

January 07, 2025

SENIOR ELECTRICAL ENGINEER

DEFINITION

Under general direction of the Engineering Manager, supervises engineers and technicians engaged in engineering of utility power facilities for Alameda Municipal Power (AMP), and performs responsible professional engineering work in system planning, design and operations analysis and does related work as required.

DISTINGUISHING FEATURES

The Senior Electrical Engineer is responsible for providing guidance and direction to professional and technical utility electrical engineering staff. This is a senior level professional engineer classification. Incumbents develop policy recommendations and make decisions or select courses of action based on data supplied by subordinate engineers, as well as perform complex technical calculations and design work. Work in this class is distinguished from that of lower classes by the overall responsibility for major and/or complex engineering projects or assignments, by the level and extent of supervisory responsibilities, and/or by the level of professional specialization and expertise required. Advanced technical skill, professional specialization and certification are required and will vary according to assignment.

EXAMPLES OF DUTIES

The following list of duties is intended only to describe the various types of work that may be performed and the level of technical complexity of the assignment(s) and is not intended to be an all-inclusive list of duties. The omission of a specific duty statement does not exclude it from the position if the work is consistent with the concept of the classification or is similar or closely related to another duty statement.

Reasonable accommodations may be made to enable individuals with disabilities to perform these essential functions.

Essential Duties

1. Prepares plans, specifications and cost estimates for complex electrical equipment and installations; recommends system additions and improvements.
2. Manages and oversees internal and external construction projects; coordinates with developers, design consultants, and contractors to ensure designs and construction comply to standards. Works with developers, contractors and compliance inspectors to resolve conflicts or design changes. Performs testing and acceptance of work and equipment.
3. Reviews and approves the work of engineering and technical staff, including completed project designs. Resolves design, construction, and maintenance issues. Provides guidance to Engineering and Operations personnel on new equipment and smart device technologies.
4. Reviews customer design permit application package for new business, subdivisions, and service upgrades. Coordinates and communicates with customers, developers, outside consultants, contractors, and other city departments to ensure compliance with AMP safety and construction standards.
5. Performs complex engineering design for transmission, substation and distribution protective relaying using microprocessor-based relays, including relay logic and settings configurations. Prepares relay testing and commissioning forms. Guides electrical maintenance technicians and engineers in testing and understanding various protective schemes. Updates substation equipment schematic and wiring diagram for any completed modifications or upgrades.
6. Performs various complex engineering analysis and studies, including but not limited to short circuit, arc flash, power factor correction, protection coordination, voltage drops and pole loading.
7. Utilizes various software applications, such as Microsoft Office, GIS, system modeling software, and various specialized equipment and protective relay software.
8. Provides guidance to electrical maintenance technicians on Supervisory Control and Data Acquisition (SCADA) database mapping and Human Machine Interface (HMI) configurations. Integrates new microprocessor based protective relays and automation controllers into SCADA systems, including testing, commissioning and system operator training.
9. Provides technical support in troubleshooting SCADA issues including fiber communications, Ethernet switches, Remote Terminal Units (RTUs) and Real Time Automation Controller (RTAC) devices. Investigates and resolves SCADA alarms, software and hardware problems, and performs device firmware upgrades.

10. Investigates and analyzes system events using the events file gathered from the microprocessor relays and SCADA. Provides findings and technical recommendations and corrective measures.
11. Provides technical support and consulting to other internal divisions/sections, consultants, and other City departments.
12. Reviews, researches and recommends updates to construction standards, engineering design guidelines, rules and regulations, and equipment and material technical specifications.
13. Supervises professional engineers and technicians conducting system studies such as system planning, loss evaluation, protection coordination and load forecasting.
14. Prepares and reviews technical specifications and statements of work for labor, materials, and equipment procurement. Conducts feasibility studies and market research; evaluates bids and prepares reports for the Public Utilities Board.
15. Assists the Engineering Manager in preparing budgets, identifying priorities projects, and developing cost estimates.
16. Provides engineering support to substation, operations and maintenance personnel in emergency situations such as outages, equipment malfunctions, and field construction issues

Other Duties:

17. Performs related duties as assigned.

WORKING CONDITIONS

- Indoor office environment with periodic visits to field, substations, or construction sites.
- Occasional exposure to electrical hazards, noise, dust, and varying weather conditions during field work.
- Noise level is usually moderate in the office and may be loud in field or substation environments.
- May be required to work extended hours, evenings, or weekends to meet project deadlines or respond to emergency situations.
- Work may require travel between various AMP facilities and City offices.

PHYSICAL DEMANDS

- Dexterity of hands and fingers to operate objects, controls, and tools such as computers, testing equipment, and standard office devices.
- Vision abilities required to read and interpret plans, schematics, specifications, and various technical documents in electronic and paper formats.
- Frequently required to sit, stand, or walk for extended periods of time.
- Occasionally required to bend, stoop, kneel, climb, or reach overhead during field inspections or site visits.
- Ability to lift, carry, push, and pull materials and objects weighing up to 25 pounds.
- Hearing and speaking to exchange information and communicate clearly in person, by telephone, or by radio in field and office environments.

EMPLOYMENT STANDARDS

Education/Experience

Any combination equivalent to education and experience likely to provide the required knowledge and abilities. A typical way to obtain the knowledge and abilities would be:

Education: Graduation from an accredited college with a B.S. Degree in Electrical Engineering.

Experience: Six (6) years of progressively responsible experience in the distribution system planning, design, and operation of electric utility power systems, including distribution, transmission and substation protection; at least two (2) years of which must have been in a lead or supervisory role, or leading projects and initiatives.

Knowledge

Knowledge of principles and practices of professional electrical engineering applicable to planning, operation, maintenance, design and construction of overhead and underground electrical systems; transmission, substation and distribution system protection and coordination, various electrical equipment operation and application; concepts and electrical systems related to engineering analysis of reliability, power quality, root cause and SCADA communication systems; *principles and methods of public administration; effective methods, principles and practices of supervision and employee evaluation; effective customer service/relations principles and practices*; local, state and federal codes, regulations, and laws related to electric utilities; *project planning and administration; residential, commercial and industrial business needs; business mathematics; correct English usage including spelling, punctuation, and grammar; personal computers including hardware and software applications related to the work; effective methods of communication, both oral and written; effective conflict resolution techniques; applicable technical information and aspects of the electric utility industry; principles and procedures of record keeping; principles, practices and techniques of project management including contract administration and compliance; effective*

methods of policy development and implementation; research and statistical techniques and methodology; problem resolution methods and practices related to business process analysis.

Ability

*Ability to effectively plan, coordinate and supervise electrical engineering and project management activities; plan, administer and evaluate work projects and schedules; manage complex major projects; demonstrate effective leadership and gain consensus and support; prepare, read, and interpret plans, specifications and descriptions and technical reports; interpret and apply complex governmental regulations; effectively present technical information to a non-technical audience; establish and maintain accurate records; plan, administer and evaluate work programs and schedules, draw valid conclusions and project consequences of decisions and recommendations; prepare and present complex technical studies and reports; operate computer equipment and utilize specialized software; set priorities, meet deadlines, and make sound decisions; maintain level of knowledge required for satisfactory job performance; communicate effectively both orally and in writing; establish and maintain effective working relationships with employees, contractors, consultants, the general public and representatives of other agencies, supervise, train and evaluate assigned staff; *perform related duties as required.**

Other Requirements

Possession of a valid California Driver's License and satisfactory driving record at the time of appointment is required as a condition of initial and continued employment only if the operation of a vehicle, rather than the employee's ability to get to/from various work locations in a timely manner, is necessary to perform the essential functions of the position.

Registration as a Professional Electrical Engineer in the State of California is required at the time of application.