs through the National Joint Apprenticeship and Training Committee. To find a sponsored apprenticeship, consult the Office of Apprenticeships Sponsors website (oa.doleta.gov).

Step 5: Obtain a License:

Most states require that electricians acquire a license. You should contact your state's local building official for licensing requirements. In a majority of instances you need to pass exams on the National Electrical Code and common electrical knowledge and theory. Once licensed, you need to take continuing education courses to keep up-to-date with National Electrical Code additions or amendments and new procedures and materials.

Electrician: Roles and Responsibilities



National Electrical Code and common electrical knowledge and theory.

Licensed Electrician

Proper training and education is required to become a licensed electrician. Participating in an apprenticeship program and taking advantage of both classroom instruction and on-the-job training will provide the knowledge and skills necessary to become a licensed electrician. Electricians must also pass a licensing examination to work as a licensed electrician.

Electrical systems help power homes and businesses around the world. Electricians are largely responsible for installing, maintaining, and repairing these systems. Among the aspects of many electrical systems are wiring, circuit breakers, and outlets. Licensed electricians are specifically trained to work on electrical systems in a safe manner.

Before entering a training program, some minimum requirements must be met. Candidates must have a high school diploma or equivalent and be 18 years of

age or older. Those wishing to become a licensed electrician should also have good vision, be physically fit, and have good manual dexterity.



Apprenticeship programs.

Apprenticeship programs help prepare those wanting to become licensed electricians. Local unions and building contractor associations often offer apprenticeship programs for interested individuals. Programs typically include both classroom and on-the-job training.

Classroom training to become a licensed electrician covers a wide range of electrical theory and practical knowledge. This includes understanding how to read blueprints and training related to safety when working with electrical components. Other aspects of classroom training may include topics such as mathematics, fire alarm systems, and electrical code requirements.

On-the-job training takes place in live situations, often under the direction of a mentor or supervisor. Initially, apprentices may just assist licensed electricians with the basics, such as

Electrician

measuring and drilling holes. As training progresses, apprentices will learn all of the necessary skills to become a licensed electrician. This includes learning how to design, install, and repair electrical systems.

After the successful completion of an apprenticeship program, candidates must pass a licensing exam. These exams traditionally test the candidate's knowledge of electrical theory and local electrical codes and requirements. Special licensing may be required depending on the type of employment the candidate seeks. For instance, those working for the government may need to meet certain licensing requirements.

Additional training and education will be required throughout an electrician's career. This involves embarking on educational and training programs that help keep licensed electricians up to date on changes related to **electrical codes** and regulations. Electricians will also need to keep up with technological changes and advancements in the field in regards to the adoption of new energy sources.

or products for the consumer market, so electrical engineering qualifications typically include the need to be innovative. Education is generally crucial as well, for the basic electrician and the engineer alike. A bachelor's degree is typically the minimum education level for an electrical engineer, but depending on the job, a master's or doctorate degree may be required.

At the bachelor's degree level, areas such as mathematics, computer science, as well as communications and business management are usually studied. Additional education or training requirements can include courses in computer programming, materials design, and electrical controls and instruments. There are many different colleges that offer courses in electrical engineering, and their programs can vary from one to another. An electrical engineer can also hold positions of leadership. The respective personal qualities and education at the master's level are electrical engineering qualifications typically needed to reach this career level.

Electrical Engineering Qualifications

Electrical engineers can hold various types of jobs in communications, automotive, and medical companies. Other jobs can be found in businesses that specialize in designing and building integrated circuits and computer systems. Some of them involve creating new systems



Electrical Engineering Qualifications.

In addition to educational requirements, electrical engineering qualifications typically include the ability

to analyze the world scientifically and mathematically. Since work environments can range from performing job duties alone or with a team, an electrical engineer typically has to be comfortable with both.

He or she may also have to balance multiple projects at once. The ability to manage each of these in the same day is often a job requirement.

These electrical engineering qualifications sometimes vary depending on the job and stage of one's career.

Electrical engineers can work in different areas, such as lighting, telecommunications, energy, or robotics. Some jobs involve working with architects or with technological equipment such as radar.

Engineers can build prototypes of equipment, supervise construction, and also help test and get the equipment out to a commercial, industrial, or consumer marketplace.

Electricians usually have to take continuing education classes and pass qualification exams. Some educational requirements can be satisfied at a college or at home. To become an electrical engineer, college work is generally needed to be qualified for nearly any job in the field.

A range of sub-disciplines in the field are often available to study. While one can be the focus of study, sometimes two can be integrated for someone to add to his or her electrical engineering qualifications.

Electrician Jobs and Responsibility

There are three different electrician jobs: self-employment, working for an electrical contractor, and teaching. An electrician is a skilled trade's person who has a combination of education and experience working with electrical wiring. In order to work as an electrician, a license is required. This process is managed by the state government, which has strict regulations that must be met in order to become an electrician.

The first requirement to become an electrician is an education program at a community or career college. These programs are typically two to three years in length. The classroom training is combined with job placement opportunities.

Upon completion of the training, all candidates are required to pass a licensing examination to become an electrician. Unlicensed electricians must clearly state their status to any potential employers or clients. The types of jobs available to an unlicensed electrician are very restricted, as a licensed electrician must check their work.

The most common source of electrician jobs is self-employment. Licensed electricians can open their own businesses, deciding what type of service they want to provide, ranging from residential to commercial. Most electricians specialize in one or the other, as this provides an opportunity to build efficiencies into the process and expand a customer base.

Electrician



The most common source of electrician jobs is self-employment.

Another option is to work for an electrical contractor. These electrician jobs provide more stability than self-employment, and are a good way to start a career as an electrician. An established contractor often has business relationships with builders, and construction and renovation firms. These businesses often work together, coordinating activity between the different trades on a large project.

Electricians can become instructors at local community or career colleges, teaching courses in basic wiring, reading electrical schematics, and more. Many electricians also offer courses in electrical safety for construction workers, factory staff, building operators, and hobbyists. In order to become an instructor, many electricians complete a certificate program in adult education. Learning the most effective way to teach adults can be a huge help when making this career transition.

People who report the greatest satisfaction in electrician jobs enjoy working with their hands, interacting with a wide variety of people,

and being independent. A skilled electrician is an essential asset to any construction or renovation project. The career advancement opportunities for an electrician include becoming the lead hand, project manager, or shift supervisor. The options available depend on the work environment and the organizational structure.

Industrial Electrician

The job of an industrial electrician involves testing, repairing, and maintaining electrical equipment. Most industrial electricians obtain full-time positions with large employers, though some electricians work on an independent contract basis. Since electrical equipment is now more common than ever before, industrial electricians are in relatively high demand.

Employers that hire industrial electricians include steel producers, electrical firms, **motor vehicle** manufacturers, mining companies, and some parts manufacturers. While basic electrical knowledge is essential in order to excel within this industry, those electricians that make a point of learning about robotic equipment often have an edge over job competition.

Robots are increasingly popular within the manufacturing world. While reliable, robots require repair and maintenance frequently. Thus, an industrial electrician that specializes in robotic repair will often find high-paying jobs. Still, prior to honing in on one specific electrical skill, all industrial electricians must successfully complete proper schooling.

Electrician: Roles and Responsibilities



Specific electrical skill.

In order to become an industrial electrician, a high school diploma must be obtained. Courses that should be completed during high school include basic math and science courses. Following high school graduation, aspiring electricians must complete 9000 hours of an apprenticeship program. Once this program has been successfully completed, candidates must then pass a basic examination.

In addition to necessary schooling, industrial electricians must also be able to work under difficult conditions. Often, electricians will have to climb machines, work in confined spaces, and crawl into tight spots. Personality-wise, an industrial electrician should be able to effectively communicate with co-workers and plant managers. Understanding blueprints and visualizing spaces is also a large part of being an industrial electrician.

While most electricians work set hours, sometimes shifts, it is not uncommon for an employer to contact an electrician during off-hours. Whenever a machine needs to be repaired, electricians are expected to attend to that machine right away. Thus, this job can be stressful at times.

Rarely will an industrial electrician be promoted to another position. When a promotion does occur, an electrician's status can be elevated to include various managerial tasks such as overseeing projects and supervising other junior-level electricians. Most promotions within this field only occur following five years spent with an employer.

Industrial electrician jobs can be easily found by searching government websites, calling manufacturing plants, and seeking the help of job placement agencies. Industrial electricians that make a point of continuing their education, keeping abreast of current technologies, and learning as much as possible about the manufacturing industry will thrive.

Domestic Electrician

Every home is connected to a power source, allowing its inhabitants to use devices such as lights, appliances, hot water heaters, and computers. In order for this to happen, wires must be run through the home's walls to connect outlets to a breaker box, and the breaker box to an outside power source. It is the job of a domestic electrician to run the wires through the home, install the breaker box, and make sure everything is ready for the power company to connect the home to the main electrical lines outside. A domestic electrician is someone who is trained to handle all electrical wiring and connections in a residential setting.

The domestic electrician must be proficient in running lines through the walls, attic, or under the house during construction. It is also important for him

Electrician

to understand different kinds of wires that may be used, because different appliances require different wire sizes for proper functioning. If the wrong wire is used, it could result in overloaded circuits, malfunctioning appliances, or even cause a fire.

Another common job assigned to a domestic electrician is the upgrading of wires and breaker boxes in older homes. Houses built before dryers, computers, and televisions were common are not always wired to handle such a large amount of electricity being used at once. For this reason, they often require box upgrades so a higher wattage of power can be used without overloading the breaker. Sometimes in very old homes, the wires themselves will become worn and must be replaced to prevent malfunctions in service, or even worse, house fires.

In some cases, a homeowner will need help installing light fixtures, appliances, and ceiling fans. A domestic electrician may be called for these small jobs to ensure that things are done correctly. Some domestic electricians also specialize in repairing large home appliances and fixtures.

In order for someone to become a domestic electrician, he usually is required to complete schooling or an apprenticeship under someone who is already working as a licensed electrician. The amount of time this training period will last depends on location and experience level when getting started. Training should teach electrical theory, code requirements, and safety, among other skills.

Many residential electricians have construction backgrounds, and this is useful when learning the electrical trade. Often, electricians will need to cut through walls or boards to reach wires, nail or screw outlet boxes to wall studs, and perform other small carpentry-related tasks. They are also required to work closely with other builders and subcontractors during the course of building a new home or renovating an older one. For this reason, it is important for them to understand each person's job responsibilities so working side by side is easier for everyone.

Marine Electrician

The career path to become a marine electrician can differ depending on where you live, though you typically need to have both practical experience and some type of certification. It is sometimes possible to attend a trade school or work as an apprentice prior to starting this type of career, though military electricians and engineers are often qualified to take certification exams as well. If you live in the United States, you will need a certification from the American Boat and Yacht Council (ABYC) or National Marine Electronics Association (NMEA) to work for many employers, while the British Marine Electronics Association (BMEA) should be contacted in the United Kingdom.

Electrician: Roles and Responsibilities



National Marine Electronics Association (NMEA).

Marine electricians perform many of the same duties as their commercial and industrial counterparts, though training as a regular electrician will typically not prepare you to become a marine electrician. Training specifically to become a marine electrician in a vocational school context, or as an apprentice, is more common than moving from one specialty to another. Job opportunities for professionals in the marine electronics field include installing wiring in new boats, working on board large vessels while they are at sea, and diagnosing or fixing a variety of issues either as the employee of a marine electrician company, dockyard, or as an independent contractor.

The first step to become a marine electrician can depend on what type of previous experience or training you have, and the specific opportunities in your area. If you are a high school graduate and have never worked as an electrician before, you may attend a vocational school or look for work as a helper or apprentice. A marine electrician's helper can gain valuable experience, and may eventually qualify you to take certification

exams. Apprentices sometimes need to have prior work experience, or be enrolled in a vocational program, so you will need to look into the specific opportunities available in your area.

Another common way to obtain the necessary knowledge and experience is in the armed forces. Many former marine electronic engineers go on to careers as civilian marine electricians. Other electronics and engineering job opportunities may also be open to you if you have this type of background, so it may be a good idea to investigate all of your options.

In addition to work experience, you will typically also need some type of certification before you can become a marine electrician. Some areas have no legal certification requirements, though you may find it difficult to locate a company willing to hire you without a particular certification. The NMEA and ABYC offer certifications in the US, the BMEA provides similar certification in the UK, and other countries have their own agencies and certification programs. Before you seek out a certification, it may be a good idea to check with potential employers to determine exactly what they are looking for.

Substation Electrician

Electrical substations are energy distribution posts found throughout cities and countryside's. A substation receives high-voltage electrical energy from a power plant, transforms it into low-voltage streams, and distributes it to nearby homes and businesses via power lines. A substation electrician performs

Electrician

routine maintenance and emergency repairs on circuit breakers, transformers, power cables, and other elements at a substation. The work of a substation electrician can be very dangerous, and professionals receive several years of formal training and supervision before they are allowed to work independently.

Most substation electricians are employees of utility companies or municipal government organizations. A professional may be responsible for working at a single, large substation or servicing many smaller substations within a certain geographic area. In rural settings, a substation electrician may need to travel hundreds of miles between substations to conduct preventive maintenance and perform repairs. Some substations are housed within buildings, but most are outdoor structures enclosed by fences. A substation electrician, therefore, must be prepared to work during inclement weather conditions to prevent or correct power outages.



A substation receives high-voltage electrical energy from a power plant.

The main responsibility of a substation electrician is to ensure transformers and voltage regulators are kept in proper working order. Daily

duties include inspecting power lines, testing voltage and current levels, and replacing old circuit breaker fuses. When a particular element is not working correctly, an electrician temporarily disables incoming electricity to diagnose and fix the problem. He or she must have extensive knowledge of the schematics of a substation to avoid personal injury and widespread power outages while performing repairs.

A person who wants to become a substation electrician usually needs to hold a high school diploma and participate in a four- to five-year apprenticeship program.

As an apprentice, a new worker splits his or her time between classroom studies and on-the-job training. He or she takes courses to learn about the physical properties of electricity, blueprint reading, safety measures, and emergency procedures. At job sites, an apprentice works as an assistant to experienced electricians gain firsthand knowledge of the trade.

Upon completion of an apprenticeship, an individual can take a regional licensing exam to receive substation electrician credentials. A professional who gains several years of experience in an entry-level position might have the opportunity to become a supervisor within a private power company or a quality control inspector for a city agency. Some substation workers eventually decide to pursue continuing education and additional training to become independent commercial or residential electricians.

Maintenance Electrician

A maintenance electrician works to ensure that electrical and electronic equipment remains in working order by repairing damaged systems, replacing faulty parts and taking necessary preventative measures. The kind of work done on maintenance electrician jobs depends on the area in which the electrician focuses — either residential or industrial. The kinds of systems used in each vary in complexity. The majority of maintenance electricians are employed by electrical contracting firms and the rest work in other industries, with few being self-employed.

Electricians working in a residential environment might sometimes be called on by a client to also do some minor construction work and installation. A maintenance electrician might be asked to fix or install new lighting, simply repair or replace an old or faulty fuse box or even rewire an entire house. When working in an industrial environment, a maintenance electrician is often tasked with overseeing systems of much greater complexity. He or she might be tasked with maintaining the lighting and air conditioning systems of an office building or complex, or he or she might work in a factory, repairing generators and transformers or overseeing the electrical network supplying the power to **industrial robots**.

Maintenance electricians must be able to diagnose any given electrical problems and provide an accurate assessment of the damage done as well as the amount of time and effort required to remedy those problems. The

electrician must think quickly and use his or her in-depth knowledge of the systems involved to solve the problem in a manner that is both cost- and time-efficient in order to minimize any inconvenience. In such a setting where complex systems are involved and a large number of people spend their day, the amount of responsibility increases as well. The electrician working in any of these environments is responsible for notifying the management if a workplace becomes too hazardous because of some electrical problem.

The training for a maintenance electrician is a four-year process carried out through a paid apprenticeship program that emphasizes both on-the-job and classroom experience. Apprentices begin their on-site training under an experienced electrician by practicing basic techniques such as setting anchors and attaching conduits. They eventually move on to intermediate-level tasks such as full installation and testing of conduits, outlets and switches as well as learning to diagram electrical systems. In the classroom, apprentices learn about safety, electrical theory, mathematics and blueprint reading. Before their four-year term is complete, they will have mastered all non-specific electrical knowledge.

Automotive Electrician

You can become an automotive electrician by working as an auto mechanic and specializing in electrical systems through a combination of coursework and on-the-job training. Automotive electrical work is a specialized field that requires knowledge of many diverse vehicle