

Electric Transmission

VP – Electric Transmission – SCEG

The Electric Transmission Officer is responsible for System Control; Operations Planning; Transmission Planning; ERO compliance; Transmission Training; Transmission Rates; Transmission Tariff; System Control Computer Support; and Transmission customers, contracts, and billing.

<u> Analyst – Lead</u>

Ensure that all financial management information for Grid Operations, Planning, Safety and Technical Training is available in a timely and accurate manner and business transactions are properly recorded. Functions include analyzing, monitoring and preparing reports based on the expenditures and statistical information of Grid Operations, Planning, Safety, and Technical Training. Also responsible for transmission customer credit analysis and tracking.

System Control Computer Support

Mgr – System Control Comp Supp

Supervise Energy Management System (EMS) computer support department. Responsibilities include assuring proper operation of Energy Management System for monitoring, controlling, and studying the power network as well as providing direction for future EMS development to support the FERC, NERC, and System Control internal requirements. Persons in this position may also be responsible for the Company's implementation of CIP Version 5.

<u> Analyst – Database VI</u>

Provide Energy Management Application Software and Energy Management System product set maintenance and support. Responsibilities include supporting operating systems, databases, computer configuration and local area network; evaluating, planning and coordinating the installation, implementation, and maintenance of EMS functional components; designing and developing computer applications systems; analyzing and solving major computer problems.

<u> Analyst – Infrastructure V</u>

Provide support for Energy Management System computer infrastructure. Responsibilities include providing support for MS Windows and AIX hardware/software platforms, computer network management, security patch management, anti-virus software maintenance, electronic access controls, electronic access monitoring, information protection, test procedures, incident response planning and recovery plans.



<u>Analyst – Infrastructure V</u>

Provide Energy Management Application Software and Energy Management System product set maintenance and support. Responsibilities include supporting operating systems, databases, computer configuration and local area network; assisting with the evaluation, planning and coordination of installation, implementation, and maintenance of EMS functional components; assisting with the design and development of computer applications systems; assisting with the analysis and development of solutions for major computer problems.

<u>Analyst – Infrastructure III</u>

Provide support for Energy Management System (EMS) computer infrastructure. Responsibilities include providing support for MS Windows and AIX hardware/software platforms, computer network management, security patch management, anti-virus software maintenance, electronic access controls, electronic access monitoring, information protection, test procedures, incident response planning and recovery plans. The primary focus of this position is to assist in the development and enhancement of processes, procedures, and other deliverables required for compliance with evolving NERC CIP Cyber Security Standards.

<u> Analyst – Infrastructure I</u>

Provide support for Energy Management System (EMS) computer infrastructure. Responsibilities include providing support for MS Windows and AIX hardware/software platforms, computer network management, security patch management, anti-virus software maintenance, electronic access controls, electronic access monitoring, information protection, test procedures, incident response planning and recovery plans.

Engineer – Network VI

Provide technical support for compliance with NERC Critical Infrastructure Protection (CIP) Cyber Security Standards as well as for other NERC, FERC, and Homeland Security regulatory requirements. Assist with the development and maintenance of CIP policies and procedures to ensure compliance for Critical Cyber Asset (CCA) networks, applications and hardware. Provide support for Energy Management System (EMS) hardware and software, functional applications, computer network management and user interfaces.

Engineer – Network III

Provide technical support for compliance with NERC Critical Infrastructure Protection (CIP) Cyber Security Standards as well as for other NERC, FERC, and Homeland Security regulatory requirements. Assist with the development and maintenance of CIP policies and procedures to ensure compliance for Critical Cyber Asset (CCA) networks, applications and hardware. Provide support for Energy Management System (EMS) hardware and software, functional applications, computer network management and user interfaces.



Programmer System II

Provide System Application Software, Basic Application Software and Energy Management System product set maintenance and support. Responsibilities include supporting databases and computer configuration; planning and coordinating the installation, implementation, and maintenance of EMS functional components; designing and developing advanced computer applications systems; and analyzing and solving computer problems.

Programmer System II

Provide System Application Software, Basic Application Software and Energy Management System product set maintenance and support. Responsibilities include supporting operating systems, databases, and computer configuration; planning and coordinating the installation, implementation, and maintenance of EMS functional components; designing and developing advanced computer applications systems; analyzing and solving computer problems; developing and maintaining Inter-Regional Security Network (ISN) ICCP node; and assisting other programmers.

<u>Supv – Energy Mgt Sys Engr Applc</u>

Provide daily supervision of personnel supporting EMS applications such as SCADA, Automatic Generation Control (AGC), Control Performance Standards (CPS), Network Applications, Operator Training Simulator and Load Shed. Provide EMS technical support and maintenance for SCADA, AGC, CPS, and reliability applications to support System Control and Operations Planning.

<u>Engineer – IV</u>

Provide EMS technical support and maintenance for SCADA, Automatic Generation Control (AGC) and Control Performance Standards (CPS).

Spec – Power Sup Reliability III

Provide EMS technical support and maintenance for Network Applications power system model, mapping of real-time data, visualization tools used to display real-time measurements/study results, and Load Shed.

<u> Spec – Power Sup Reliability I</u>

Provide EMS technical support and maintenance for the Network Applications power system model, Network Application tools used for contingency/reliability analyses, and the Operator Training Simulator used for training System Controllers.



Electric Transmission Support

Mgr – Elec Transmission Sup – SCEG

This position is responsible for all wholesale transmission customers and contracts; for administration, filing and managing the SCE&G OATT; electric transmission rate analysis and filing; managing the administration of billing and accounting; review, tracking and analyzing standards and requirements of NAESB and other FERC documents.

<u>Engineer – IV</u>

The position is responsible for administering SCE&G's interconnection programs and assisting with the other functions of the Electric Transmission Support Department.

Operations Planning

Mgr – Operations Planning

Manages the Operations Planning Department in preparation of Load Forecasts of Native Load Customer Demand and oversight of SCE&G Open-Access Contracting and Transmission billing functions, reviews/approves resource commitment plan to meet Native Load Customer Demand while ensuring adequate Reserve Obligations are maintained and oversees energy accounting with neighboring utilities. Directly advises System Controllers on resource dispatch decisions. Communicates with generating plants within Control Area to coordinate outages/reduction information. Oversees real-time load flow and contingency analysis.

Spec – Power Sup Reliability III

Serves as a Subject Matter Expert in the areas of: preparation for and participation in internal and external compliance audits; developing and delivering training for Transmission Operations to NERC-Certified System Operators; developing tools and processes/procedures for Operations Planning/System Control groups including OATi products; interfacing with SCE&G nuclear plant personnel to develop and maintain interface agreements and other required regulatory procedures. Represents SCE&G on various VACAR committees and serves in leadership roles on those committees as required. This position may also assist with other Operations Planning support functions such as: prepares forecasts of Native Load Customer Demand and reviews/approves resource commitment plan; directly advises System Controllers on resource dispatch decisions; communicates with generating plants to coordinate outages/reduction information; performs preliminary load flow and transfer studies and analyzes system conditions and contingencies.



Engineer – III

Prepares forecasts of Native Load Customer Demand and reviews/approves resource commitment plan. Directly advises System Controllers on resource dispatch decisions. Communicates with generating plants to coordinate outages/reduction information. Assists in Transmission Billing calculations and month end energy accounting with neighboring utilities. Performs preliminary load flow and transfer studies and analyzes system conditions and contingencies.

<u>Supv – Reliability Desk</u>

Supervises and provides direction to the Reliability Desk group within the Operations Planning department; responds to emergency situations and provides direction for implementing solutions; ensures compliance with SERC, NERC, and FERC requirements related to the Reliability Desk functions; provides technical expertise for software systems and models.

Spec – Power Sup Reliability II

Responsible for contingency analysis and reliability analysis of transmission system. This position has the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. Employees responsible for the operation and maintenance of generation and transmission equipment are subject to this authority. This position is responsible for complying with the NERC Certification at the highest level (currently Reliability Operator).

<u>Spec – Power Sup Reliability I</u>

Responsible for contingency analysis and reliability analysis of transmission system. Employee filling this position must achieve NERC Certification prior to performing any real time operating or monitoring activities.

System Control

<u>Mgr – System Control Center</u>

This position is responsible for directing activities associated with the continuous operation and maintenance of the bulk electric generation and transmission system. Additional responsibilities include the participation in various national, regional, and local organizations to represent SCE&G and to take part in industry task forces dealing with operational and strategic issues.



<u>Controller – System – Sr.</u>

This position is responsible for the coordination of transmission outage requests and generation resources, and directing shift activities in the control room as well as duties listed under the System Controller position. This position has the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. Employees responsible for the operation and maintenance of generation and transmission equipment are subject to this authority. This position is responsible for complying with the NERC reliability standards and must hold and maintain NERC Certification at the highest level (currently Reliability Operator).

Project Manager – System Control

This position is responsible for various SCE&G projects related to operation of the Bulk Electric System (BES). This position is System Control's primary Subject Matter Expert (SME) in matters related to department operations, tools, equipment, NECR Standards, etc. This position also interacts directly with subject matter experts (SME's) from other internal company groups such as Generation, Power Delivery, Distribution, Communications, IT, etc.to consult and advise on system control activities, capabilities and projects to ensure consistent and reliable communication and successful completion, implementation, and operation of coordinating and completing tasks required to fulfil department responsibilities such as regulatory and regional reporting.

Trainer – Operations

This position is responsible for organizing and providing continuing education training to existing System Controllers as well as preparation training to Associate System Controllers.

<u>Supv – System Control Center</u>

This position is responsible for directing shift activities in the control center and providing oversight to the system controllers on shift, as well as duties listed under System Controller position.

Controller – System

This position is responsible for operational coordination of generation resources, monitoring and controlling the SCE&G transmission to ensure reliable interconnected system operations and management of SCE&G's open access transmission and ancillary service market. These duties include real time generation control, real time interchange transaction and transmission access management, real time security coordination, transmission switching, and coordination of transmission field operations. This position has the responsibility and authority to implement real-time actions to ensure the stable and reliable operation of the Bulk Electric System. Employees responsible for the operation and maintenance of generation and transmission equipment are subject to this authority. This position is responsible for complying with the NERC reliability standards and must hold and maintain NERC Certification at the highest level (currently Reliability Operator).



Controller – System Associate

This position is responsible for operational coordination of generation resources, monitoring and controlling the SCE&G transmission to ensure reliable interconnected system operations and management of SCE&G's open access transmission and ancillary service market. These duties include developing an understanding of real time generation control, real time interchange transaction and transmission access management, real time security coordination, transmission switching, and coordination of transmission field operations. This is a trainee position. As a trainee, upon completion of NERC Certification, this position may fulfill duties of a System Controller on a temporary basis to finalize training.

Transmission Planning

Mgr – Transmission Planning

This position is responsible for the analysis and planning of South Carolina Electric & Gas's transmission network for service to customers and all interconnection transmission facilities with neighboring utilities. This includes future planning studies, system performance appraisal studies and analytical studies dealing with the steady state and dynamic operation of interconnected power systems. This position participates in a number of sub-regional, regional and inter-regional (NERC) reliability groups that focus on the future development of the overall interconnected network. Responsible for system impact studies to support transmission service requests, generator interconnections, modeling and for the calculation of available transfer capability (13 months or longer). Responsible for studies with other transmission providers to assure the coordinated operation of a reliable bulk power system on a regional and inter-regional basis. Also participates in other NERC reliability activities and develops appropriate operating procedures and guidelines for use by System Operations.

Engineer – Sr.

This position tests and confirms that SCE&G's power system (230kV and 115kV) is in compliance with applicable planning standards and criteria over the 10 year planning horizon. Performs studies to support System Control, the Reliability Desk and Transmission Operations in the operation and maintenance of SCE&G's 230kV and 115kV systems.

<u>Analyst</u>

Assists in performing planning studies and various other duties.

Engineer – IV

This position conducts all Feasibility, System Impact, Optional Upgrade and Facility Studies associated with Transmission Service Requests and Generator Interconnection requests per the SCE&G OATT. Manages the associated departmental study efforts and tracks/post actual study performance. Performs motor start studies, breaker evaluations, ground switch analysis and equivalent outside modeling.



<u>Supv – Transmission Plan Studies</u>

This position oversees all regional and inter - regional, SCRTP, SIRPP, CTPA, EIPC and special study activities. This position also coordinates all departmental compliance filings and activities associated with ERO standards. This position serves on industry working groups and committees relating to compliance and power system assessment efforts.

Engineer – IV

This position is responsible for the Dispersed Load Forecast by substation used in SCE&G's power system models. Responsible for determining options on the transmission/distribution systems to serve new distribution load and growth in existing distribution load. Works with Distribution Planning Operations and the Electric Transmission Support Group to determine the best overall alternative. Tests and confirms that SCE&G's power system (46kV and 33kV) is in compliance with applicable planning standards and criteria over the next 10 years. Performs studies to support System Control and Transmission Operations in the operation and maintenance of SCE&G's 46kV and 33kV systems. This position assists in conducting all Feasibility, System Impact, Optional Upgrade and Facility Studies associated with Transmission Service Requests and Generator Interconnection requests per the SCE&G OATT. This position also assists in managing the associated study contracts and tracks/post actual study performance. This position assists in performing motor start studies, breaker evaluations, ground switch analysis and equivalent outside modeling and transmission system power quality analysis. This position supports Transmission Planning's interactions with generation operations.

Engineer – IV

This position conducts stability studies on SCE&G's system as required by system events, the NRC, emergent system needs, or to evaluate proposed interconnected generators. Assists in determining the seasonal and future power transfer capabilities of the SCE&G transmission system. Assists in conducting Impact Studies and Facility Studies, as required to evaluate the impact of a transmission service request on system transfer capability. Performs studies of transmission expansion projects. Performs Generator Interconnection studies. Supports Transmission Operators, Transmission Engineering, Substation Engineering, and System Protection on issues related to the implementation of projects. Creates and maintains the power system models (base cases) used in power flow and dynamics simulators for planning purposes. Performs studies to determine compliance with applicable planning standards and criteria over the 10 year planning horizon. Maintains computer simulation software. Performs special studies of emergent transmission system conditions. Supports System Control by providing information and training to System Control personnel on transmission constraints and operating procedures that will reduce or remove the constraints. Serves on industry working groups and committees relating to power flow, stability, and transfer capability.



Engineer – IV

This position performs departmental work responsibilities including participating in the Electric Reliability Organization (ERO) Standards development process, ensuring SCE&G compliance to approved and applicable ERO standards related to planning and system design, planning of transmission facilities including contingency analyses, alternative development and evaluation, solution selection, power circuit breaker analyses, transmission stability analyses and power system base case development. Other responsibilities include performing transmission and sub-transmission planning studies, conducting Generator Interconnect Feasibility Studies, System Impact Studies, and Facilities Studies for new generators that request connection to the SCE&G transmission system. Responsibilities also includes conducting similar studies for wholesale customers who request Transmission Service on the SCE&G transmission system, Capacity Benefit Margin (CBM) and Transmission Reliability Margin (TRM) determination and reporting, Power Quality analyses of voltage flicker and harmonics on the transmission system, VAR planning, loss evaluations and substation load forecasting. Additional responsibilities include analyzing transmission projects schedule impacts on operations, providing information and training to System Control personnel on transmission constraints and operating guides that will reduce or remove the constraints. Other responsibilities include the analyses of LIDAR results of transmission facilities, overseeing transmission line rating changes, and maintaining transmission line ratings in the transmission facilities database. Also, this position develops load connection projects and service modifications and improvements for distribution and industrial customers and assists in the development of the dispersed substation load forecast to be used in power system modeling. In addition, this position serves on industry working groups and committees relating to power flow and transfer capability. This position performs system loss studies. An additional responsibility of this position is to perform geomagnetic disturbance studies. This position serves on industry working groups and committees relating to power flow, stability, transfer capability, and geomagnetic disturbances.



Engineer – III

This position assists in conducting stability studies on SCE&G's system as required by system events, the NRC, emergent system needs, or to evaluate proposed interconnected generators. Determines the seasonal and future power transfer capabilities of the SCE&G transmission system. Conducts System Impact Studies and Facility Studies, as required to evaluate the impact of a transmission service request on system transfer capability. Performs studies of transmission expansion projects and conducts studies to determine the adequacy of reactive resources. Assists in creating and maintaining the power system models (base cases) used in power flow and dynamics simulators for planning purposes. Assists in performing Generator Interconnection studies. Assists in maintaining Transmission Planning's computer system and software. Supports Transmission Operations, Transmission Engineering, Substation Engineering, and System Protection on issues related to the implementation of projects. Assists in performing studies to determine compliance with applicable planning standards and criteria over the 10 year planning horizon. Performs special studies of emergent transmission system conditions. Assists in supporting System Control by providing information and training to System Control personnel on transmission constraints and operating procedures that will reduce or remove the constraints. Serves on industry working groups and committees relating to power flow, stability, and transfer capability.



Electric Transmission Engineering and Field Operations

<u>Management</u>

<u>SVP – SCANA & Pres – SCEG – Ret Opns</u>

Provides executive and strategic management for SCE&G electric retail business. Overall responsibility for operations, construction and maintenance of SCE&G's electric distribution system. Overall responsibility for power delivery engineering, maintenance and construction of transmission and substation infrastructure as directed by SCE&G System Control and System Planning.

<u>Gen Mgr – Elec Tran/Const</u>

General manager in charge of a staff of managers and related technical staff and craft personnel responsible for the safety, engineering, design, construction, maintenance, and operations of the all existing and new electric and transmission infrastructure.

Mgr – Power Delivery Operations

Responsible for the maintenance and construction of transmission and substation infrastructure as directed by System Control and System Planning. Interfaces with distribution and power generation facilities to coordinate outages, relaying, and other maintenance activities. Manages a large contingent of technical and craft personnel that perform front-line functions. Responsible for 24/7 call out of same technical and craft group in order to respond to system outages or other emergencies.

New Nuclear Transmission

Project Manager – NND Transmission

This position consults and advises Power Delivery General Manager and the project management team and provides oversight for the day-to-day, tactical and strategic operations to ensure the successful and timely completion of the NND Transmission projects.

<u>Analyst</u>

This position supports the project management team and applies controls to ensure compliance with the terms of the transmission line EPC contract. This position also supports Power Delivery project management and maintains capital budgets.



Relay & SCADA Engineering

Mgr – System Protection & SCADA Appl

Manager in charge of a staff of engineers and technicians responsible for the design and application of protective relaying and SCADA for electric substations and transmission lines. Manager responsible for protective relay settings philosophy, protective relay settings development, relay system designs, system disturbance and fault analysis, and engineering assistance to field relay groups. Manager also personally performs these functions as well as supervises and coordinates others performing these functions.

Supv – Engineering

This position performs supervisory duties over a group of Relay Applications Engineers and Relay Technical Specialists. This position also performs project work associated with protective relay settings development; relay system designs, system disturbance, fault analysis, and engineering assistance to field relay groups. This position will also lead the Relay & SCADA Engineering and Operations Committee.

Engineer – IV

Engineers classification performing project work associated with their assigned group including protective relay settings development, relay system designs, system disturbance and fault analysis, and engineering assistance to field relay groups.

<u>Engineer – III</u>

Engineers classification performing project work associated with their assigned group including protective relay settings development, relay system designs, system disturbance and fault analysis, and engineering assistance to field relay groups.

<u>Engineer – II</u>

Engineers classification performing project work associated with their assigned group including protective relay settings development, relay system designs, system disturbance and fault analysis, and engineering assistance to field relay groups.

Spec – Relay Technical III

Lead the implementation and administration of Enoserv Powerbase and RTS software to assure that relay settings and test record documentation complies with NERC reliability standards. Fulfills data requests for internal and external audits. Responsible for development and maintenance of protective relay test plans to be used by relay field operations personnel. Responsibilities also include training of field personnel, resolution of issues associated with relay testing, tracking the status of the relay testing and maintenance program, and other duties as assigned.



Spec – Relay Technical III

Develops protective relay standards and designs relay panels.

Spec – Relay Technical II

Responsible for the development and implementation of Engineering Access relay communications. Assists with the implementation and administration of Enoserv Powerbase and RTS software. Assists with the development and maintenance of protective relay test plans to be used by relay field operations personnel. Assist with training of field personnel, resolution of issues associated with relay testing and tracking the status of the relay testing and maintenance program.

Engineer – Sr.

Team Leader responsible for development of standards for transmission and distribution SCADA standards, RTU designs and configurations, construction of RTUs for field installation and supervision of small technical staff.

Engineer – IV

Lead the development and implementation of software associated with access to cyber assets. Provides guidance in the use of computer systems/databases to improve other record keeping activities associated with SCADA and protective relay activities. Develops SCADA RTU standards and RTU configurations for Transmission, Distribution, and Generating Station remote terminal units. Develops work orders as needed and purchase requisitions for RTUs and associated equipment. Coordinates with Relay applications personnel in developing point lists and provides point lists to and coordinates with personnel operating the transmission EMS and distribution SCADA master station. Assists field technicians in installation and trouble resolution.

Engineer – IV

Develops SCADA RTU standards and RTU configurations for Transmission, Distribution, and Generating Station remote terminal units. Develops work orders as needed and purchase requisitions for RTU's and associated equipment. Coordinates with Relay Applications personnel in developing point lists and provides point lists to and coordinates with personnel operating the transmission EMS and distribution SCADA master station. Assists field technicians in installation and trouble resolution.

Spec – Technical II

Constructs, configures and tests RTU panels, assists with trouble resolution, tracks parts repair and inventory, and other duties of assigned group.



Substation Engineering

Mgr – Substation Engineering

Manager in charge of a staff of engineers, technicians, and draftsmen responsible for the design of electric substations.

Engineer – IV

Engineers classification performing project work associated with their assigned group.

Engineer – II Engineers classification performing project work associated with their assigned group.

Engineer – I Engineers classification performing project work associated with their assigned group.

<u> Spec – Technical III (VACANT)</u>

Technical classification performing project work associated with their assigned group.

<u> Spec – Technical I</u>

Technical classification performing project work associated with their assigned group.

Supv – Drafting Services

Supervisor in charge of a drafting services group that produce drawings which depict the physical and electrical arrangement of electrical substations.

<u>Draftsman – Sr.</u>

Draftsman classification performing project CAD drawings associated with their assigned group.

<u>Draftsman</u>

Performing structural and electrical red-line markups on CAD drawings and limited project drafting.



Siting-Surveying & Permitting

Engineer – Sr.

Engineer in charge of a staff of engineers, technicians, and land surveyors responsible for conducting siting studies to site new substations and new transmission line corridors. Also responsible for the permitting of same. Also, responsible for the technical review of all New Nuclear Transmission Line design specifications.

Engineer – IV

Engineer devoted to the routing, siting, and permitting associated with their assigned group.

<u>Spec – Technical II (VACANT)</u>

Different classifications of Technicians doing siting and permitting associated with their assigned group.

PD Material Equipment Standards

Mgr – Pwr Del Mat Equip Stand

Manager in charge of a staff of engineers, technicians, and draftsmen responsible for generating the equipment specifications and technical standards for the electric transmission and substation system, and to support the Power Delivery Engineering CAD drawing system. Also a liaison with computer IT programmers to write and modify computer programs used by the Power Delivery Engineering and Operations groups.

Engineer – IV

Engineering classification performing materials, equipment, and standards work associated with their assigned group.

<u> Spec – Technical II</u>

Technician classification performing project work associated with their assigned group.

Spec – Technical I

Technician classification performing project work associated with their assigned group.

Spec – Drafting Support (VACANT)

Plots and makes copies of engineering drawings for Power Delivery staff. Keeps drawing files accurate and up to date.



Spec – Computer Aided Drafting

Technical classification responsible for administering computer aided drafting applications and performing project work associated with developing engineering and design standards.

Engineer – Sr.

Team Leader supervising development of protective relay standards. Also designs assigned substation projects requiring protective relay experience.

<u>Spec – Technical II</u>

Specialized drafter-designers producing CAD drawings for protective relay standards and developing detailed designs and CAD drawings for assigned substation projects.

Transmission Engineering

Mgr – Transmission Engineering

Manager in charge of a staff of engineers, and technicians responsible for transmission line design.

Engineer – IV (VACANT)

Engineer classification performing project work associated with their assigned group.

Engineer – III

Engineer classification performing project work associated with their assigned group.

<u>Spec – Technical II</u>

Technician classification performing project work associated with their assigned group.

Spec – Technical I

Technician classification performing project work associated with their assigned group.