STATEMENT OF WORK

VA Gulf Coast Veteran's Healthcare System - Biloxi, Mississippi
Grid Tied Solar PV System

The Department of Veterans Affairs (VA) intends to procure solar photovoltaic (PV) systems as an Open Market Construction project at the VA Gulf Coast Veteran's Healthcare System, Biloxi, Mississippi, 39531.

The VA has chosen to pursue the following sites:
- Site 1: Carport Structure at Surface Parking Lot Adjacent to Biloxi Parking Garage Building 28
- Site 2: Building 25 Electric Scooter Charging Stations
- Site 3: Building 14 Roof Top

Figure 1 (Appendix B) displays the potential photovoltaic (PV) at the surface parking lot area adjacent to Building 28 parking garage, the scooter charging stations at Building 25 and the roof top of Building 14. A detailed proposal shall be submitted for each indicated area. The proposal shall provide the calculated total DC and AC kW power output generated for each site. The optimal configuration of areas and sizes of PV power (DC & AC rating) shall be proposed by the contractor and the successful contractor shall be based on the Solar PV System which provides the best economic returns for the VA on the basis of dollars per kW AC output. The total combined AC power output for Sites 1-3 shall be at minimum 450**kW AC**.

1. Description of Work

1.1 Site Descriptions

This work involves the complete design, engineering and construction of a fully functioning Solar PV Power system including, but not limited to the equipment selection, carport structures, permitting, bonding and construction of a photovoltaic system.

The proposal shall describe how solar power is interconnected to the Biloxi, VAMC campus electrical distribution system. Contractor shall assess the proposed site areas, and provide construction details and plans to ensure topographical conditions are suitable for the proposed construction. The plan shall at a minimum, identify the array plan view, possible shadow zones, inverter/transformer locations, carport spacing, number of affected parking spaces, carport structural details, mounting details and (above and below grade) wire routing. All site preparation work shall be accomplished by the contractor and schedules shall be approved by the government Project Manager and Contracting Officer's Representative (COR) prior to commencing work.

SITE 1: SURFACE PARKING LOT – ADJACENT TO PARKING GARAGE

The surface parking lot adjacent to the parking garage is constructed of asphalt pavement and concrete traffic islands to control traffic movement and to contain landscaping. The parking lot has 2- lane traffic between parking bays that are all striped perpendicular to the traffic lanes. The parking lot has trees along the perimeter and in several of the traffic islands. The trees located in traffic islands adjacent to the proposed canopies are to be removed and hauled off site. Tree stumps and roots are to be grinded to a minimum of 6 inches below existing grade. The intent for Site 1 is to have carport structures built at the locations shown in Figure 1. The carports are to be double cantilevered steel framed structures and have a metal standing seam roof. The solar module arrays will attach to the metal standing seams using a conventional rail system. The steel frame is to be painted white and the standing seam roof is to be red so as to match the color of the covered canopies recently constructed at the Biloxi VAMC.

The electric power generated by this Solar PV system may be supplied to the closest switchgear with available capacity that connects to the Facility distribution system near the parking lot areas.

While it is expected that one of the parking lots will be used as a laydown area, the Contractor shall coordinate with the COR and the Facility Manager for proper phasing of the work in order not to hinder and aggravate traffic and parking conditions at the VA Gulf Coast Veteran's Health Care System.

SITE 2: BUILDING 25 ELECTRIC SCOOTER CHARGING STATION AREA

The intent is for a steel framed structure to be constructed which covers the 7 spaces at the existing electric scooter charging station area located at Building 25. The work at site 3 is to construct the steel framed structure at this location as shown in Figure 1 and attach solar modules on the roof canopy and connect to the grid. The steel structured canopy is to be anchored into the concrete footings that exist at this location. The steel framed structure is to be painted white and is to have a reddish colored metal standing seam roof that matches the covered walkways recently constructed at the Biloxi VA.

SITE 3: BUILDING 14 ROOF TOP

The intent is for a PV rail system to attach to the standing metal seams of the existing roof of Building 14. It is proposed to locate the inverters and combiners in the conditioned attic space of Building 14 and to tie the solar power into the grid at the nearest transformer to this location.

The final system configuration shall allow automatic operation without operator intervention. System design and equipment specifications shall minimize maintenance requirements. It is the intention of the VA to connect this PV main metering system into a nation-wide meter data aggregation system in the future. Metering systems which facilitate interconnection with this data aggregation system will be preferred. Meters such as the ION 7650/7550 for AC or similar are recommended. The contractor will be responsible for interconnecting with the existing system for data transfer. The system shall have Main Metering capabilities for each individual site. In addition, metering shall be provided to monitor performance of the arrays within each site, with the data to be used by facility personnel. This metering shall measure the output of each combiner box, and may be located at each re-combiner box. This monitoring is for the purpose of tracking performance and alarming conditions of individual arrays that are under-performing.
Performance shall be logged every 15 minutes. This monitoring shall be connected to existing VA local metering system via a wired RS485 and if necessary a fiber connection to all re-combiner boxes.

The PV metering system shall be connected into the VA Corporate-Wide Advanced Utility Metering Database (proprietary Schneider System). Metering systems which interconnect with this system shall be required. Meters such as the Power Logic ION units for AC or similar are recommended. Campus has an existing metering system in place which has an interconnection with the VA National metering system.
The contractor will be responsible for interconnecting with the existing system for data transfer. The system shall have Main Metering capabilities for each individual site.

1.2 System Requirements

a. Main Individual Site Metering system shall:
    1. Be revenue grade (ANSI C12.20 - 0.2)
    2. Comply with EN50160, EC 61000-4-30 Class A, and IEEE 1159
    3. Be capable of disturbance direction detection
    4. Contain at least 5MB of onboard memory with data logging and event recording

capacity to account for network outages and downtime.

5. Contain a minimum of 5 digital inputs
6. Contain multiple electromechanical and solid-state outputs to allow a high level of integration with 3rd party devices and systems.
7. Include LAN (Ethernet or wireless) connectivity which allows remote monitoring and troubleshooting and for connection with the VA utility metering data aggregation system.

8. Collect and transmit system performance data to include at a minimum solar irradiance, DC power, AC real power, AC current, AC voltage, and power factor; ambient air temperature, PV cell temperature and AC energy produced (hourly, daily, monthly, yearly). Logging shall be recorded in 15 minute intervals.

9. Provide remote monitoring of real-time system performance data (as outlined above) on a web-based portal. All service fees associated with data collection, transmission, monitoring, and hosting shall be borne by the contractor for a period of five years from system startup.
10. The successful contractor will integrate new meters with the VA Campus-Wide Siemens Desigo Management System such that all meters will be displayed at all Siemens workstations for display and monitoring. Contractor will provide additional Siemens panels as required for connection.
11. Be capable of integration with the VA Corporate-Wide Advanced Utility Metering Database located at the Schneider Electric facility located in St. Louis, Mo. Contractor will be responsible of coordinating this effort with the Successful Contractor awarded the contract for integrating existing meters at all VA facilities nationwide. That successful contractor will be identified prior to installation of metering system.

b. Combiner Box Metering system shall:

1. Monitoring instantaneous and average DC current of each combiner box.
2. Capable of reporting individual, total and average of each combiner box every 15 minutes
3. Capable of setting alarming points for out of range performance.
4. Accuracy of +/- 1%
5. Communicate via a two wire RS485 Modbus to local VA Data Acquisition Metering (DAS) Automatic Metering System (AMR).
6. Capable of being viewed on web based portal
7. RS485 terminals shall be electrically isolated for safety
8. Current Transformers (CTs) capable of measuring the full output of each combiner box
9. Suitable for outdoor installation in NEMA cabinet and cooling fans provided if needed for circuitry protection.
10. Reporting of Printed Circuit Board (PCB) Temperature
11. System shall be capable of economically reporting all combiner box parameters every 15 minute and retaining information for at least 5 years.
12. Metering logging and communication may be independent from the Main Individual Site Metering system.

1.3 Building Kiosk

The four solar PV sites shall be connected to the existing Kiosk (42 inch flat screen) for the purpose of public awareness located in the main first floor lobby area of Building 30. The system shall provide at a minimum Main Individual Site metering for real time information showing the total power and energy produced by all the solar arrays (KW, KW-HR, BTU) for hourly, daily, weekly, monthly, yearly and over the system life time in tabular and graphic form. The system shall provide educational information including site system pictures about solar power energy and the benefits, the reduction of greenhouse gases, reduction of fossil fuels, CO2 emissions and imported oils. The system shall display the information on the existing 42” wall mounted flat screen system. A separate interface device (mouse/keypad) may be located nearby for accessing specific screens for additional information and details. The system shall also capture the data currently logged by any existing VA Hot Water Solar Data Acquisition Systems (DAS) at the site. Any existing hot water DAS data can be transferred via a comma delimited file every 15 minutes for interfacing with the Kiosk system. The Kiosk and metering system data shall be stored and archived in a data base

that can be downloaded by the VA. The format and display shall be submitted for review and approval.

1.4 Contractor

Requirements: The

Contractor Shall:

1. Be solely responsible for compliance to federal, state and local Safety (OSHA, etc.), International Building Codes, Life and Fire Safety (NFPA, etc.) and Environmental (EPA, etc.) rules and regulations. Contractor shall submit all required programs, plans and documents with respect to regulatory compliance (Project Specific Safety Plan, etc.).
2. Be solely responsible for the verification of existing conditions ensuring to ascertain the site conditions that may affect required equipment clearances, electrical, metering, control and mechanical requirements of the contract;
3. The contractor shall comply with, review, and incorporate any interconnection agreements, utility-required disconnects, and utility-grade meters into this project.
4. The contractor shall assist the Medical Center Energy Manager to apply for and obtain the maximum applicable state grants or incentives for a photovoltaic construction for their site from the local utility provider, Mississippi Power Company. Contractor shall pay any application fee(s) for Mississippi Power rebate(s) and will be reimbursed after completion of the project.
5. Determine the techniques, means, method, and materials of construction to meet the requirements of this contract and provide a proposal to accomplish the work described herein.
6. Provide all labor, materials, equipment, supervision and management required to implement the proposal and to provide a fully operational system.
7. Provide all general construction work. Any structural and architectural work must be approved by the VA's Contracting Officer's Representative (COR) prior to construction. Also Contractor shall comply with local and V.A. building code requirements and have a Mississippi-licensed Structural Engineer review and stamp solar construction plans and specifications.
8. Coordinate with VA and local authorities to minimize pedestrian and traffic disruptions during delivery and construction.
9. Provide manufacturer start-up, testing and document final operation.
10. Provide as-built documentation, record drawings, Operation and Maintenance (O&M) manuals and operator training.
11. PV modules shall have minimum 20-year limited warranty that modules will generate not less than 80% of rated output under Standard Test Conditions (STC). PV modules that do not satisfy this warranty condition for any reason shall be replaced within two (2) weeks. Warranties on any replacement PV modules shall be for 20 years from date of replacement. The respective shippers shall prepay shipping costs in each direction. Panels shall be part on the CEC list of approved modules.
12. All PV systems shall carry a five-year warranty from both the manufacturer and the installer, including parts and labor. Warranty shall start on the date of Substantial Completion.
13. Provide the VA a complete turn-key, commissioned and warranted system as outlined in this contract.
14. Design of solar PV system of sites will include that the system automatically senses **any** loss of utility or start-up of the generators and disconnects the Solar PV inverters during any operation of the emergency generators. The Solar PV system is required to re-connect to the power grid by manual means only.

2. Technical Requirements

The contractor is solely responsible for determining the techniques, means, methods, and materials of construction to meet the requirements of this contract. All work shall comply with OSHA, VA Specifications and local code requirements including seismic

requirements. VA Specifications shall be used and can be located at the following link: http://www.cfm.va.gov/til/spec.asp. All products that are listed, tested, identified, or labeled by Underwriters Laboratories (UL), Factory Mutual (FM), Edison Testing Laboratories (ETL), or other National Testing Organization shall be used when available. With Contracting Officer approval, non-listed products are only permitted when listing does not exist. Disconnects and switches shall be DC rated when used in DC applications.

The inverter(s) disconnects and associated electrical equipment must be located in an accessible area, weather-protected and secure. Disconnects and over-current devices shall be mounted in approved boxes, enclosures, or panel boards. Metal enclosures/boxes shall be bonded to the grounding conductor. An electrical meter with built-in modem shall be provided that is capable of recording kWh produced by the PV system and instantaneous kW of the system.

Transformers, if required, shall have an efficiency of greater than 97%. Transformers shall be housed in a NEMA 3R enclosure.

Inverters shall be UL 1741 Certified. Inverters shall have a minimum 15-year warranty. Inverters shall not be located in direct sun.

The proposed carport structure shall be a double cantilevered (Site 1 only) structure for modules located on the surface parking lot area. The proposed carport components shall be constructed of industrial /commercial grade materials properly rated, protected and suitable for the application. Structural calculations and carport design shall be submitted to VA for approval prior to final design.

The PV carports shall not affect typical traffic ingress and egress to the parking areas and minimize the loss of parking spaces to accommodate the structure. Under canopy (LED or Induction) lighting shall be installed to suitably illuminate the covered parking areas during night time hours. Minimum canopy vehicle clearance heights shall be explicitly identified in the proposal and approved by VA prior to final design and construction. The carport structures shall have a metal standing seam type roof which the module rail system shall be attached to. The standing seam type roof shall be a reddish color to best match the color of the covered canopy walkways existing at the Biloxi VA Medical Center. The steel for the car port structures shall be painted white to match the color of the post and beam construction of the covered walkways.

The PV solar panel mounting structure shall be corrosion-resistant.

NOTE: The contractor shall stage all contract work with the COR and Engineering representative to minimize system downtime (i.e. electrical shutdown). Any system downtime (i.e. electrical shutdown) shall be scheduled during weekends and/or after business hours. Downtimes shall be approved by the COR and Engineering representative at least two weeks prior to the shutdown. Coordinate all work with the COR and Engineering representative.

3. Roles and Responsibilities

a. **Documentation:** The Department of Veterans Affairs (VA) COR will provide the contractor with *copies of existing site documents based upon availability and need.*

   The contractor shall request other government documentation deemed pertinent to the work accomplishment directly from the COR. The contractor shall consider the COR as the final source for needed government documentation when the contractor fails to secure the documents by other means. The contractor is expected to use common knowledge and resourcefulness in securing all other reference materials, standard industry publications, and related materials that are pertinent to the work.

b. **Communications:** The contractor shall maintain frequent communications with the COR and other designated Veterans Health Administration (VHA) staff and the VA Team to

conduct work in progress reviews. Progress reports shall be delivered to the COR and other authorized assigned VA representative or designee on a monthly basis via electronic mail.

c. **Credits/Incentives or Grants:** VA will retain all REC (Renewable Energy Credits), Incentives and/or associated with the scope of work in this solicitation.

4. Contractor Requirements, Confidentiality and Non-Disclosure

a. The contractor shall follow all Government rules and regulations regarding information security to prevent disclosure of sensitive information to unauthorized individuals or organizations.

b. Contractor staff and management may have access to some privileged and confidential materials of the United States Government such as budget and strategic plans. Theseprinted and electronic documents are for internal use only, are not to be copied or released without permission, and remain the sole property of the United States Government. Some of these materials may be protected by the Privacy Act of 1974 (revised by PL 93-5791) and Title 18. Unauthorized disclosure of Privacy Act or Title 18 covered materials is a criminal offense.

c. Regulatory standard of conduct governs all personnel directly and indirectly involved in procurements. All personnel engaged in procurement and related activities shall conduct business in a manner above reproach and, except as authorized by statute or regulation, with complete impartiality and with preferential treatment for none. The general rule is to avoid strictly any conflict of interest or even the appearance of a conflict of interest in Government- contractor relationships.

5. Other Personnel Considerations

a. Personnel assigned by the contractor to the performance of work on this contract shall be acceptable to VA in terms of personal and professional conduct and technical knowledge. Should the assignment to this contract of any person by the contractor be deemed to conflict with the interests of VA, or in the event performance is deemed to be unsatisfactory at any time during the life of the contract, the Contracting Officer may notify the contractor and request the person be immediately removed from the assignment. The reason for removal will be documented and a request to receive personnel replacement within three (3) business days of the notification will be made. Replacement personnel qualifications shall be equal to or greater than those of the personnel being replaced. Employment and staffing difficulties will not be justification for failure to meet established schedules.

b. The contractor must notify Veterans Health Administration (VHA) ten (10) calendar days in advance and the Project Manager (PM) and COR will approve or reject new proposed contractor key personnel for the performance of this contract. The contractor shall submit a resume of qualifications and the Contractor Personnel Change Control form to the PM and COR and all other direct employees proposed for the project. The PM and COR will approve all contractor employees prior to bringing on duty via Contractor Personnel Change Request Form, at any time from date of award to the end of the contract, contractor personnel are no longer available, the VHA will approve the qualifications of proposed replacement personnel and will reject individuals who do not meet the qualifications set forth herein. All contractor employees are subject to immediate removal from performance of this contract when they are involved in a violation of the law, VA security, confidentiality requirements, and/or other disciplinary reasons.

6. Deliverables – Submittals – Schedules:

6.1 Contractor shall submit the following construction documentation and all catalog material to

the COR for approval *before a notice to proceed is issued* by the Contracting Officer. Submissions shall include:

1. Provide a schedule that demonstrates complete fulfillment of all contract requirements. The schedule shall include milestone dates, including equipment ordering and delivery dates, activity start and end dates, man-loading estimates, and activity description. The schedule shall be submitted as part of the design and shall be approved prior to receiving the notice to proceed. An updated schedule shall be submitted prior to progress meetings as work progresses.

6.2 Contractor shall submit all permits associated with the construction project prior to receiving notice to proceed.The following submittals shall be approved *prior to ordering any equipment*:

1. Manufacturer's complete technical literature for the selected panel, including net peak capacity;
2. Inverter, including required DC voltage and how the proposed PV arrays will operate within the Maximum Power Point (MPP) of the inverter at different cell temperatures using Keesler AFB, MS weather data.
3. All submittals will be provided to the VA COR electronically and are to be downloaded from the contractor's managed ftp site.

6.3 Individual panels shall be tested *prior to construction on mounts*. Record open-circuit voltage and short-circuit current for each panel. Submit these test results to the COR.

6.4 Provide 50% and 100% construction designs for approval. All final construction designs shall be reviewed and approved by the government COR. The drawing submissions will be CAD-based and include specific locations, routings, etc., typical of a construction submission.

6.5 After award Contractor shall submit:

1. **Performance and Payment Bonds** – Due to VA *10 Calendar Days after award*.
2. **Proof of Insurance** – Due to VA *10 Calendar Days after award*.
3. **Submit quality control, safety, and environmental plans**.
    a. *Contractor Quality Control Plan (CQCP)*: The contractor shall develop a quality control plan and *shall furnish to VA for review no later than 30 calendar days after the receipt of notice to proceed*. The plan shall identify personnel, procedures, control, instructions, tests, records, and forms to be used. VA will consider an interim plan for the first 45 calendar days of operation. Construction will be permitted to begin only after acceptance of the CQCP or acceptance of an interim plan applicable to the particular feature of the work to be started. Work outside of the features of the work included in an accepted interim plan will not be permitted to begin until acceptance of a CQCP or another interim plan containing the additional features of the work to be started. After acceptance of the CQCP, the Contractor shall notify the Contracting Officer's Representative in writing of any proposed change. Proposed changes are subject to acceptance by the Contracting Officer.
    b. *Safety Plan*: Comprehensive safety plan shall be implemented by the Contractor to eliminate injuries occurring relative to providing the design and construction services for this project. *Construction will be permitted to begin only after VA's acceptance of the Safety Plan.* Contractor is responsible for providing enough project lead time to allow for VA review of Safety Plan before acceptance. The Department of Labor OSHA requires that all Contractors involved in construction on VA owned or leased property comply with the Incorporation of General Industry Safety and Health Standards applicable to Construction Work and Technical Amendments, Final Rule 29 CFR Parts 1910 and 1926 as published in the Federal Register Volume 58, No. 124, June 30, 1993. In addition, any Contractor that performs construction type work on any VA project as defined by the Scope of the referenced regulation is required to; (1) Provide and maintain his own protective equipment and devices, etc; and (2) Require all sub-contractors used on site to follow these same provisions in the regulation.
    c. *Environmental Plan*: Comprehensive environmental plan shall be implemented by the Contractor to prevent environmental pollution during, and as result of,

construction operations under this contract. *Construction will be permitted to begin only after VA's acceptance of the Environmental Plan.* Contractor is responsible for providing enough project lead time to allow for VA review of Safety Plan before acceptance. The plan shall include the identification and resolution of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life or affect other species of importance to human.

6.6 The performance periods and submission schedules for each phase of design are indicated below.

1. Contractor shall submit Preliminary 50% design analysis, drawings, and specifications to the VA for review and approval *no more than 90 calendar days after NTP* is issued. This submittal will include drawings, outline specifications, design analysis, a design documentation report, quantity and cost estimates, an construction cost estimate, a proposed construction schedule, site plans identifying all right of ways, a complete order of work clause describing the required sequence of construction operations, and other supporting documents.

2. The Contractor shall submit 100% design analysis, drawings, and specifications for the VA review and approval with implementation/rejection of comments provided by the VA during 50% review *no more than 45 calendar days* after receipt of preliminary design review comments. This submittal will include detailed working drawings and specifications necessary for the effective coordination and efficient execution of the construction work. The final design shall also include a construction contractor submittal register, design analysis, a design documentation report, quantity and cost estimates, an construction cost estimate, a proposed construction schedule, site plans identifying all right-of-way (for construction and perpetual operations), and other supporting documents.

3. The Contractor shall submit final design analysis, drawings, and specifications with implementation/rejection of the VA comments provided during 100% for review and approval, *28 calendar days* after receipt of final design review comments. This submittal will include same items that are required for the final design submittal.

6.7 During the construction phase, Contractor shall submit Coordination (Shop) Drawings to the VA for review and approval.

6.8 In addition to the elements mentioned above, the contractor shall submit to the VA

1. Progress reports to the VA on a daily basis.
2. Inspection report.
3. Test reports.
4. Upgraded schedule.
5. Contractor shall provide for review and approval by VA, any stand-by power provisions or partial requirements standards required by the local utility and required as part of this construction. Provide cost information relative to the agreements and any other equipment that may be required by the utility and proposed system construction.

6.9 During the completion of the project, the Contractor shall submit

1. Punch-list to the VA for review.
2. Final inspection report.
3. O & M manual.
4. Warranty documents.

6.10 Upon completion of the project, the Contractor Shall Submit

1. Engineering calculations used to determine design characteristics of the PV system, and sizing and selection of system components. Engineering calculations include, but are not limited to, structure, module operating temperature, conductor sizing, and over-current device ratings. Calculations shall be on 8½ inch by 11 inch sheet, suitable for side binding.
2. Detailed drawings of the PV mounting system and how it is integrated to the canopy support structure; submit engineering calculations used to determine the canopy's structural integrity considering appropriate wind loads.
3. Connection Wiring Diagram: Provide a wiring diagram for complete system construction. Diagram shall show how components are wired; including but not limited to terminal blocks, wire sizes, wire connections, connection to external devices and ground connections.

4. Engineering data and calculations indicating acceptable system load limits are met for each site.

6.11 Upon completion of the construction, the contractor shall demonstrate the performance of the system to the Field Inspector and COR and shall submit the documentation, items and other information listed below.

1. The contractor shall provide all information pertinent to the equipment for preventative maintenance and replacement. Include full product documentation from manufacturer, installer and/or supplier. Data shall be both electronic (PDF, Word and AutoCAD) and hard-copy, on 8 1/2 inch by 11 inch sheet, suitable for side binding. Include 3 copies of the items listed below and other features as recommended by the manufacturer.
    a. As-built versions of the submittals and drawings shall be both electronic and hard copy.
    b. Construction drawings and field wiring diagrams.
    c. Operators manuals for each system component including detailed instructions on how to operate the system, programming and installation instructions, emergency operating procedures, default program values and set points, listing of field programmed variables and set points, equipment wiring diagrams, product model number, with Name, Address and Telephone number of local representative, starting, operating, and shut down procedures. Include normal and emergency shutdown procedures, schedule of maintenance work, if any, recommended cleaning agents and methods, replacement parts list, including internal fuses, and warranty information.
    d. Provide a formal 2-hour on-site training session instructing operators at the medical center in the operation and maintenance of the new system, including operation and maintenance of inverters, disconnects and other features as requested by VA. VA shall be permitted to video tape this training for official use. Contractor shall instruct the VA personnel in removal and installation of panels, including wiring and all connections. At the time of training the Contractor shall furnish, for the equipment specified, operation and maintenance manuals, record drawings and recommended spare parts lists identifying components adequate for competitive supply procurement for operation and maintenance of system. The operation and maintenance manuals shall include maintenance schedules for all equipment.
    e. Provide the VA with written instructions and procedures for all components of the system. At the time of training the Contractor shall furnish, for the equipment specified, operation and maintenance manuals, record drawings and recommended spare parts lists identifying components adequate for competitive supply procurement for operation and maintenance of system. The operation and maintenance manuals shall include maintenance schedules for all equipment.
    f. Startup report including system and individual panel performance. System and individual panel performance shall be compared to expected performance and shall include at a minimum solar irradiance, DC energy, AC energy, ambient air temperature and PV cell temperature. System performance shall be measured and reported for at least one full day.
    g. If the performance monitoring of the constructed array indicates the array is not meeting its required performance predictions it shall be corrected by the Contractor at the Contractor's expense within thirty (30) calendar days of notification. Following correction, performance monitoring will again be performed until the array meets required performance predictions. Measurements made under actual construction and temperature will be normalized to STC.

7. Project Acceptance

Project Acceptance: All submittals and deliverables must be received and approved by the COR before final acceptance of the line item will be made.