PACIFIC GAS AND ELECTRIC COMPANY
LABOR RELATIONS
300 LAKESIDE DRIVE
OAKLAND, CA 94612

MATTHEW LEVY
SENIOR DIRECTOR

ENGINEERS AND SCIENTISTS OF CALIFORNIA
LOCAL 20, IFPTE, AFL-CIO AND CLC
810 CLAY STREET
OAKLAND, CA 94607
510.238.8320

CARL HARLAND
ASSISTANT EXECUTIVE DIRECTOR

24-12-ESC

August 15, 2024

Carl Harland, Assistant Executive Director
Engineers and Scientists of California, Local 20
IFPTE (AFL-CIO & CLC)
810 Clay Street
Oakland, CA 94607

Dear Mr. Harland:

The Company and Union have concluded negotiations for newly represented Remedial Action Schemes (RAS) / Energy Management System (EMS) Engineers and Specialists in the RAS and EMS Operations groups. The agreed upon contract language and job descriptions are included as attachments to this agreement.

1. Implementation Date, GWI and PWI

All RAS/EMS Engineers and Specialists employees will be included in the general ESC-PG&E contract as of the implementation date of September 1, 2024.

Effective upon implementation, each employee's current hourly or salaried wage rate will be moved into the salary range for their respective classification; however, no employee's hourly or salaried wage shall go beyond the maximum of their respective pay range.

In addition, current incumbent employees will have their time in related management classifications counted towards time in their respective RAS/EMS Engineer or Specialist classification for purposes of determining progressive wage increases as described in Title 15.4(b)(2) of the general ESC-PG&E contract.

2. Classification Groups

All Classifications will be part of one Classification Group in the Contract, to be called "RAS and EMS Engineers and Specialists."

3. Seniority

Seniority shall be determined per Title 13 using each employee's date of hire at PG&E.

4. Short Term Incentive Plan (STIP)

Eligible employees will be included in the Company's Short Term Incentive Plan (STIP) that is established for each plan year.

The STIP target participation rate for EMS and RAS Engineer classifications will remain at current rates: 10% for Associate, Career, Senior, and Senior Advising/Consulting level positions. Future hires' STIP target will be 10% for all classifications.

The STIP target participation rate for Career and Senior EMS and RAS Specialist classifications will remain at current rates: 10% for Career and Senior level positions. Future hires' STIP target will be 10% for all classifications, except Associate.

EMS and RAS Specialist, Associate classifications, which are hourly paid, are not eligible to participate in the Short Term Incentive Plan.

5. Recognition Clause

The parties agree to modify Title 3 of the Contract to reflect the inclusion of this group by referring to the NLRB case number as shown below and adding the next number to the list in section 3.1:

TITLE 3. RECOGNITION
3.1 RECOGNITION

…
XX. NLRB Case 20-RC-267723, December 23, 2020, Operations Systems Department

6. Exhibit A, Exhibit D and Appendix 1

The new Classification Group will be added to Exhibit A with salary ranges as shown in Attachment 1. Pre-bid codes will be established for all positions. Classification-specific working conditions (Attachment 2) will be added to Exhibit D and job descriptions (Attachment 3) will be added to Appendix 1.

If you agree, please so indicate in the space provided below and return one executed copy of this letter to the Company.

Very truly yours,

PACIFIC GAS AND ELECTRIC COMPANY

By: _____
Denise Floyd, Manager for
Matthew Levy, Senior Director

The Union is in agreement.

ENGINEERS AND SCIENTISTS OF CALIFORNIA
LOCAL 20, IFPTE, AFL-CIO and CLC

August 21st, 2024

By: _____
Carl Harland
Assistant Executive Director

Attachment 1 – New Classification Group and Hourly/Salary Ranges

2024 Hourly/Salary Ranges

Classification Level	2024 Minimum	2024 Maximum
EMS Specialist, Associate* (53033022)	$39.85	$50.15
EMS Specialist (53033023)	$94,728	$119,160
EMS Specialist, Senior (53033024)	$105,492	$131,940

* Hourly Paid classification. Not eligible to participate in the Short Term Incentive Plan.

Classification Level	2024 Minimum	2024 Maximum
RAS Specialist, Associate* (53033056)	$39.85	$50.15
RAS Specialist (53033057)	$94,728	$119,160
RAS Specialist, Senior (53033058)	$105,492	$131,940

* Hourly Paid classification. Not eligible to participate in the Short Term Incentive Plan.

Classification Level	2024 Minimum	2024 Maximum
EMS Operations Systems Engineer, Associate (53033158)	$91,728	$137,784
EMS Operations Systems Engineer (53033159)	$110,964	$168,756
EMS Operations Systems Engineer, Senior (53033160)	$148,272	$190,488
EMS Operations Systems Engineer, Senior Advising (53033161)	$167,568	$205,908
EMS Operations Systems Engineer, Senior Consulting (53035555)	$167,568	$205,908

Classification Level	2024 Minimum	2024 Maximum
EMS SCADA Engineer, Associate (53033163)	$91,728	$137,784
EMS SCADA Engineer (53033164)	$110,964	$168,756
EMS SCADA Engineer, Senior (53033165)	$148,272	$190,488
EMS SCADA Engineer, Senior Advising (53033166)	$167,568	$205,908
EMS SCADA Engineer, Senior Consulting (53035554)	$167,568	$205,908

Classification Level	2024 Minimum	2024 Maximum
EMS Operations Systems Integration Engineer, Associate (53033358)	$91,728	$137,784
EMS Operations Systems Integration Engineer (53033359)	$110,964	$168,756
EMS Operations Systems Integration Engineer, Senior (53033360)	$148,272	$190,488
EMS Operations Systems Integration Engineer, Senior Advising (53033361)	$167,568	$205,908
EMS Operations Systems Integration Engineer, Senior Consulting (53035553)	$167,568	$205,908

Classification Level	2024 Minimum	2024 Maximum
RAS Operations Engineer, Associate (53033452)	$91,728	$137,784
RAS Operations Engineer (53033453)	$110,964	$168,756
RAS Operations Engineer, Senior (53033454)	$148,272	$190,488

RAS Operations Engineer, Senior Advising (53033455)	$167,568	$205,908
RAS Operations Engineer, Senior Consulting (53035552)	$167,568	$205,908

Attachment 2 – Additions to Exhibit D

RAS AND EMS ENGINEERS AND SPECIALISTS

A. Contracting

The EMS Operations Group, may, for a period of three (3) years from the implementation date of this Agreement (9/1/2024), use up to fourteen (14) individuals from temporary agencies at any one time without regard to the limitations or restrictions in Title 27.2(c) of the Agreement. Any temporary agency employees used beyond these fourteen (14) are subject to Section 27.2(c).

The RAS Operations Group may, for a period of eighteen (18) months from the implementation date of this Agreement (9/1/2024), use up to two (2) individuals from temporary agencies at any one time without regard to the limitations or restrictions in Title 27.2(c) of the Agreement. Any temporary agency employees used beyond these two (2) are subject to Section 27.2(c).

During the time periods referred to above, the Company will be exempted from the provisions of Title 21.17 and may fill beginning level monthly vacancies by Unrestricted Appointment. In addition, when filling mid-level monthly vacancies (i.e., Career and Senior), the Company will be exempted from the provisions of Title 21.16(c) so long as there are no ESC-represented EMS/RAS Engineer candidates desiring promotion with a bid and required documentation on file.

B. Alternative Work Schedules

The Company and Union have discussed alternative work schedules within the RAS and EMS Operations groups and have agreed that all existing incumbents (as of 8/31/2024) may remain on their existing regular work schedule (five-day, eight-hour schedule) or existing alternative work schedule (9/80's or 4/10's) under the same terms and conditions.

All future incumbents (hired after 9/1/2024), exempt salaried and non-exempt hourly, will be placed on a five-day, eight-hour schedule, although alternative work schedules may be established pursuant to the provisions the Collective Bargaining Agreement should the parties so desire.

Either the Company or Union reserves the right to return to the five-day, eight-hour work schedule by giving a thirty (30) day written notice to the other party.

C. Advancement from Associate to Career

RAS and EMS Specialists who meet the requirements for advancement to the Career level and are performing satisfactorily in their Associate classification shall advance to Career level upon reaching the minimum qualifications in the job description for the Career level.

D. On-Call System - EMS Engineers and RAS Engineers

The parties share a common goal in ensuring compliance with all North American Electric Reliability Corporation (NERC) and California Independent System Operator (ISO) Reliability Standards. In furtherance of that goal, and to ensure that the appropriate ESC-represented EMS/RAS Engineers are available when needed to support any after-hours issues that may arise, the parties agree to the following:

1. EMS Engineers and RAS Engineers will be required to participate in an on-call rotation system. There will be one on-call system for EMS Engineers and a separate on-call system for RAS Engineers. EMS and RAS Engineers may be exempted by management due to qualification reasons. In order to activate the on-call EMS or RAS Engineer, the System Operator, System

Dispatcher, or other departments must call the hotline number and not the individual on-call EMS or RAS Engineer.

2. When on-call, employees must make all reasonable efforts to be available to respond and fit for duty. If an employee is aware that they will be unavailable for a scheduled on-call assignment, or an unpredictable situation makes the employee unavailable on short notice, they must contact management immediately. On-call Engineers are expected to respond by phone as soon as possible in accordance with On-Call procedures for the respective group.

3. For RAS Engineers, on-call assignments will be for one week at a time. The RAS Engineering group will have one (1) Engineer on-call. No RAS Engineer will be required to be on-call more than one (1) week out of four (4), or 13 weeks per calendar year, unless a RAS Engineer volunteers to do so. The RAS Engineering on-call schedule is from 0800 Thursday to 0759 the following Thursday. RAS engineers will not be required to remain at their home during their on-call assignment; however, on-call Engineers must carry a Company issued laptop and cell phone with them if they are away from their home. On-call Engineers must remain in areas that provide good internet and cell phone connectivity. The on-call Engineer may also be required to report to the Grid Control Center (GCC) when needed.

4. For EMS Engineers, on-call assignments will be for one week at a time. The EMS Engineering group will have one (1) Engineer on-call. No EMS Engineer will be required to be on-call more than one (1) week out of four (4), or 13 weeks per calendar year, unless an EMS Engineer volunteers to do so. The EMS Engineering on-call schedule is from 0800 Tuesday to 0759 the following Tuesday. EMS engineers will not be required to remain at their home during their on-call assignment; however, on-call Engineers must carry a Company issued laptop and cell phone with them if they are away from their home. On-call Engineers must remain in areas that provide good internet and cell phone connectivity. The on-call Engineer may also be required to report to the Grid Control Center (GCC) when needed.

5. The EMS on-call Engineer is responsible for answering phone calls and addressing tickets to ensure all issues are resolved or properly assigned throughout their on-call assignment week. If the EMS On-Call Engineer is unable to troubleshoot the problem on their own and they require assistance from another EMS Engineer, they will promptly contact an Engineer from the appropriate functional discipline. Management must be contacted immediately in the event the issue cannot be promptly resolved by either the On-Call Engineer or by another EMS Engineer.

6. Should the On-Call EMS Engineer be unable to make contact or reach anyone from the specific discipline needed, Management shall have the discretion to assign an additional EMS engineer from that discipline to on-call responsibilities. This will continue until such time as the Joint Oversight Committee has had the opportunity to review the situation to ensure coverage is adequate, and has agreed upon a resolution, which may include adoption of alternate on-call procedures.

7. Establishment of the on-call rotation schedule for the RAS and EMS Engineering groups will honor employee requests as much as possible, with seniority used as a tiebreaker where practicable. Employees may swap on-call weeks or days, with management permission; however, employees may not swap days that lead to work being performed on overtime.

8. In order to avoid fatigue and the possibility of human performance errors, EMS and RAS Engineers working excessive hours during an on-call week will be provided with reasonable rest, as deemed appropriate by management, following notification and discussion with management.

9. Reasonable requests for temporary removal from the on-call rotation system due to personal circumstances or hardships not to exceed six (6) months will be considered by management and will not be unreasonably denied.

10. As practicable, EMS and RAS Engineers will be provided the necessary equipment and may work remotely to provide after-hours and weekend support when responding to an incident that does not require the EMS or RAS Engineer's physical presence at the GCC; however, EMS and RAS Engineers must be able to report to the GCC within thirty (30) minutes, but no later than 60 minutes, to provide support when operational needs require, or when directed by management. If an employee cannot report to the GCC within 30 minutes, but no later than 60 minutes, the employee must contact management immediately.

11. During the on-call assignment week, RAS and EMS Engineers will receive additional compensation at the rate of 1.5 times their normal hourly rate of pay for all hours worked performing on-call duties outside of their normal work hours. If support is needed and a call is received, an employee shall be paid at this rate for not less than a total of two (2) hours for an on-call shift/day outside of an employee's regular work schedule. Such support may include telephone, remote computer access, and other methods of response; however, incidental phone calls of less than 5 minutes will not be considered a callout. On-call compensation is exclusive of time worked immediately contiguous with the employee's regular workday when the employee is performing duties other than supporting the control center during an emergency. All other additional hours worked during the on-call week will continue to be compensated per Section 17.11 of the ESC collective bargaining agreement.

12. Should support from an EMS or RAS Engineer other than the on-call Engineer be needed (e.g., when a situation requires expertise in a specific subject matter) the EMS or RAS Engineer called for support will be paid at 1.5 times their hourly rate of pay for all hours worked performing on-call support duties outside of their normal hours. If support is needed and a call is received, the employee shall be paid at this rate for not less than a total of two (2) hours for an on-call shift/day outside of an employee's regular work schedule. Only the individual who actually provides a solution/fix will be compensated as described above.

13. In situations where there is a System Event, including but not limited to Emergency Operations Center (EOC) or Electric Transmission Emergency Center (ETEC) activation, there may be a need for additional EMS and/or RAS specific support beyond those that are on-call. In these situations, management will coordinate a staffing plan to provide additional support based on individual availability either remotely, at the Vacaville GCC, Rocklin GCC, or any other PG&E location. This staffing plan may include all team members (Engineers and Specialists), including those not currently participating in the on-call rotation system. Establishment of the staffing plan will honor employee requests as much as possible, with seniority used as a tiebreaker where practical.

14. The Company and Union agree to discuss the utilization of Senior RAS Specialists for the On-Call system if the employee is deemed qualified to do so by management.

15. Joint Oversight Committee - The Company and Union agree to establish a Joint Oversight Committee consisting of two (2) representatives each. Committee members will be appointed by the Company and Union, respectively. The Committee will expeditiously address any issues, as needed, arising from the On-Call System Agreement. This Committee will also be responsible for attempting to address and resolve disputes within 45 days arising from this agreement prior to a grievance being filed.

Attachment 3 – Job Descriptions

	Energy Management System Specialist, Associate (53033022)
Summary	The Engineering Applications Specialist functions as line of business support for technology support provided by EMS group including but not limited to Energy Management System (EMS) displays, Control Center Wallboards, end user EMS workstations and substations. The incumbent understands user needs as well as EMS business procedures and processes for the corresponding department. The incumbent typically works with users on display requirements, provides user support, coordinates and/or conducts testing of changes or additions to systems and works with the end users on enhancements or improvements to technologies. The incumbent collaborates with end users to prepare, document, create PowerPoint presentation and deliver business users' system needs and may represent user needs in the development of functional specifications. The Associate is mentored and guided by EMS team and leadership.
Job Duties	General job responsibilities: 1. Provides prompt user support, answering and addressing most of the straightforward user questions independently. 2. Analyzes and documents low complexity business processes, visualization and information needs and requirements. 3. Provides timely and professional responses to EMS or user inquiries. Escalate as appropriate. 4. Follow EMS processes and provide report when requested. May perform various additional activities, such as supporting project team in, scope determination, requirements documentation, project team/ user support, etc. 5. Create, configure, and maintain displays for end users. Regularly update displays to ensure alignment with the EMS models, end user requests, and field conditions. 6. Manage displays for all EMS and Training Simulator applications. 7. Provide hardware and technology support for end users. 8. Provide backup support to maintain Operating diagrams 9. Provide EMS team initiative and project support related to project requirements, documentation, implementation, or other aspects as directed by EMS Leadership. 10. Supports vendor coordination as directed by EMS Leadership.
Knowledge / Abilities	• Proficient with MS Professional Office Suite (Excel, Access, Word, Visio) and MicroStation/Bentley. • Ability to understand electric transmission operation diagrams/symbols. • Ability to create/modify EMS displays. • Excellent written and verbal communication skills. • Demonstrated ability to be a team player.
Job Qualifications:	
	Bachelor's degree in Math, or Science related field , or similar field; or four years equivalent experience required

	Energy Management System Specialist (53033023)
Summary	The Engineering Applications Specialist functions as line of business support for technology provided by Operations Systems, including but not limited to Energy Management System (EMS) displays, Control Center Wallboards, and end user EMS workstations. The incumbent understands user needs as well as Operations Systems business procedures and processes. The incumbent typically works with users on display requirements, provides user support, coordinates and/or conducts testing of changes or additions to systems and works with the end users on enhancements or improvements to technologies. The incumbent collaborates with end users to prepare, document, and deliver business users' system needs and may represent user needs in the development of functional specifications.

	The Career level Specialist performs the basic duties of the position independently.
Job Duties	The Career Engineering Applications Specialist is able to perform all the duties of the Associate level Specialist, with the addition of the following duties: 1. Work independently with limited oversight and provide direction and support to others as needed to facilitate work outputs. 2. Manage time appropriately on time sensitive work independently. 3. Under leadership direction, schedule, troubleshoot and coordinate issues with Vendor. 4. Demonstrate analytical and decision-making skills, with ability to coordinate with others to meet desired work objectives. 5. Troubleshoot and resolve complex display issues identified by end users. 6. Develop, maintain, troubleshoot, and execute basic scripts. 7. Supports vendor coordination and meetings, including meeting support and participation as directed by EMS Leadership. 8. Support the development and implementation of new display concepts based on needs and input from end users. 9. Perform work with a strong orientation to safety, teamwork, and overall customer satisfaction.
Knowledge / Abilities	The Career level resource will demonstrate a mastery of all Associate level knowledge and abilities. Additional required knowledge and abilities for a Career level resource include: • Demonstrated ability and skill to write scripts or develop software. • Solid working knowledge of electric transmission operation diagrams/symbols. • Good knowledge and ability to create/modify EMS displays. • Exceptional listening, communication (written & verbal) and facilitation skills. • Strong interpersonal skills, with proven ability to work collaboratively and develop strong working relationships across various PG&E internal and external stakeholder groups. • Demonstrated ability to support projects of low to medium complexity. • Proven ability to maintain high standards with tasks and end user support.
Job Qualifications:	
	Bachelor's degree in Math or Science related field or similar field; or four years equivalent experience required AND 3 years of experience in the position or related work experience.

	Energy Management System Specialist, Senior (53033024)
Summary	The EMS Engineering Applications Specialist functions as line of business support for technology provided by EMS group , including but not limited to Energy Management System (EMS) displays, Control Center Wallboards, end user EMS workstations and substations. .The incumbent understands user needs as well as EMS business procedures, processes and for the corresponding department. The incumbent typically works with users on display requirements, provides user support, coordinates and/or conducts system testing of changes or additions to systems and works with the end users on enhancements or improvements to technologies. The incumbent collaborates with users to prepare, document, create PowerPoint presentation and deliver business users' system needs to Engineers and may represent user needs in the development of functional specifications. The incumbent may also perform feasibility analysis and provide recommendations on alternative solutions The Senior Specialist has mastered the duties of the Career level Specialist and in addition can lead projects, mentor other Specialists, help train newly hired EMS staff on software systems, and make independent contributions to EMS software/Hardware systems.
Job Duties	The Senior Engineering Applications Specialist is able to perform all the duties of the career level Specialist, with the addition of following duties: General job responsibilities: 1. Develop, lead, and provide training to other Engineering Applications Specialists on

	department systems and processes. 2. Recognize gaps and needs in current EMS policies and procedures, identify appropriate corrective action, and work with management to implement changes if appropriate. 3. Strong analytical and decision-making skills, with ability to influence and negotiate with others to meet desired work objectives. 4. Lead and create documentation that includes standards, technical specifications, templates, manuals, process and procedures, process flow diagrams, and job aids. 5. Develops and implements new display concepts based on needs and input from end users. 6. Leads identification, evaluation, and implementation of new display systems. 7. Lead and configures and troubleshoots complex display systems and projects. 8. Automate processes and tasks to improve overall team efficiency. 9. Lead video wall maintenance and issue resolution and provides hardware support as needed in the GCC. 10. Responsible for display system vendor management and relationship for the EMS team. 11. May guide and direct the work of other EMS Specialists.
Knowledge / Abilities	The Senior level resource will demonstrate a mastery of all Career level knowledge and abilities. Additional required knowledge and abilities for a Senior level resource include: • Excellent Technical writing and documentation skills. • Exceptional organizational skills required and ability to work productively in fast-paced, real-time environment, and successfully navigate complex technical scenarios. • Demonstrated proficiency with troubleshooting and creating new and complex scripts. • Proven experience participating in projects of high complexity required.
Job Qualifications:	
	Bachelor's degree in Math and Science related field or similar field; or four years equivalent experience required. AND Eight (8) years of experience in the position or related work experience.

	Remedial Action Schemes Specialist, Associate (53033056)
Summary	Remedial Action Schemes (RAS) and Undervoltage Load Shedding Schemes (UVLS) monitor the electric transmission grid to detect system conditions and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Specialists function as an assistant to a RAS Engineer in supporting PG&E's various RASs and UVLSs. Typical assignments include obtaining and analyzing engineering data; preparing and reviewing system related inputs/outputs; writing and revising computer programs; troubleshooting RAS Operations owned equipment; executing and documenting system and security tests; assisting in administrative work associated with the technical office activities. The Associate Specialist is an entry-level position that functions as line of business support within RAS Operations.
Job Duties	Initial assignments from the tasks below will require direction and supervision; with experience the independence and responsibility will expand and the need for supervision will decrease. General Duties 1. Investigates assigned technical issues under the guidance of leadership or more senior team members 2. May provide real-time technical support to operations centers to resolve RAS issues 3. Support troubleshooting tasksfor all RAS systems Centralized RASs 4. Supports day-to-day maintenanceactivities for PACIRAS and SFRAS including outage clearances 5. Supports NERC-CIP related activities including system testing and documentation 6. Primarily supports one of the following 3 activities: a. Supports RAS HMI (Human Machine Interface) updates, design, and testing b. Supports controller programming updates and testing c. Supports SMP Gateway updates,design, and testing Local Schemes 7. Supports RAS equipment installation/modification project tasks asassigned 8. Supports development of RAS submittal packages for review/approval by the RC 9. Supports NERC-O&P compliance relatedactivities including event analysis and documentation 10. Supports internal team members to ensure the RAS/UVLS processes are followed
Knowledge / Abilities	• Ability to follow technical procedures and documentation • Strong technical and analyticalskills • Excellent written and verbalcommunication skills • Ability to take initiative • Proficient with MS ProfessionalOffice Suite (Excel, Access, Word, Visio) • Familiarity with various datacommunications (IEC 61850Standard, Generic Object Oriented Substation Events Messaging, Substation Modernization Platform Gateways) • Familiarity with ProgrammableLogic Controllers and ladder logic • Familiarity with Visual Basic,C/C++
Job Qualifications:	
	Bachelor's degree in Math, or Science related field, or similar field; or four years equivalent experience required

	Remedial Action Schemes Specialist (53033057)
Summary	Remedial Action Schemes (RAS) and Undervoltage Load Shedding Schemes (UVLS) monitor the electric transmission grid to detect system conditions and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Specialists function as an assistant to a RAS Engineer in supporting PG&E's various RASs and UVLSs. Typical assignments include obtaining and analyzing engineering data; preparing and reviewing system related inputs/outputs; writing and revising computer programs; troubleshooting RAS Operations owned equipment; executing and documenting system and security tests; assisting in administrative work associated with the technical office activities. The Career level Specialist is able to perform the basic duties of the position independently.
Job Duties	Able to perform all the duties of the Associate Specialist, and in addition: 1. Under leadership direction, schedule, troubleshoot and coordinate issues with vendors 2. Supports vendor coordination and meetings, including meeting support and participation as directed by RAS Leadership 3. Support the development and implementation of RAS updates/modifications 4. Documents processes and technical specifications for the RAS and/or UVLS system
Knowledge / Abilities	• Remedial Action Schemes, Special Protection Systems, data communications, and network communications • WECC/NERC Standards including the compliance aspect of the standards • Data communications (IEC 61850 Standard, Generic Object Oriented Substation Events Messaging, Substation Modernization Platform Gateways) • Human Machine Interface design and programming • ICCP with a control center environment • Programmable Logic Controllers and ladder logic • Visual Basic, C/C++, or other programming languages • Software testing/integration for real-time systems
Job Qualifications:	
	Bachelor's degree in Math or Science related field or similar field; or four years equivalent experience required **AND** 3 years of experience in the position or related work experience.

	Remedial Action Schemes Specialist, Senior (53033058)
Summary	Remedial Action Schemes (RAS) and Undervoltage Load Shedding Schemes (UVLS) monitor the electric transmission grid to detect system conditions and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Specialists function as an assistant to a RAS Engineer in supporting PG&E's various RASs and UVLSs. Typical assignments include obtaining and analyzing engineering data; preparing and reviewing system related inputs/outputs; writing and revising computer programs; troubleshooting RAS Operations owned equipment; executing and documenting system and security tests; assisting in administrative work associated with the technical office activities. The Senior Specialist position requires mastery of the Journey Specialist job duties and in addition can lead projects, mentor other Specialists, help train newly hired RAS staff on software systems, and make independent contributions to RAS software/Hardware systems.

Job Duties	Able to perform all the duties of the Journey Specialist, and in addition: General Duties 1. Applies extensive knowledge of concepts, principles, and practices ofRAS systems to resolvecomplex problems. 2. Recognize gaps and needs in current RAS policies and procedures, identify appropriate corrective action, and work with management to implement changes if appropriate. 3. Lead and create documentation that includes standards, technical specifications, templates, manuals, process and procedures, process flow diagrams, and job aids. 4. Automate processes and tasks to improve overall team efficiency. Centralized RASs 5. Coordinates, schedules, and performs hardware maintenance and issue resolution and provides hardware support as needed in the GCC Local Schemes 6. Support technical activities for local schemes requiring coordination from various stakeholders, e.g., System Protection, Transmission Planning, Operations departments.
Knowledge / Abilities	• Basic understanding of operations systems, power systems, power flow analysis, power system theory, voltagestability, and transmission planning • Ability to manage time appropriately ina time sensitive operations environment • Ability to take the lead, technically, onprojects • Technical writing and documentationskills • Proficient with MS Professional OfficeSuite (Excel, Access, Word, Visio) • Working knowledge of data communications (IEC 61850 Standard,Generic Object Oriented Substation Events Messaging, Substation Modernization Platform Gateways) • Working knowledge of Intelligent Electronic Device programming andoperation (for example, GE N60 relays) • Proficient with Human Machine Interface design and programming • Proficient with electrical or telecommunication protection • Proficient with ICCP within a controlcenter environment • Proficient with Programmable LogicControllers and ladder logic • Proficient with Visual Basic, C/C++ • Proficient with software testing/integration for real-timesystems
Job Qualifications:	
Education	Bachelor's degree in Math and Science related field or similar field; or four years equivalent experience required. **AND** Eight (8) years of experience in the position or related work experience.

	EMS Operations Systems Engineer, Associate (53033158)
Summary	EMS Operations Systems Engineers ensure that EMS situational awareness applications, network models, advanced applications, and Operations Planning study tools are functioning at a high level to provide confidence that the PG&E transmission system is operating in a safe and reliable manner. In addition, the EMS Operations Systems Engineers provide operational and project related support of the Energy Management System (EMS) in collaboration with EMS end users. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. EMS Operations Systems Engineers are responsible for EMS troubleshooting, EMS SCADA applications, EMS network applications and models, DTS applications and models, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS Operations Systems Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS Operations Systems Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The Associate Engineer is an entry-level Engineer job that works under the general technical direction of more experienced engineers.
Job Duties	Initial assignments from the tasks below will require direction and supervision; with experience, the independence and responsibility will expand and the need for supervision will decrease. General Duties: 1. Develops knowledge to test,maintain and troubleshoot EMS applications, EMS modeling applications and processes, and external systems that directly interface with the EMS. 2. Updates and maintains accurate electric network topology, model, calculations, and contingency definitions on a timely basis to reflect changes in transmission grid and associated equipment. 3. Provides real-time and on-call technical support to operations by analyzing and resolving EMS application and data issues to ensure high quality application solutions. 4. Support EMS application configuration to provide customized visualization, alarming, tagging, etc. based on user roles and responsibilities. 5. Develop knowledge to support the real-time and study advanced network applications - state estimator, contingency analysis, power flow applications, voltage stability, transient stability, and other applications per PG&E's business needs. 6. Develop knowledge to maintain PG&E's SPS and RAS models used by power flow and contingency analysis applications. 7. Support Common Information Model (CIM) and other required network model data exchange processes. 8. Support internal and external stakeholders on work projects, enhancements, and issue resolution. 9. Takes full responsibility for assigned tasks and projects, including on-time completion. 10. Performs work with a strong orientation to safety, teamwork, and overall customer satisfaction. 11. Coordinates, implements, and maintains internal metrics and reporting. 12. Follows, supports, and maintains proper documentation, procedures, and reports to ensure compliance with the NERC TOP and CIP standards. 13. Develops proficiency in the design and writing of software/scripting to automate EMS related tasks. 14. Develop knowledge to support Grid Operations Training with the creation and maintenance of DTS displays, models, and training scenarios. 15. Support issue resolution with the DTS vendor to resolve DTS deficiencies. 16. May perform display work, SCADA modeling, and testing as directed.
Knowledge / Abilities	• Basic understanding of operations systems, power systems, power flow analysis, power system theory, voltage stability, and transmission planning.

	• Ability to follow technical procedures and documentation. • Strong technical and analytical skills. • Excellent written and verbal communication skills. • Ability to take initiative with the goal to work independently in the future. • Proficient with MS Professional Office Suite (Excel, Access, Word, Visio). • Ability to work as a team player in a professional environment. • Ability to work with others to create system requirements documents, create functional specifications and architectural designs. • Ability to design and write software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c#, .NET, java, etc. • Knowledge of Transmission Grid Control System and EMS Applications. • Ability to adhere to PG&E ethics and standards of conduct.
Job Qualifications:	
Education	Required: Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field Desired: Master's degree in Electrical engineering
Licenses / Certifications	EIT Certification desirable but not required
Experience	0-2 years' experience in utility transmission operations and EMS systems desired.

	EMS Operations Systems Engineer (53033159)
Summary	EMS Operations Systems Engineers ensure that EMS situational awareness applications, network models, advanced applications, and Operations Planning study tools are functioning at a high level to provide confidence that the PG&E transmission system is operating in a safe and reliable manner. In addition, the EMS Operations Systems Engineers provide operational and project related support of the Energy Management System (EMS) in collaboration with EMS end users. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. EMS Operations Systems Engineers are responsible for EMS troubleshooting, EMS SCADA applications, EMS network applications and models, DTS applications and models, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS Operations Systems Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS Operations Systems Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The career-level engineer requires mastery of the Associate level engineer skills and duties and is responsible for leading the engineering and design of more complex EMS Application tasks and projects. Uses independent judgment in applying engineering principles and works with minimal supervision. Resolves issues within the incumbent's level of competency; consults more senior engineers on more difficult issues while ensuring critical needs are met quickly and efficiently.
Job Duties	Able to perform all the duties of the Associate Engineer, and in addition: 1. Test,maintain and troubleshoot EMS Applications, EMS modeling applications and processes, and external systems that directly interface with the EMS. 2. Independently coordinates, tests, and performs activities required for model updates or as needed for EMS system configuration or software updates. 3. Independently support the real-time and study advanced network applications - state estimator, contingency analysis, power flow applications, voltage stability, transient stability, and other applications per PG&E's business needs. 4. Maintain PG&E's SPS and RAS models used by power flow and contingency analysis applications. 5. Assist in the development and operationalization of procedures and ensure compliance with applicable NERC Standards.

	6. Determines cost effective and practical solutions; troubleshoots and resolves moderately complex operational and/or design assignments. 7. Provides post-event analysis of events such as EMS application failures, modeling issues, data loss, etc. 8. Works with system vendors, contractors, internal and external stakeholders to resolve issues and implement solutions. 9. Documents processes and technical specifications. 10. Provides on-the-job training and guidance for engineers with less experience. 11. Supports the development and implementation of new system concepts based on end user needs and input from vendors. 12. Independently support Grid Operations Training with the creation and maintenance of DTS displays, models, and training scenarios.
Knowledge / Abilities	Additional required knowledge and abilities include: • Understanding of operations systems, power systems, power flow analysis, power system theory, and voltagestability. • Familiar with engineering drawings and substation single line diagrams. • Ability to manage time appropriately in a time sensitive operations environment. • Technical writing and documentation skills. • Understanding of relevant industry EMS and SCADA systems. • Demonstrated ability and skill to write scripts and ability to support projects of medium complexity. • Excellent listening, communication (written & verbal) and facilitation skills. • Strong interpersonal skills, with proven ability to work collaboratively and develop strong working relationships across various internal and external stakeholder groups. • Ability to provide high quality solutions and end user satisfaction. • Strong technical, analytical, and decision-making skills, with ability to coordinate with others to meet desired work objectives. • Good working knowledge of Power/Transmission Grid and EMS systems • Familiar with all EMS functionalities including SCADA Modeling, Display Management, and System Infrastructure and Integration.
Job Qualifications:	
Education	Required: Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field Desired: Master's degree in Electrical engineering
Licenses / Certifications	PE desirable but not required
Experience	Mastery of the Associate level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Career Level Engineer. Meets specific technical requirements gained through a minimum of three (3) years of experience in utility transmission operations and EMS systems desired.

	EMS Operations Systems Engineer, Senior (53033160)
Summary	EMS Operations Systems Engineers ensure that EMS situational awareness applications, network models, advanced applications, and Operations Planning study tools are functioning at a high level to provide confidence that the PG&E transmission system is operating in a safe and reliable manner. In addition, the EMS Operations Systems Engineers provide operational and project related support of the Energy Management System (EMS) in collaboration with EMS end users. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. EMS Operations Systems Engineers are responsible for EMS troubleshooting, EMS SCADA applications, EMS network applications and models, DTS applications and models, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS Operations Systems Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS Operations Systems Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management.

	The Senior engineer job requires mastery of the career engineer job duties and is responsible for leading engineering and design of complex projects. Applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Works with limited guidance to complete assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the career level Engineer, and in addition: 1. Applies extensive knowledge of concepts, principles and practices inoperations systems engineering to resolve complex problems. 2. Manages multiple internal and external stakeholders and collaborates extensively with key system users such as Grid Operations. 3. Leading and providing expert guidance on multiple complex projects simultaneously. 4. Acts as a first-tier of support and mentor to less senior EMS Operations Systems Engineers. 5. Supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums. 6. Performs advanced and complex modeling and application projects, such as DC line modeling, model merges, process automation. 7. Is seen as a subject matter expert in EMS and DTS Applications. May have ownership of one or more NERC standard and is expected to participate in NERC/WECC audits. 8. Establishes methodologies and processes to use with minimal guidance and direction from Leadership or Sr. advisor. 9. Interprets business internal/external issues and recommends best practices. 10. Obtains a good understanding of all EMS functions and applications and provides solutions that cross multiple EMS job functions.
Knowledge / Abilities	Additional required knowledge and abilities include: • Advanced understanding of operations systems, power systems, power flow analysis, power system theory, and voltagestability. • Detailed knowledge of EMS system architecture and functionality and ability to facilitate conversations across the entire EMS team. • Ability to lead projects and provide technical mentorship and coaching toless senior team members. • Ability to manage time appropriately in a time sensitive operations environment. • Knowledge of California and Federal regulatory requirements such as Federal Energy Regulatory Commission (FERC),NERC/CIP, WECC, CPUC, and CAISO. • Proficient at working with others to create system requirements documents, create functional specifications and architectural designs. • Proficient at designing and writing software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c#, .NET, java, etc. • Excellent technical writing skills. • Exceptional organizational skills and ability to work productively in fast-paced, real-time environment, and successfully navigate complex technical scenarios. • Experience implementing projects of high complexity required. • Excellent working knowledge of Power/Transmission Grid Control System and EMS • Knowledge and understanding of SCADA modeling, display management, system infrastructure and integration, data archiving, remote system communication and control protocols TCP/IP, ICCP, DNP3, etc.
Job Qualifications:	
Education	Required: Bachelor’s Degree in Electrical/Computer Engineering, Computer Science, or similar technical field Desired: Master's degree in Electrical engineering
Licenses / Certifications	PE desirable but not required
Experience	Mastery of the career level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Engineer. Meets specific technical requirements gained through a minimum of eight (8) years of utility transmission operations

	and EMS systems.

	EMS Operations Systems Engineer, Sr. Advising (53033161) / Senior Consulting (53035555)
Summary	EMS Operations Systems Engineers ensure that EMS situational awareness applications, network models, advanced applications, and Operations Planning study tools are functioning at a high level to provide confidence that the PG&E transmission system is operating in a safe and reliable manner. In addition, the EMS Operations Systems engineers provide operational and project related support of the Energy Management System (EMS) in collaboration with EMS end users. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. EMS Operations Systems Engineers are responsible for EMS troubleshooting, EMS SCADA applications, EMS network applications and models, DTS applications and models, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS Operations Systems Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS Operations Systems Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The Senior Advising Engineer leads complex engineering projects, is a recognized expert within their area of responsibility, and applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Provides technical leadership and coaching. Researches and identifies practical solutions to highly complex problems. Identifies opportunities and brings in ideas to help improve company performance. Independently completes assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the Senior Engineer, and in addition: 1. Acts as Subject Matter Expert (SME) within their area of responsibility. Leads complex projects and provides technical solutions. 2. Acts as a technical role model to EMS Operations Systems Engineers. 3. Independently plans, architects, and designs complete complex EMS system solutions and projects. 4. Leads development of department standards, processes, and procedures. 5. Identifies, analyzes, and improves existing business processes to meet existing/new goals and objectives. 6. Searches for and discovers practical solutions to highly complex problems. 7. Provides leadership, direction, and assistance to technical employees and teams. Coaches and develops others. 8. As assigned, ensures the cost-effective implementation of the highest priority projects while optimizing capital investments. Manage projects within the project budget and schedule. 9. Conceives and investigates areas in which engineering precedents are not tested and contributes to new designs and techniques that are regarded as major advances in the company and/or industry. 10. Leads and supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums.
Knowledge / Abilities	Additional required knowledge and abilities include: • Subject Matter Expert (SME) understanding of operations systems, power systems, power flow analysis, power system theory, and voltage stability. • Strong knowledge of PG&E's transmission system and operational practices. • Knowledge of California and Federal regulatory requirements such as FederalEnergy Regulatory Commission (FERC),NERC/CIP, WECC, CPUC), and CAISO. • Able to influence others to achieve understanding, acceptance, and commitment to act in support of ideas, programs, or causes. • Strong understanding of the overall EMS architecture.
Job Qualifications:	

Education	Required: Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field Desired: Master's degree in Electrical engineering
Licenses / Certifications	Current and active California PE license required for Senior Consulting Engineer Position but not for Senior Advising Engineer position.
Experience	Mastery of the Senior level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Advising Engineer. Meets specific technical requirements gained through a minimum of thirteen (13) years of experience in utility transmission operations and EMS systems desired.

	EMS SCADA Engineer, Associate (53033163)
Summary	EMS SCADA Engineers perform all EMS SCADA modeling and testing needed to ensure the entire PG&E transmission system is controllable and visible (situational awareness) to Grid Operations, while providing an appropriate level of data and situational awareness for external systems that are impactful to the PG&E transmission area. In addition, the SCADA engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for the PG&E Grid Operations. SCADA Engineers may be responsible for any of the following: troubleshooting, modeling transmission system equipment, testing new SCADA data points with field personnel, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS SCADA Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS SCADA Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The Associate Engineer is an entry-level Engineer job that works under the general technical direction of more experienced engineers.
Job Duties	Initial assignments from the tasks below will require direction and supervision; with experience the independence and responsibility will expand and the need for supervision will decrease. General Duties: 1. Develops knowledge to test,maintain and troubleshoot the EMS and address SCADA modeling deficiencies as needed. 2. Provides real-time technical support to operations to analyze and resolve EMS SCADA issues. 3. Works with System Automation to address bad quality SCADA data. 4. Investigates and analyzes assigned technical issues. 5. Interacts with internal clients regarding work projects/enhancements or issues. 6. Provides real-time technical support to users, including EMS On-Call duties. Work with and support internal and external clients on work projects, enhancements, and issue resolution. 7. Supports EMS team projects as directed. 8. Takes full responsibility for assigned tasks and projects, including on-time completion. 9. Performs work with a strong orientation to safety, teamwork, and overall customer satisfaction. 10. Coordinates, implements, and maintains internal reporting systems. 11. Follows, supports, and maintains proper documentation and reports to ensure compliance with the NERC TOP and CIP standards. 12. Develops proficiency in the design and writing of software/scripting to automate EMS related tasks. 13. Updates and maintains accurate electric EMS SCADA model data on a timely basis to reflect changes in transmission grid. 14. Operates, maintains, and troubleshoots EMS application models, configuration files, and databases. 15. Assists in the development and operationalization of procedures and ensure compliance with applicable NERC Standards. 16. May perform display work when needed.
Knowledge / Abilities	Additional required knowledge and abilities include: • Ability to follow technical procedures and documentation. • Strong technical and analytical skills. • Excellent written and verbal communication skills.

	• Ability to take initiative with the goal to work independently in the future. • Proficient with MS Professional Office Suite (Excel, Access, Word, Visio). • Ability to work as a team player in a professional environment. • Ability to work with others to create system requirements documents, create functional specifications and architectural designs. • Ability to design and write software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c# .NET, java, etc. • Knowledge of Transmission Grid Control System and SCADA Modeling. • Ability to adhere to PG&E ethics and standards of conduct.
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering or Computer Science or similar technical field
Licenses / Certifications	EIT Certification desirable but not required
Experience	0-2 years' experience in utility transmission operations and EMS systems desired.

	EMS SCADA Engineer (53033164)
Summary	EMS SCADA Engineers perform all EMS SCADA modeling and testing needed to ensure the entire PG&E transmission system is controllable and visible (situational awareness) to Grid Operations, while providing an appropriate level of data and situational awareness for external systems that are impactful to the PG&E transmission area. In addition, the SCADA engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for the PG&E Grid Operations. SCADA Engineers may be responsible for any of the following: troubleshooting, modeling transmission system equipment, testing new SCADA data points with field personnel, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS SCADA Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS SCADA Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The career-level engineer requires mastery of the Associate level engineer skills and duties and is responsible for leading the engineering and design of more complex SCADA models and projects. Uses independent judgment in applying engineering principles and works with minimal supervision. Resolves issues within the incumbent's level of competency; consults more senior engineers on more difficult issues while ensuring critical needs are met quickly and efficiently.
Job Duties	Able to perform all the duties of the Associate Engineer, and in addition: 1. Determines cost effective and practical solutions; troubleshoots and resolves moderately complex operational and/or design assignments. 2. Provides post-event analysis of events such as modeling issues, data loss, communications failures, etc. 3. Works with system vendors, contractors, internal and external stakeholders to resolve issues and implement solutions. 4. Documents processes and technical specifications. 5. Partners with EMS project teams to solve issues associated with modeling 6. Acts as a first point of contact for multiple internal and external clients. 7. Provides on-the-job training and guidance for colleagues with less experience. 8. Maintains relationships and procedures with other PG&E teams that are responsible for providing the EMS SCADA engineers with modeling data. 9. Supports the development and implementation of new system concepts based on end user needs and input from vendors.

Knowledge / Abilities	Additional required knowledge and abilities include: • Familiar with commercial/industrialelectrical and/or mechanical prints. • Ability to manage time appropriately ina time sensitive operations environment. • Technical writing and documentationskills. • Good understanding of relevant industry EMS and SCADA systems. • Demonstrated ability and skill to write scripts and ability to support projects of medium complexity. • Excellent listening, communication (written & verbal) and facilitation skills. • Strong interpersonal skills, with proven ability to work collaboratively and develop strong working relationships across various internal and external stakeholder groups. • Ability to provide high quality solutions and end user satisfaction. • Strong technical, analytical, and decision-making skills, with ability to coordinate with others to meet desired work objectives. • Good working knowledge of Power/Transmission Grid Control System and EMS SCADA modeling • Familiar with all EMS functionality including Advance Network Applications, Display Management, System infrastructure and Integration, Server maintenance and remote system Communication and Control Protocols TCP/IP, ICCP, DNP3 etc., Data archiving.
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering or Computer Science or similar technical field
Licenses / Certifications	EIT Certification desirable but not required
Experience	Mastery of the Associate level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Career Level Engineer. Meets specific technical requirements gained through a minimum of three (3) years of experience in utility transmission operations and EMS systems desired.

	EMS SCADA Engineer, Senior (53033165)
Summary	EMS SCADA Engineers perform all EMS SCADA modeling and testing needed to ensure the entire PG&E transmission system is controllable and visible (situational awareness) to Grid Operations, while providing an appropriate level of data and situational awareness for external systems that are impactful to the PG&E transmission area. In addition, the SCADA engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for the PG&E Grid Operations. SCADA Engineers may be responsible for any of the following: troubleshooting, modeling transmission system equipment, testing new SCADA data points with field personnel, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS SCADA Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS SCADA Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The Senior engineer job requires mastery of the career engineer job duties and is responsible for leading engineering and design of complex projects. Applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Works with limited guidance to complete assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the career level Engineer, and in addition:

	1. Applies extensive knowledge of concepts, principles and practices inoperations systems engineering to resolve complex problems. 2. Manages multiple internal and external clients and collaborates extensively with key system users such as Grid Operations. 3. Leading and providing expert guidance on multiple complex projects simultaneously. 4. Acts as a first-tier of support and mentor to less senior EMS SCADA Engineers. 5. Supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums. 6. Performs advanced modeling of complex systems and substation configurations. 7. Is seen as a subject matter expert in SCADA modeling. May have ownership of one or more NERC standard and is expected to participate in NERC/WECC audits. 8. Establishes methodologies and processes to use with minimal guidance and direction from Leadership or Sr. advisor. 9. Interprets business internal/external issues and recommends best practices. 10. Obtains a good understanding of all EMS functions and applications and provides solutions that cross multiple EMS job functions.
Knowledge / Abilities	Additional required knowledge and abilities include: • Ability to lead projects and provide technical mentorship and coaching toless senior team members. • Ability to manage time appropriately in a time sensitive operations environment. • Knowledge of California and Federal regulatory requirements such as Federal Energy Regulatory Commission (FERC),NERC/CIP, WECC, CPUC, and CAISO. • Proficient at working with others to create system requirements documents, create functional specifications and architectural designs. • Proficient at designing and writing software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c# .NET, java, etc. • Exceptional written and verbal communication skills. • Excellent Technical writing and documentation skills. • Exceptional organizational skills and ability to work productively in fast-paced, real-time environment, and successfully navigate complex technical scenarios. • Experience implementing projects of high complexity required. • Excellent working knowledge of Power/Transmission Grid Control System and EMS • Proficient of relevant industry EMS systems. • Excellent working knowledge of EMS/SCADA Modeling • Good knowledge and understanding of Advanced Network Applications, Display Management, System infrastructure and Integration, Server maintenance and remote system Communication and Control Protocols TCP/IP, ICCP, DNP3 etc., Data archiving.
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering or Computer Science or similar technical field
Licenses / Certifications	EIT Certification desirable but not required
Experience	Mastery of the career level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Engineer. Meets specific technical requirements gained through a minimum of eight (8) years of utility transmission operations and EMS systems.

	EMS SCADA Engineer, Sr. Advising (53033166) / Senior Consulting (53035554)
Summary	EMS SCADA Engineers perform all EMS SCADA modeling and testing needed to ensure the entire PG&E transmission system is controllable and visible (situational awareness) to Grid Operations, while providing an appropriate level of data and situational awareness for external systems that are impactful to the PG&E transmission area. In addition, the SCADA engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for the PG&E Grid Operations.

	SCADA Engineers may be responsible for any of the following: troubleshooting, modeling transmission system equipment, testing new SCADA data points with field personnel, coordinating data needs with external teams, and supporting Grid Operations to ensure an overall high level of service to end users. EMS SCADA Engineers follow all PG&E processes and procedures and collaborate closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS SCADA Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. The Senior Advising Engineer leads complex engineering projects, is a recognized expert within their area of responsibility, and applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Provides technical leadership and coaching. Researches and identifies practical solutions to highly complex problems. Identifies opportunities and brings in ideas to help improve company performance. Independently completes assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the Senior Engineer, and in addition: 1. Acts as Subject Matter Expert (SME) within their area of responsibility. Leads complex projects and provides technical solutions. 2. Acts as a technical role model to EMS engineers. 3. Independently plans, architects, and designs complete complex EMS system solutions and projects. 4. Leads development of department standards, processes, and procedures. 5. Identifies, analyzes, and improves existing business processes to meet existing/new goals and objectives. 6. Searches for and discovers practical solutions to highly complex problems. 7. Provides leadership, direction, and assistance to technical employees and teams. Coaches and develops others. 8. Independently identifies, analyzes, and improves existing business processes to meet existing/new goals and objectives. 9. Searches for and discovers practical solutions to highly complex problems. 10. Provides leadership, direction, and assistance to employees and teams. Coaches and develops others. 11. As assigned ensures the cost-effective implementation of the highest priority projects while optimizing capital investments. Manage multi-year budgets and leads multi-year projects for assigned work categories. 12. Conceives and investigates areas in which engineering precedents are not tested and contributes to new designs and techniques that are regarded as major advances in the company and/or industry. 13. Leads and supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums. 14. Ability to work as a team player in a professional environment
Knowledge / Abilities	Additional required knowledge and abilities include: • Strong knowledge of PG&E's transmission system and operational practices. • Ability to lead projects and provide technical mentorship and coaching to less senior team members. • Able to influence others to achieve understanding, acceptance, and commitment to act in support of ideas, programs, or causes. • Familiar with commercial/industrial electrical and/or mechanical prints.
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering or Computer Science or similar technical field
Licenses / Certifications	EIT Certification desirable but not required; Current and active California PE license required for Senior Consulting Engineer Position but not for Senior Advising Engineer position.
	Mastery of the Senior level Engineer job duties or equivalent and demonstrated knowledge

Experience	and ability to perform the basic duties of the Senior Advising Engineer. Meets specific technical requirements gained through a minimum of thirteen (13) years of experience in utility transmission operations and EMS systems desired.

	EMS Operations Systems Integration Engineer, Associate (53033358)
Summary	EMS Operations Systems Integration Engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. Integration Engineers are responsible for a variety of system support functions including troubleshooting, system administration, system integration, hardware architecture design and implementation, creating software requirements and functional specifications, writing custom software, designing and implementing EMS system interfaces, configuration control, user interface design, external system communication, interface configuration (Inter-Control Communications Protocol, databases, FEPs etc.), documentation, and project management. EMS Integration Engineers follow all PG&E processes and procedures and collaborates closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. The EMS Integration team collaborates with other EMS teams to ensure the EMS system databases, models, and system parameters are accurate and up to date with the latest modifications to the electric grid, telemetry, and associated systems. Additionally, the team will test and deploy software updates or EMS system configuration changes as needed. EMS Integration Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. Travel to Vacaville and/or Rocklin and other PG&E facilities are required to support these team obligations. The Associate EMS Operations Systems Integration Engineer is an entry-level EMS Engineer job that works under the general technical direction of the EMS Operations Systems Integration Supervisor and more experienced EMS Integration Engineers.
Job Duties	Initial assignments from the tasks below will require direction and supervision; with experience the independence and responsibility will expand and the need for supervision will decrease. 1. Develops knowledge and proficiency to test,maintain, configure, and troubleshoot all Operations Systems. 2. Develops proficiency with the EMS system's software languages provided to better support EMS system customization and custom interface development. 3. Provides real-time technical hardware and software support to users, including EMS On-Call duties. 4. Works with and support internal and external clients on work projects, enhancements, and issue resolution. 5. Supports EMS team projects as directed. 6. Takes full responsibility for assigned tasks and projects, including on-time completion. 7. Performs work with a strong orientation to safety, teamwork, and overall customer satisfaction. 8. May perform EMS modeling, and display work when needed. 9. Supports and monitors all systems, hardware, databases, configuration files, and software used in the operation of the PG&E transmission grid on a timely basis. 10. Maintains data exchange models and external communication links such as Inter-Control Communications Protocol (ICCP) to ensure proper data flow to CAISO and other entities. 11. Submits, coordinate clearances, firewall change requests for EMS equipment, test and maintains proper documentation. 12. Coordinates, implements, and maintains internal reporting systems. 13. Follows, supports, and maintains proper documentation, system and data backups, software and associated logs, errors, warnings, and reports to ensure compliance with the NERC Transmission Operations Planning (TOP) and Critical Infrastructure Protocol (CIP) standards. 14. Works with system vendors on system maintenance tasks. 15. Develops proficiency in the design and writing of software/scripting to automate EMS related tasks. 16. Supports Dispatcher Training Simulator (DTS), Quality Assurance (QA), Development, Production, and sand box environments to ensure high availability and data availability in

	support of EMS training and testing activities.
Knowledge / Abilities	Additional required knowledge and abilities include: • Ability to follow technical procedures and documentation. • Strong technical and analyticalskills. • Excellent written and verbal communication skills. • Ability to take initiative. • Proficient with MS Professional Office Suite (Excel, Access, Word, Visio). • Ability to work as a team player in a professional environment. • Ability to work with others to create system requirement documents, create functional specifications and architectural designs. • Ability to design and write software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c# .NET, java, etc. • Proficiency with version control concepts, software development environments and debugging methods. • Have knowledge of Transmission Grid Control System and EMS/SCADA • Have knowledge of EMS/SCADA Display System and SCADA Modeling
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field
Licenses / Certifications	
Experience	0-2 years' experience in utility electrical operations systems desired.

	EMS Operations Systems Integration Engineer (53033359)
Summary	EMS Operations Systems Integration Engineers, Career, provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. Integration Engineers are responsible for a variety of system support functions including troubleshooting, system administration, system integration, hardware architecture design and implementation, creating software requirements and functional specifications, writing custom software, designing and implementing EMS system interfaces, configuration control, user interface design, external system communication, interface configuration (ICCP, databases, FEPs etc.), documentation, and project management. EMS Integration Engineers follow all PG&E processes and procedures and collaborates closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. The EMS Integration team collaborates with other EMS teams to ensure the EMS system databases, models, and system parameters are accurate and up to date with the latest modifications to the electric grid, telemetry, and associated systems. Additionally, the team will test and deploy software updates or EMS system configuration changes as needed. EMS Integration Engineers will participate in activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. Travel to Vacaville and/or Rocklin and other PG&E facilities are required to support these team obligations. The career-level EMS Operations Systems Integration Engineer requires mastery of the Associate EMS Operations Systems Integration Engineer level skills and duties and is responsible for leading the engineering and design of more complex projects. Uses independent judgment and works with minimal supervision. Resolves issues within the incumbent's level of competency; consults more senior EMS Integration Engineers on more difficult issues while ensuring critical needs are met quickly and efficiently.

Job Duties	Able to perform all the duties of the Associate EMS Operations Systems Integration Engineer, and in addition: 1. Determines cost effective and practical solutions; troubleshoots and resolves moderately complex operational and/or design assignments. 2. Provides post-event analysis of events such as software or hardware failures, data loss, communications failures, etc. 3. Works with system vendors, contractors, internal and external stakeholders to resolve issues and implement solutions. 4. Document processes and technical specifications. 5. Partner with EMS project teams to solve issues associated with integration, environment, configuration, and interfaces. 6. Provides on-the-job training and guidance for colleagues with less experience. 7. Support the development and implementation of new system concepts based on end user needs and input from vendors. 8. Coordinates and performs activities required for metadata model updates, patches, upgrades, hardware, software, configuration changes, etc. *9.* Designs and implements custom EMS system software and scripts to provide custom functionality as needed. 10. Assist in the development and operationalization of procedures and ensure compliance with applicable NERC Standards.
Knowledge / Abilities	Additional required knowledge and abilities include: • Ability to manage time appropriately ina time sensitive operations environment. • Technical writing and documentationskills. • Good understanding of relevant industry EMS systems. • Demonstrated ability and skill to write scripts and develop software. • Excellent listening, communication (written & verbal) and facilitation skills. • Strong interpersonal skills, with proven ability to work collaboratively and develop strong working relationships across various internal and external stakeholder groups. • Ability to support projects of medium complexity. • Ability to provide high quality solutions and end user satisfaction. • Strong technical, analytical, and decision-making skills, with ability to coordinate with others to meet desired work objectives. • Good working knowledge of Power/Transmission Grid Control System and EMS • Good working knowledge and understanding of EMS/Scada Display System and Communication/Control Protocol TCP/IP, ICCP, DNP3, etc. • Have some knowledge of SCADA Modeling, Advance Network Applications and Network modeling
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field
Licenses / Certifications	
Experience	Mastery of the Associate EMS Operations Systems Integration Engineer level job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Career EMS Operations Systems Integration Engineer. Meets specific technical requirements gained through a minimum of three (3) years of cumulative experience in EMS.

	EMS Operations Systems Integration Engineer, Senior (53033360)
Summary	EMS Operations Systems Integration Engineers, Senior provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. Integration Engineers are responsible for a variety of system support functions including troubleshooting, system administration, system integration, hardware architecture design and implementation, creating software requirements and functional specifications, writing custom software, designing and implementing EMS system interfaces, configuration control, user interface design, external system communication, interface configuration (ICCP, databases, FEPs etc.), documentation,

	and project management. EMS Integration Engineers follow all PG&E processes and procedures and collaborates closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. The EMS Integration team collaborates with other EMS teams to ensure the EMS system databases, models, and system parameters are accurate and up to date with the latest modifications to the electric grid, telemetry, and associated systems. Additionally, the team will test and deploy software updates or EMS system configuration changes as needed. EMS Integration Engineers will participate in activities such as meetings, end user support, Training support, or systems support as needed and as directed by EMS management. Travel to Vacaville and/or Rocklin and other PG&E facilities are required to support these team obligations. The Senior EMS Operations Systems Integration Engineer job requires mastery of the career EMS Operations Systems Integration Engineer job duties and is responsible for leading engineering and design of complex projects. Applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Works with limited guidance to complete assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the career level EMS Operations Systems Integration Engineer, and in addition: 1. Applies extensive knowledge of concepts, principles and practices inoperations systems engineering to resolve complex problems. 2. Works with multiple internal and external clients and collaborates extensively with key system users such as Grid Operations. 3. Leading and providing expert guidance on multiple complex projects simultaneously. 4. Ability to identify and self-assign needed enhancements or required changes to meet the end user's needs. 5. Acts as a first-tier of support and mentor to less senior EMS Integration Engineers. 6. Supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums. 7. Provide Subject Matter Expertise and participate in NERC audits and interviews. 8. Establishes methodologies and processes to use with minimal guidance and direction from Leadership or Sr. advisor. 9. Interprets business internal/external issues and recommends best practices. 10. Obtains a good understanding of all EMS functions and applications and provides solutions that cross multiple EMS job functions. 11. Support all NERC CIP related activities including system testing and documentation.
Knowledge / Abilities	Additional required knowledge and abilities include: • Ability to lead projects and provide technical mentorship and coaching toless senior team members. • Knowledge of California and Federal regulatory requirements such as Federal Energy Regulatory Commission (FERC),NERC/CIP, WECC, CPUC, and CAISO. • Proficient at working with others to create system requirements documents, create functional specifications and architectural designs. • Proficient at designing and writing software/scripting e.g.: VBA, Perl, C++, SQL, Oracle, Python, c# .NET, java, etc. • Exceptional written and verbal communication skills. • Excellent Technical writing and documentation skills. • Exceptional organizational skills and ability to work productively in fast-paced, real-time environment, and successfully navigate complex technical scenarios. • Experience implementing projects of high complexity required. • Excellent working knowledge of Power/Transmission Grid Control System and EMS • Excellent working knowledge of EMS/SCADA Display System and Communication/Control Protocol TCP/IP, ICCP, DNP3, etc. • Good knowledge and understanding on SCADA Modeling, Advance Network Applications and Network modeling
Job Qualifications:	
	Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical

Education	field
Licenses / Certifications	
Experience	Mastery of the career level EMS Operations Systems Integration Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior EMS Operations Systems Integration Engineer. Meets specific technical requirements gained through a minimum of eight (8) years of cumulative experience in EMS Operations Systems Integration Engineering.

	EMS Operations Systems Integration Engineer, Sr. Advising (53033361) / Senior Consulting (53035553)
Summary	Senior Advising Integration Engineers provide operational and project related support of the Energy Management System (EMS) which is a critical system for the safe and reliable operation of the PG&E electric transmission system. The EMS team provides 24-hour rotational EMS support for PG&E Grid Operations. Integration Engineers are responsible for a variety of system support functions including troubleshooting, system administration, system integration, hardware architecture design and implementation, creating software requirements and functional specifications, writing custom software, designing and implementing EMS system interfaces, configuration control, user interface design, external system communication, interface configuration (ICCP, databases, FEPs etc.), documentation, and project management. EMS Integration Engineers follow all PG&E processes and procedures and collaborates closely with key stakeholders to ensure systems, software, models, and data are meeting end users' needs. EMS Integration team collaborates with other EMS teams to ensure the EMS system databases, models, and system parameters are accurate and up to date with the latest modifications to the electric grid, telemetry, and associated systems. Additionally, the team will test and deploy software updates or EMS system configuration changes as needed. EMS Integration Engineers will participate in team activities such as meetings, Grid Operations support, Training support, or systems support as needed and as directed by EMS management. Travel to Vacaville and/or Rocklin and other PG&E facilities are required to support these team obligations. The Senior Advising EMS Operations Systems Integration Engineer leads complex engineering projects, is a recognized expert within their area of responsibility, and applies overall EMS function experience, uses extensive knowledge of concepts, principles, and practices to resolve complex EMS problems. Provides technical leadership and coaching on multiple EMS functions. Researches and identifies practical solutions to extraordinarily complex problems. Identifies opportunities and brings in ideas to help improve company performance. Independently completes assignments of broad EMS function scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Able to perform all the duties of the Senior EMS Operations Systems Integration Engineer, and in addition: 1. Acts as Subject Matter Expert (SME) within their area of responsibility. Leads complex projects and provides technical solutions. 2. Acts as a technical role model to EMS engineers. 3. Independently plans, architects, and designs complete complex EMS system solutions and projects. 4. Leads development of department standards, processes, and procedures. 5. Independently identifies, analyzes, and improves existing business processes to meet existing/new goals and objectives. 6. Searches for and discovers practical solutions to highly complex problems. 7. Provides leadership, direction, and assistance to employees and teams. Coaches and develops others. 8. As assigned ensures the cost-effective implementation of the highest priority projects while optimizing capital investments. Manage multi-year budgets and leads multi-year projects for assigned work categories. 9. Conceives and investigates areas in which engineering precedents are not tested and contributes to new designs and techniques that are regarded as major advances

	in the company and/or industry. 10. Leads and supports industry initiatives, including those sponsored by NERC, WECC, CAISO, or other appropriate forums. 11. Ability to work as a team player in a professional environment.
Knowledge / Abilities	Additional required knowledge and abilities include: • Able to influence others to achieve understanding, acceptance, and commitment to act in support of ideas, programs, or causes. • Familiar with commercial/industrial electrical and/or mechanical prints. • Strong understanding of the overall EMS architecture and all areas of EMS functions and applications including SCADA modeling and Advanced Network Applications. • Strong working knowledge and experience EMS/SCADA Modeling, Advance Network Applications and Network modeling
Job Qualifications:	
Education	Bachelor's Degree in Electrical/Computer Engineering, Computer Science, or similar technical field
Licenses / Certifications	Current and active California PE license required for Senior Consulting Engineer Position but not for Senior Advising Engineer position.
Experience	Mastery of the Senior level EMS Operations Systems Integration Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Advising EMS Operations Systems Integration Engineer. Meets specific technical requirements gained through a minimum of thirteen (13) years of cumulative experience in EMS Engineering.

	RAS Operations Engineer, Associate (53033452)
Summary	Remedial Action Schemes (RAS) monitor the electric transmission grid to detect outages and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Operations Engineers provide support of the Remedial Action Schemes (RAS) that are critical systems for the safe and reliable operation of the PG&E electric transmission system. The roles and responsibilities of the team covers two main support structures – (1) support of the San Francisco Remedial Action Scheme (SFRAS) and the 500kV Pacific Intertie Remedial Action Scheme (PACIRAS) systems located at the Vacaville Grid Support Center (VGSC) and the San Francisco Control Center (SFCC) and (2) support of the local RAS and Under-Voltage Load Shedding (UVLS) schemes. RAS Operations Engineers may be responsible for any of the following: troubleshooting, system administration, system integration, hardware and software design and modification, Programmable Logic Controller (PLC) support, configuration control, user interface design, external system communication, documentation, and project management. RAS Operations Engineers follow all PG&E safety rules and maintain equipment in safe conditions while looking for unsafe situations and acting to resolve them. The Associate Engineer is an entry-level Engineer job that works under the general technical direction of more experienced engineers.
Job Duties	Initial assignments from the tasks below will require direction and supervision; with experience the independence and responsibility will expand and the need for supervision will decrease. <u>General Duties</u> 1. Develops knowledge to test, maintain and troubleshoot RAS systems. 2. Investigates/analyzes assigned technical issues under supervision of method, progress,and resources. 3. Applies basic engineering principles and scientific theory tothe various RAS systems and other control systems. 4. Provides real-time technical support to operations centers to analyze and resolve RAS issues. 5. Interacts with internal clients regarding work projects/enhancements or issues. 6. Supports controller programming updates and testing. 7. Supports troubleshooting tasksfor all RAS systems. <u>Centralized RAS Duties</u> 8. Supports day-to-day maintenanceactivities for PACIRAS and SFRAS including outage clearances. 9. Supports RAS HMI (Human Machine Interface) updates, design, andtesting. 10. Supports SMP Gateway updates,design, and testing. 11. Supports NERC-CIP related activities including system testing and documentation. <u>Local Scheme Duties</u> 12. Supports RAS equipment installation/modification project tasks asassigned. 13. Coordinate simpler RAS submittal packages for review/approval by the Reliability Coordinator. 14. Supports NERC-O&P relatedactivities including event analysis and documentation. 15. Evaluates and quantifies risks associated with each RAS/UVLS scheme. 16. Works with various RAS/UVLS Stakeholders to risk rank all schemes.

	17. Supports other departments involved in RAS/UVLS processes.
Knowledge / Abilities	• Ability to follow technical procedures and documentation. • Strong technical and analytical skills. • Excellent written and verbal communication skills. • Ability to take initiative. • Proficient with MS Professional Office Suite (Excel, Access, Word, Visio). • Familiarity with various data communications (IEC 61850 Standard, Generic Object Oriented Substation Events Messaging, Substation Modernization Platform Gateways). • Familiarity with Programmable Logic Controllers and ladder logic. • Familiarity with Visual Basic, C/C++.
Job Qualifications:	
Education	Bachelor's Degree in Electrical Engineering, Computer Science, or similar technical field
Licenses / Certifications	Engineering In Training desired
Experience	1-2 years' experience in RAS systems or power systems or control systems environment. desired. Experience in RAS systems or control systems, AND power systems desired.

	RAS Operations Engineer (53033453)
Summary	Remedial Action Schemes (RAS) monitor the electric transmission grid to detect outages and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Operations Engineers provide support of the Remedial Action Schemes (RAS) that are critical systems for the safe and reliable operation of the PG&E electric transmission system. The roles and responsibilities of the team covers two main support structures – (1) support of the San Francisco Remedial Action Scheme (SFRAS) and the 500kV Pacific Intertie Remedial Action Scheme (PACIRAS) systems located at the Vacaville Grid Support Center (VGSC) and the San Francisco Control Center (SFCC) and (2) support of the local RAS and Under-Voltage Load Shedding (UVLS) schemes. RAS Operations Engineers may be responsible for any of the following: troubleshooting, system administration, system integration, hardware and software design and modification, Programmable Logic Controller (PLC) support, configuration control, user interface design, external system communication, documentation, and project management. RAS Operations Engineers follow all PG&E safety rules and maintain equipment in safe conditions while looking for unsafe situations and acting to resolve them. The journey-level engineer requires mastery of the Associate level engineer skills and duties and is responsible for leading the engineering and design of more complex projects. Uses independent judgment in applying engineering principles, working with minimal supervision. Resolves issues within the incumbent's level of competency; consults more senior engineers on more difficult issues while ensuring critical needs are met quickly and efficiently.
Job Duties	Is able to perform all the duties of the Associate Engineer, and in addition: <u>General Duties</u> 1. Applies engineering principles and techniques to determine cost effective and practical solutions to moderate to complex operational and/or design assignments related to the various RAS systems and other control systems. 2. Acts as a first point of contact for multiple internal and external clients. 3. Maintains relationships with system vendors, contractors, and internal departments; attends interdepartmental meetings. 4. Documents processes and technical specifications for the RAS and/or UVLS system.
Knowledge /	General knowledge/experience of the following:

Abilities	• Remedial Action Schemes, Special Protection Systems, data communications, and network • communications. • WECC/NERC Standards including the compliance aspect of the standards. • Data communications (IEC 61850 Standard, Generic Object Oriented Substation Events • Messaging, Substation Modernization Platform Gateways). • Human Machine Interface design and programming (for example, Indusoft Web Studio). • ICCP with a control center environment. • Programmable Logic Controllers and ladder logic. • Visual Basic, C/C++, or other programming languages • Software testing/integration for real-time systems.
Job Qualifications:	
Education	Bachelor's Degree in Electrical Engineering, Computer Science, or other technical field.
Licenses / Certifications	EIT desired
Experience	Mastery of the Associate level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Journey Level Engineer. Meets specific technical requirements gained through a minimum of three (3) years of cumulative experience in RAS systems or power systems or control systems environment. Experience with Remedial Action Schemes, Under Voltage Load Shedding Schemes, data communications, and/or network communications desired. Experience in RAS systems or control systems, AND power systems desired.

	RAS Operations Engineer, Senior (53033454)
Summary	Remedial Action Schemes (RAS) monitor the electric transmission grid to detect outages and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Operations Engineers provide support of the Remedial Action Schemes (RAS) that are critical systems for the safe and reliable operation of the PG&E electric transmission system. The roles and responsibilities of the team covers two main support structures – (1) support of the San Francisco Remedial Action Scheme (SFRAS) and the 500kV Pacific Intertie Remedial Action Scheme (PACIRAS) systems located at the Vacaville Grid Support Center (VGSC) and the San Francisco Control Center (SFCC) and (2) support of the local RAS and Under-Voltage Load Shedding (UVLS) schemes. RAS Operations Engineers may be responsible for any of the following: troubleshooting, system administration, system integration, hardware and software design and modification, Programmable Logic Controller (PLC) support, configuration control, user interface design, external system communication, documentation, and project management. RAS Operations Engineers follow all PG&E safety rules and maintain equipment in safe conditions while looking for unsafe situations and acting to resolve them. The Senior engineer job requires mastery of the journey engineer job duties and is responsible for leading engineering and design of complex projects. Applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Provides leadership, coaching, technical direction, knowledge transfer and assistance to technical employees and teams. Works with limited guidance to complete assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Is able to perform all the duties of the Associate and Journey Engineer, and in addition: <u>General Duties</u> 1. Applies extensive knowledge of concepts, principles and practices inRAS

	systems engineering to resolvecomplex problems. 2. Manages multiple internal and externalclients. 3. Acts as a first tier of support to less senior engineers. 4. Performs advanced troubleshooting tasks for allRAS systems, e.g., troubleshooting requiring IT department support. 5. Leads evaluation and risk ranking projects/efforts. <u>Centralized RAS Duties</u> 6. Performs advanced troubleshooting tasks for PACIRAS and SFRAS, e.g., troubleshooting requiring IT department support. <u>Local Schemes Duties</u> 7. Lead/coordinate technical activities for local schemes requiring support from various stakeholders, e.g., System Protection, Transmission Planning, Operations departments. 8. Coordinate more complex RAS submittal packages for review/approval by the RC 9. Leads evaluation and risk ranking projects/efforts.
Knowledge / Abilities	• Basic understanding of operations systems, power systems, power flow analysis, power system theory, voltagestability, and transmission planning. • Ability to manage time appropriately ina time sensitive operations environment. • Ability to take the lead, technically, onprojects. • Technical writing and documentationskills • Proficient with MS Professional OfficeSuite (Excel, Access, Word, Visio) • Working knowledge of data communications (IEC 61850 Standard,Generic Object Oriented Substation Events Messaging, Substation Modernization Platform Gateways). • Working knowledge of Intelligent Electronic Device programming andoperation (for example, GE N60 relays). • Proficient with Human Machine Interface design and programming (forexample, Indusoft Web Studio). • Proficient with electrical or telecommunication protection. • Proficient with ICCP within a controlcenter environment. • Proficient with Programmable LogicControllers and ladder logic. • Proficient with Visual Basic, C/C++. • Proficient with software testing/integration for real-timesystems.
Job Qualifications:	
Education	Bachelor's Degree in Electrical Engineering, Computer Science, or other technical field.
Licenses / Certifications	PE desired
Experience	Mastery of the journey level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Engineer. Meets specific technical requirements gained through a minimum of eight (8) years of cumulative experience in RAS systems or power systems or control systems environment. Working knowledge of Remedial Action Schemes, Under Voltage Load Shedding Schemes, data communications, and/or network communications desired. Experience in RAS systems or control systems, AND power systems desired.

	RAS Operations Engineer, Sr. Advising (53033455) / Senior Consulting (53035552)
Summary	Remedial Action Schemes (RAS) monitor the electric transmission grid to detect outages and take appropriate fast remedial actions in order to prevent overloads, unsafe voltage ranges, and out-of-step conditions that could lead to cascading outages. RAS Operations Engineers provide support of the Remedial Action Schemes (RAS) that are critical systems for the safe and reliable operation of the PG&E electric transmission system. The roles and responsibilities of the team covers two main support structures – (1) support of

	the San Francisco Remedial Action Scheme (SFRAS) and the 500kV Pacific Intertie Remedial Action Scheme (PACIRAS) systems located at the Vacaville Grid Support Center (VGSC) and the San Francisco Control Center (SFCC) and (2) support of the local RAS and Under-Voltage Load Shedding (UVLS) schemes. RAS Operations Engineers may be responsible for any of the following: troubleshooting, system administration, system integration, hardware and software design and modification, Programmable Logic Controller (PLC) support, configuration control, user interface design, external system communication, documentation, and project management. RAS Operations Engineers follow all PG&E safety rules and maintain equipment in safe conditions while looking for unsafe situations and acting to resolve them. The Senior Advising Engineer leads complex engineering projects, is a recognized expert within their area of responsibility, and applies extensive knowledge of concepts, principles, and practices to resolve complex problems with only general direction. Provides technical leadership and coaching. Researches and identifies practical solutions to highly complex problems. Identifies opportunities and brings in ideas to help improve company performance. Independently completes assignments of broad scope and complexity with few precedents or standards, and assignments that require integration of information from a variety of sources.
Job Duties	Is able to perform all the duties of the Senior Engineer, and in addition: <u>General Duties</u> 1. Acts as Subject Matter Expert (SME) in one or more RAS systems areas. 2. Leads development of department standards, processes, and procedures. 3. Identifies, analyzes, and improves existing business processes to meet existing/new goals and objectives. 4. Searches for and discovers practical solutions tohighly complex problems. 5. Provides leadership, direction, and assistance to technical employees and teams. Coaches and develops others. 6. As assigned ensures the cost-effective implementation of the highest priority projects while optimizing capital investments. May manage multi-year budgets for assigned work categories. 7. Conceives and investigates areas in which engineering precedents are not tested and contributes to new designs and techniques that are regarded as major advances in the company and/or industry. <u>Centralized RAS Duties</u> 8. Plans, architects, and designs complete RAS systems in development. 9. Takes on a lead role in day-to-day maintenanceactivities for PACIRAS and SFRAS including outage clearances. 10. Takes on a lead role in HMI (Human MachineInterface) updates, design, and testing. 11. Takes on a lead role in controller programmingupdates and testing. 12. Takes on a lead role in SMP Gateway updates,design, and testing.
Knowledge / Abilities	• Advanced understanding of operationssystems, power systems, power flow analysis, power system theory, voltagestability, and transmission planning. • Ability to manage time appropriately in atime sensitive operations environment. • Ability to lead projects and provide technical mentorship and coaching toless senior team members. • Knowledge of California and Federal regulatory requirements such as FederalEnergy Regulatory Commission (FERC),NERC/CIP, WECC, CPUC), and CAISO. • Technical writing and documentationskills • Proficient with MS Professional OfficeSuite (Excel, Access, Word, Visio) • Advance skill with data communications(IEC 61850 Standard, Generic Object Oriented Substation Events Messaging,Substation Modernization Platform Gateways). • Advanced skill with Intelligent Electronic Device programming and operation (for example, GE N60 relays). • Advanced skill with Human Machine Interface design and programming (forexample, Indusoft Web Studio).

	• Advanced skill with electrical ortelecommunication protection. • Advanced skill with ICCP within a controlcenter environment. • Advanced skill with Programmable LogicControllers and ladder logic. • Advanced skill with Visual Basic, C/C++. • Advanced skill with software testing/integration for real-time systems.
Job Qualifications:	
Education	Bachelor's Degree in Electrical Engineering, Computer Science, orother technical field.
Licenses / Certifications	Current and active California PE license required for Senior Consulting Engineer Position but not for Senior Advising Engineer position.
Experience	Mastery of the Senior level Engineer job duties or equivalent and demonstrated knowledge and ability to perform the basic duties of the Senior Advising Engineer. Meets specific technical requirements gained through a minimum of thirteen (13) years of cumulative experience in RAS systems or power systems or control systems environment. Working knowledge of Remedial Action Schemes, Under Voltage Load Shedding Schemes, data communications, and/or network communications desired. PG&E experience in RAS systems or control systems, AND power systems desired.