US DEPARTMENT OF AGRICULTURE

STATEMENT OF WORK

ELECTRICAL SYSTEM REPAIR, SWITCHGEAR REPLACEMENT 2.0

SAN BERNARDINO NATIONAL FOREST

CALIFORNIA

Address:
San Bernardino National Forest Supervisor's Office
602 S. Tippecanoe Ave.
San Bernardino, California 92408

Project Title

Electrical System Repair, Switchgear Replacement 2.0
San Bernardino National Forest - Supervisor's Office

General Information

1.0 Background and Purpose

A catastrophic arc-flash event occurred within the bus duct connection between the Southern California Edison (SCE) substation main feeders and the Forest Service's 5 kV, 2000-amp Main Distribution Switchgear main circuit breaker point of connection. The incident was triggered by rodent intrusion, which compromised insulation integrity and initiated the fault.

Subsequent inspection revealed that the existing switchgear was in a deteriorated and poorly maintained condition. The arc-flash caused extensive smoke damage to the main circuit breaker and adjacent cubicles, and a significant number of bus support insulators were found to be damaged and require full replacement. The overall condition of the equipment renders it unsafe, unreliable, and unsuitable for continued operation.

The existing switchgear, due to its old age, has no records or documentation available, except for the Single Line Diagram (SLD) of the facility. Existing panel schedules of the facility are available but not updated

The purpose of this project is to remove the existing damaged switchgear and install a new main distribution switchgear. The contractor shall provide all labor, materials, tools, permits, drawings, and equipment necessary to complete the work and shall protect all existing facilities and equipment throughout the duration of construction.

1.1 Period of Performance

The period of performance for this project shall be 365 calendar days from the date of issuance of the Notice to Proceed (NTP). Estimated start date is 10 days after award.

2.0 Definitions

ATS - Automatic Transfer Switch
BAA - Buy American Act
BLDG. - Building
CO - Contracting Officer
COR - Contracting Officer's Representative
ESR - Electrical Service Requirement
GACC - Geographic Area Coordination Center
IEEE - International Electrical and Electronics Engineers
LOTO - Lockout/Tagout
MV - Medium-Voltage
NEMA - National Electrical Manufacturers Association
NFPA - National Fire Protection Agency
SCE - Southern California Edison
SLD - Single Line Diagram
SOW - Statement of Work
USFS - United States Forest Service

Contractor Requirements

3.0 Technical Requirements / Tasks

The contractor shall remove the existing outdoor 5 kV, 2000-amp main switchgear and replace it with a new, modern metal-clad switchgear assembly.

The new assembly shall incorporate digital thermal sensors, optical detection systems, and predictive - analytics - based condition monitoring to enhance operational safety, reliability, and efficiency. These technologies shall provide real-time fault detection, equipment health diagnostics, and automated alerts to support proactive maintenance and reduce system downtime.

The contractor is solely responsible for all utility coordination, shutdown approvals, and power restoration with the Southern California Edison (SCE).

3.1 Statement of Work (SOW)

3.1.1 Pre-Construction Assessment and Full Replacement of old switchgear

a. Inspect and evaluate the existing system including all existing electrical drawings, single line diagram and electrical infrastructure of the facility.

b. There are no documented records of the old switchgear including three-line electrical drawings and control schemes.

c. The new switchgear shall meet current safety and capacity requirements of the existing facility load.

3.1.1.2 Comprehensive Power System Engineering Study and Analysis

i. Provide comprehensive power-system engineering studies to ensure safety, reliability, and full regulatory compliance. Required analyses include a Short-Circuit Analysis, Protective Device Coordination Study, and Arc Flash Hazard Analysis.

ii. In addition, the contractor shall perform load-flow analysis, ground-grid design verification, and physical space and clearance assessments to confirm that the new equipment will integrate safely and effectively with existing site conditions. All engineering work shall be performed, signed, and sealed by a Professional Electrical Engineer (Power) licensed in the State of California.

iii. Safely disconnect and subsequently reconnect both emergency generators, including the associated step-down transformer, automatic transfer switch, and all feeder and control cabling serving the building. All work shall be performed in a manner that maintains system integrity, protects critical loads, and ensures compliance with applicable electrical safety standards.

iv. The contractor shall complete all disconnection activities prior to removal of the existing switchgear and shall perform all reconnection, testing, and functional verification following installation of the new switchgear. Coordination with the local forest unit with the connection and disconnection of the prime generator is mandatory to ensure proper sequencing, operational continuity, and adherence to site-specific requirements.

3.1.2 Demolition, Abatement, Removal and Disposal of Hazardous Materials

a. Disconnect, remove, and properly dispose of the existing 5-kV, 2000-amp switchgear assembly, including all associated components. If required, perform asbestos abatement for legacy materials such as sealants, insulation, and cables. Prior to any disturbance of suspect materials, the contractor shall conduct hazardous material sampling and testing. If hazardous materials are identified, contact the Contracting Officer prior to any abatement/removal work. All abatement shall be performed in full compliance with applicable State and Federal regulations. All hazardous materials shall be classified, handled, packaged, transported, and disposed of off National Forest lands at an approved disposal facility.

b. Contractors transporting hazardous waste must maintain current State registration for hazardous-waste hauling. If abatement is required, the contractor or subcontractor shall maintain the current 40-hour HAZWOPER certification, and all asbestos-related work shall be performed by a California-certified asbestos abatement contractor. Disposal documentation, including weight tickets and manifests, shall be submitted to the Contracting Officer for each load and must clearly identify the project site as the point of origin. The contractor is responsible for all associated waste-handling and disposal fees.

c. Dispose of all oil-filled and other hazardous components in full compliance with applicable California environmental regulations. The contractor shall properly identify, manage, handle, package, transport, and dispose of hazardous materials in accordance with State and Federal requirements. All disposal activities must be documented, and records shall be submitted to the Contracting Officer.

d. Safely disconnect, identify, and clearly label all existing cables prior to removal or reconnection activities. Labeling shall be durable, legible, and consistent with industry standards to ensure accurate re-termination, system integrity, and safe commissioning of the new equipment.

3.1.3 Site Preparation

a. Provide all necessary excavation, concrete-pad repair, and trenching required to accommodate new conduit feeds if existing cable lengths are insufficient to reach the new switchgear. The contractor shall utilize the existing concrete pad for installation of the new outdoor switchgear. Any modifications to the pad are anticipated to be minimal; however, the contractor is responsible for verifying pad condition, making any required repairs, and ensuring full compliance with equipment manufacturer requirements. Although no trenching is currently anticipated due to the intent to reuse existing cables in place, the contractor shall be prepared to perform trenching if field conditions require it.

b. Prepare the existing foundation and concrete pad to receive the new switchgear. The contractor shall verify pad dimensions, elevation, structural integrity, and anchorage compatibility with the new equipment. Any required surface preparation, leveling, patching, or minor repairs shall be performed to ensure full compliance with manufacturer installation requirements. The existing step-up transformer and standby emergency generator shall remain in place and shall be protected throughout all construction activities.

3.1.4 Installation:

Set new, NEMA 3R (outdoor) rated 5KV, 2000-amp metal-clad switchgear.

a. Terminate existing medium-voltage (MV) cables. Provide new medium-voltage (MV) cables if the existing cables do not reach, terminate or configure with the new Switchgear. Ensure correct torque and sealing for outdoor conditions.

   The Government intends to reuse the existing medium-voltage feeder cables where feasible. Replace if existing MV feeders could no longer terminate in the new switchgear.

   Any modifications to feeder connections and splicing operations must follow the National Electrical Code (NEC) and undergo review to verify that the extended system maintains its required ampacity and fault-withstand ratings.

   There are no existing cable testing reports, megger results, or prior maintenance reports available for review. Contractor to perform cable test and megger test.

   Ensure new installation meets local codes and safety standards (NFPA 70E).

b. Manufacturer Support: The contractor shall coordinate with the switchgear manufacturer to provide a factory-trained field technician on-site for a period of three to five days during installation and startup. The technician shall support installation activities and assist with full system commissioning to ensure proper integration and compliance with manufacturer's requirements. (Spec. 261326)

3.1.5 Testing and Commissioning

a. Perform rigorous testing and commissioning of the new switchgear in strict adherence to all regulatory, safety, and compliance standards referenced in Section 3.4 "Common Regulatory and Compliance" of the SOW. Required testing shall include, at a minimum, megger insulation-resistance testing (with a minimum acceptable value of 1 megohm), verification of the key-interlock system, and programming, configuration, and functional testing of all protective relays in accordance with the approved protective device coordination study.

b. Test Standby Generator with new Switchgear

c. Qualified Personnel:

All work shall be performed by qualified personnel with appropriate credentials and experience.

i. Electrical Engineering and assessment shall be performed by a Licensed Professional Electrical Engineer (Licensed in Power with the State of California) and electrical work must be performed by certified High-voltage electricians (Class C-10 in California).
ii. NETA-certified technician performs complete inspection and tests to ensure compliance and standards.
iii. Comprehensive Engineering Study and Analysis performed by a Licensed Professional Electrical Engineer (State of California).

d. Safety Standards: Compliance with NFPA 70 (NEC) and OSHA standards.

e. Lockout/Tagout (LOTO): Strictly follow LOTO procedures to disconnect all service-entrance conductors.

3.2 Contractual & Procurement Elements

Lead Time/Logistics: Medium voltage equipment often has long lead times; contractors must account for supply chain delays. The contractor shall account for these conditions when developing the project schedule and shall proactively manage all equipment logistics to ensure timely delivery, coordination, and installation. Any anticipated delays shall be communicated to the Government immediately, along with proposed mitigation measures.

3.2.1 Submittals:

a. The contractor shall prepare and submit complete shop drawings and submittal packages for the new switchgear installation. All submittals shall be reviewed, approved, signed, and sealed by a Professional Electrical Engineer (Power) licensed in the State of California prior to submission.

b. Approval from Southern California Edison (SCE) and the U.S. Forest Service is required before procurement or fabrication of the new switchgear may begin. No equipment shall be purchased, released for manufacture, or delivered to the site until all required approvals have been obtained.

3.3 Post-Installation

a. Update all electrical schematics and labeling to reflect the new system configuration. Provide a fully updated single-line diagram (SLD) of the facility's electrical distribution system, incorporating all new equipment, cable identifications, protective devices, and interconnections. Deliverables shall include three hard-copy sets and one electronic PDF copy.

b. The contractor shall provide a complete set of Operation and Maintenance manuals for all installed equipment, including recommended maintenance intervals, detailed troubleshooting procedures, and manufacturer service instructions. As part of this package, the contractor shall also furnish a comprehensive maintenance schedule for the Forest Service, outlining routine inspections, preventive maintenance tasks, testing frequencies, and any actions required to maintain long-term equipment performance and warranty compliance. All documentation shall be submitted as part of project closeout and approved by the Government prior to final acceptance.

c. Ensure that all disturbed areas have been restored to original condition or better, and all debris, waste materials, and unused equipment have been removed from the site.

d. Contractor shall be responsible for acquiring the necessary local building and utility Southern California Edison (SCE) electrical permits and inspections. No work shall proceed without the required permits and documented approvals.

e. The contractor shall coordinate the reconnection of utility power with Southern California Edison (SCE) and the U.S. Forest Service. All scheduling, notifications, required inspections, and utility interface activities shall be managed by the contractor to ensure a safe, orderly, and compliant restoration of permanent power service.

3.4 Common Regulatory & Compliance

a. Standards: IEEE C37.04 (Rating Structure), IEEE C37.06 (AC Breakers), IEEE C37.11 (Control), NEMA SG5 (Power Switchgear Assemblies). IEEE and NEMA standards, including IEEE C37.20.2 for metal-clad switchgear and IEEE 37.59-2018 for replacing old switchgear and breakers in California

b. Southern California Edison Transmission and Distribution Electrical Service Requirement (ESR) 2025 – Fourth Quarter Issue

c. Interlocks: Key interlock systems shall be provided as standard safety features, ensuring proper sequencing of operations and preventing access to energized components or unsafe switching conditions.
d. NEC – National Electrical Code (NFPA 70)
e. NFPA 70E – The Standard for Electrical Safety in the Workplace
f. Cal/OSHA – Occupational Safety and Health Administration
g. NFPA 110- Operational Codes for Prime Power systems including maintenance, testing and fuel quality standards.
h. NETA ATS (Acceptance Testing Specifications). The industry standard for new equipment installation.

4.0 Additional Scope Information

1. Specification 024116 – Structure Demolition
2. Specifications 260010 - Supplemental Requirements for Electrical
3. Specifications 260011 – Facility Performance Requirements for Electrical
4. Specifications 260513 – Medium-Voltage Cables
5. Specifications 260526 – Grounding and Bonding for Electrical Systems
6. Specifications 260573 – Power System Studies
7. Specifications 261326 – Medium-Voltage Metal-Clad Switchgear

5.0 Deliverable / Schedule

Deliverable	Objective	Due
Contractor Submittal Package	As part of the contractor's quote, the contractor shall provide a comprehensive submittal package which, at a minimum, shall include • **Proposed Schedule** — A preliminary project schedule identifying major milestones, procurement activities, installation phases, testing, commissioning, and closeout. • **Items to Be Installed** — A complete listing of all equipment, materials, and components proposed for installation. • **Work to Be Performed** — A concise description of all tasks the contractor will perform to complete the project. • **Equipment to Be Used** — A list of all major equipment, tools, and machinery the contractor intends to use during the work. • **Switchgear Lead Time** — The contractor shall provide manufacturer-verified lead times for fabrication, delivery, and shipment of the switchgear. Documentation must be current and supported by the manufacturer or authorized distributor. No substitutions or alternate equipment shall be permitted after award without written approval from the Contracting Officer.	With quote submission.
Submittals	**Submittal Requirements:** The contractor shall submit all required proposed project plans, engineering studies, design drawings, and all other associated administrative documentation / submittals to the U.S. Forest Service for review and approval. These submittals shall be complete, accurate, and prepared under the responsible charge of a California-licensed Professional Electrical Engineer (Power). No procurement, fabrication, or field work related to the switchgear installation may begin until all required submittals have been reviewed, approved, and accepted by the Government. **Dig Permit Requirements:** The contractor shall identify whether any excavation, trenching, or subsurface disturbance is required for the installation. If excavation is necessary, the contractor shall determine whether dig permits or utility-locate services are required and shall obtain all such permits prior to beginning any ground-disturbing activities.	

Conclusion	Final acceptance is granted only after the Government verifies that all requirements have been met and all documentation has been received. No later than five (5) calendar days after completion of installation and final acceptance by all parties, the contractor shall submit all remaining closeout deliverables.

6.0 Warranty Information

Warranty Coverage:

The contractor shall provide a comprehensive warranty covering all labor, installation services, workmanship, and materials furnished under this contract. The warranty shall ensure that all installed equipment, components, and systems perform in accordance with manufacturer specifications, industry standards, and the requirements of this Statement of Work. The warranty shall include correction of defects, failures, or deficiencies arising from improper installation, workmanship, or failure to comply with contract requirements. The contractor shall provide an explicit statement identifying the warranty response timeline and which warranty services are provided at no cost and any conditions under which costs may be incurred.

Warranty Period:

The warranty period shall begin upon final acceptance of the completed work by the U.S. Forest Service and shall remain in effect for a minimum of one (1) year, unless the manufacturer provides a longer warranty period for specific equipment, in which case the longer period shall apply. Manufacturer warranties shall run concurrently and shall not limit or reduce the contractor's obligations.

Manufacturer Certifications:

Documentation from the switchgear manufacturer confirming proper installation, configuration, and commissioning.

7.0 Travel

The Government shall not reimburse the contractor for any travel-related costs associated with mobilization to or from the project site. All travel expenses are the sole responsibility of the contractor.

8.0 Security Requirements

Contact USDA Forest Service SBNF SO POC for security requirements and access to the facility.