SUBSTATION ELECTRICIAN

JOB DESCRIPTION

Classification Responsibilities: A Substation Electrician performs highly skilled, journey-level electrical work in the operation, construction, maintenance, and repair of high voltage electric substations, and other related electrical and mechanical equipment associated with high voltage electric substations. The responsibilities also include operation of the Electric Control Room and the System Control and Data Acquisition (SCADA) system, and participation in the substation/control room stand-by and after-hours call-out duty rotation. This class is responsible for performing related duties as required.

Distinguishing Features: The hazardous conditions of working in close proximity to energized equipment (high voltages of 12,470 and 69,000 volts) in substations are extremely critical factors of this job. Work is strenuous and requires bending, stooping, and heavy lifting. A Substation Electrician works under the general supervision of the Electric Substation Supervisor and/or Electric Substation Foreman and is expected to use independent judgment in the performance of their duties. Employees in a certified Substation Electrician Apprentice program may progress to this class by noncompetitive promotion upon meeting the specific criteria-based promotion requirements of classroom curriculum/coursework, on-the-job training, testing requirements, and successful performance appraisals. Incumbents are subject to call-out and after-hours stand-by duty for emergency repairs and/or electric control room operations and must be willing to work overtime as required. This class is FLSA nonexempt.

QUALIFICATIONS

Employee Values: All employees of the City of Mesa are expected to uphold and exhibit the City's shared employee values of Knowledge, Respect, and Integrity.

Minimum Qualifications Required. Any combination of training, education, and experience equivalent to graduation from high school or GED. Successful completion of an apprentice electrician's program and possession of a valid card or certificate of Journeyman Electrician status, which will be verified prior to qualifying applicants to a list, OR, verified certificate of Journeyman Electrician status and a minimum of four years' experience performing journey-level high voltage (4kV and above) substation electrician duties with an electric utility or other entity operating and maintaining high voltage substation equipment.

Special Requirements. Must possess a valid Class D Arizona Driver's License by hire or promotion date. Must reside within the City of Mesa Electric Utility call-out area (example: within an 18-mile radius of the Main Street and Center Street intersection) within one year after hire date. Must possess, or be able to obtain by hire date, a valid First Aid card with Cardiopulmonary Resuscitation (CPR) certification.

Substance Abuse Testing. Due to the safety and/or security sensitive nature of this classification, individuals shall be subject to pre-employment or pre-placement alcohol, drug and/or controlled substance testing as outlined in City policy and procedures.

Preferred/Desirable Qualifications. Experienced SCADA operations; Computerized Maintenance Management Systems; Geographic Information System (GIS); writing and executing switching orders, and basic computer skills such as Microsoft Word, Excel, and Outlook. The ideal candidate filling this vacancy must be self-motivated, communicate and work well with others, and possess a positive attitude with the highest commitment to work safety.

ESSENTIAL FUNCTIONS

Communication: Communicates with customers and the general public to obtain information on trouble calls. Prepares written documents, such as substation maintenance reports and substation logbooks, to record maintenance procedures and troubleshoot results.

Manual/Physical: Installs, inspects, maintains, troubleshoots, and repairs the following: substation equipment such as oil circuit breakers, transformers, tap changers, voltage regulators, bus work, disconnect switches, switchgear, air circuit breakers, and auxiliary equipment; substation control equipment such as batteries, charging equipment, circuit breakers, protective relays, and the SCADA system (example: remote terminal units, transducers, and other related telemetry equipment and devices); and control systems within the substations, control buildings, and control center. Operates the Electric Control Room and SCADA system as needed. Inspects, programs, and downloads information from electronic relays as needed for analysis and reporting using a laptop computer. Assists in outage restoration, and preparation and execution of switching procedures. Installs personal protective grounds. Tests insulating oil in breakers and transformers for dielectric strength. Replenishes and filters oil as work is performed on the tap changers or breakers. Measures, cuts, bends, threads, assembles, and installs electrical conduit. Measures, terminates, and connects control wiring to terminal blocks, relays, etc. Operates pickup trucks requiring a standard Class D Arizona Driver's License to travel to the substations to perform assigned duties. Uses common hand tools in maintaining and repairing substation equipment. Digs trenches for conduit for electric and communication lines and ground wires. Trains staff in proper work techniques and procedures, safety precautions to be followed, and the proper use of tools and equipment. Prepares sketches showing the location of wiring and equipment. Operates distribution switches, breakers, and transformer tap changers to transfer power from one area to another of the distribution system. Enters data into a terminal to operate equipment via the SCADA system. Moves light (less than 20 pounds) to heavy (more than 50 pounds) objects using a cart or other aid for distances of up to 50 feet or more. Works in a variety of weather conditions; in small, cramped areas; and at heights of greater than 20 feet. Works with cleaning fluids and chemicals in maintaining and/or cleaning work area, equipment, buildings, and yard area. Reads and follows schematic diagrams and control schemes or blueprints in the operation of electrical and electronic devices and equipment. Reads blueprints to verify or determine the routing of underground facilities. Distinguishes colors to make correct electrical connections using color-coded control wires or cables. Detects traffic sounds and backup warning devices when working near traffic and around moving equipment. Meets scheduling and attendance requirements. Takes or directs the taking of substation instrument readings.

Mental: Applies knowledge of electronics and electrical systems to diagnose and correct problems. Plans the layout and installation of electrical apparatus and control equipment. Reviews the work of other staff to ensure conformance with department standards. Learns job-related material in on-the-job and classroom settings regarding safety practices and procedures, substation maintenance and repairs, and SCADA equipment installation and maintenance. Prioritizes work assignments. Comprehends and makes inferences from written material in troubleshooting electric and electronic problems. Writes and approves switching procedures. Directs switching and updates circuit maps in the control room upon

request. Understands relay software with the ability to update/ modify database and download event reports.

Knowledge and Abilities:

Knowledge of:

electrical theory, National Electric Code, and National Electric Safety Code;
the methods, materials, and equipment used in the electrical trade;
the occupational hazards and safety precautions and procedures related to working around high voltages (69,000, 12,470, and 4,160 volts), and all safety rules of the trade including American Public Power Association (APPA), Occupational Safety and Health Administration (OSHA) 1910.269, and applicable Arizona Safety Rules; and
computerized maintenance management system.

Ability to:

install, program, and test protective relays;
wire and repair switchgear controls;
perform transformer testing including Transformer Turn Radio (TTR), Megger, Doble, combustible gas, power factor, and other types of testing; and perform analyses to determine status and condition of electrical equipment;
perform journey-level electrical work in the installation, maintenance, repair, and troubleshooting of electrical substations, breakers, switches, and other electrical equipment;
follow verbal and written directions;
perform all the physical requirements of the class; and
establish and maintain effective working relationships with customers, management, and coworkers.

The duties listed above are intended only as general illustrations of the various types of work that may be performed. Specific statements of duties not included does not exclude them from the position if the work is similar, related, or a logical assignment to the position. Job descriptions are subject to change by the City as the needs of the City and requirements of the job change.

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