



MARSHALLS ENERGY COMPANY INC.

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REQUEST FOR EXPRESSIONS OF INTEREST (CONSULTING SERVICES – FIRMS SELECTION)

Date: Sept 16, 2019

**Republic of the Marshall Islands
Sustainable Energy Development Project
Grant No.: IDA -D2610**

Assignment Title: Owner's Engineer for Supervision (OES) of Solar PV facilities and Power Plant Refurbishment & BESS in Majuro

Reference No.: MH-MEC-74853-CS-QCBS

The Ministry of Finance has received financing from the World Bank toward the cost of the Sustainable Energy Development Project (SEDeP), and intends to apply part of the proceeds for consulting services.

The consulting services ("the Services") include **Owner's Engineer for Supervision (OES) of Solar PV facilities and Power Plant Refurbishment & BESS in Majuro**. The objectives of the consulting services of OES shall be to ensure that the EPC contract(s) Lots 1 & 2 are implemented with a high standard of workmanship and quality, on schedule, and within the budget, in accordance with the specifications and drawings of the EPC Contracts, to acceptable environmental and social standards and in accordance with the MEC's requirements and the WB's procedures including Safeguard Policies.

The implementation period for OES contract is expected to be about 15 months. The estimated level of efforts is about 36 person months. The estimated start date is Jan 1, 2020. The selection process will be in accordance with the Quality-and Cost-Based Selection (QCBS) method approaching open international market. The detailed Terms of Reference (TOR) is attached.

The Marshalls Energy Company (MEC), as implementing agency for SEDeP, now invites eligible consulting firms ("Consultants") to indicate their interest in providing the Services. Interested Consultants should provide information demonstrating that they have the required qualifications and relevant experience to perform the Services.

The shortlisting criteria are:

- a. Must have valid registration and at least 5 years' experience in utility scale solar PV projects.
- b. Must have experience as owners engineer in at least 1 PV projects in pacific region or similar environment.
- c. Must have worked as owners engineer including civil works in at least 2 grid connected at 11 kV or more solar projects larger than 2 MWp at least one of them involving floating solar PV technology and total track record more than 10 MWp solar PV projects

Key Experts will not be evaluated at the shortlisting stage.

The attention of interested Consultants is drawn to paragraph 3.14, 3.16 and 3.17 of the World Bank's Procurement Regulations for IPF Borrowers dated July 1, 2016, setting forth the World Bank's policy on conflict of interest.

Consultants may associate with other firms to enhance their qualifications, but should indicate clearly whether the association is in the form of a joint venture and/or a sub-consultancy. In the case of a joint venture, all the partners in the joint venture shall be jointly and severally liable for the entire contract, if selected.

A Consultant will be selected in accordance with the Consultant's Qualification and cost based Selection (QCBS) method set out in the Procurement Regulations.

Further information can be obtained at the address below during office hours 0900 to 1700 hours.

Expressions of interest must be delivered in a written form to the address below (in person, or by mail, or by fax, or by e-mail) by **17.00 hours (Majuro time) Oct 7, 2019**

Tel. (692) 625-3827/8/9

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Sept 2019

**Marshalls Energy Company (MEC)
The Republic of the Marshall Islands
Sustainable Energy Development Project (SEDeP) (P160910)**

Terms of Reference and Scope of Services

**Owner's Engineer for Supervision (OES) of Solar PV facilities and Power Plant Refurbishment & BESS
in Majuro**

BACKGROUND

The Government of the Republic of Marshall Islands has been provided with grant funding by the World Bank (WB) for a Sustainable Energy Development Project (SEDeP) aimed at increasing the share of renewable energy from 2% to 9% and to improve power system reliability. The project includes grid connected 4.0 MW of solar PV (including 2.6 MW of floating solar PV at water reservoirs, 0.5 MW of rooftop solar PV at 5 sites, 0.9 MW on new structures at 8 sites in Majuro); battery energy storage system (BESS) of 1 MWh (2 MW for 30 mins); power station upgrade including replacement of 2 gen sets each of 2.5 MW capacity, 3.5 MW of trailer mounted gen sets, associated network modifications and upgrades to the existing diesel power station and control systems.

The Marshalls Energy Company is implementing the SEDeP through the project implementation unit (PIU) based at MEC. The owner's engineers for design (OED) have prepared the conceptual designs and bid documents for the design, supply and installation of Power Station Upgrade and BESS (Lot-1) and Solar PV plants and associated controls (Lot 2). The OED will provide their services for selection of EPC contractor as well. The bid documents for Engineering, Procurement and Construction (EPC) contractors are expected to be invited shortly and will be shared with the successful bidder of owner's engineers for supervision (OES) work for both Lot-1 and Lot 2.

MEC is planning to select and sign contract with the selected OES following the WB procurement regulations before signing contract with EPC contractors.

The Scope of Works for EPC contractor for lot 1 shall include the design, supply, testing, construction, commissioning and operational support of the following works:

1. Refurbishment of the existing power station building including:
 - a. Full demolition of mechanical annex
 - b. Establishment of Genset footings for new diesel generators (gensets) and auxiliaries
 - c. Modifications to MV switch room and control room
 - d. Establishment of pads for Battery Energy Storage System (BESS) and Modular Containerized Gensets
2. Two new diesel gensets, auxiliary systems including cooling, exhaust, fuel, oil systems and ancillary systems including fuel, oil and waste water systems.
3. MV Switchboard
4. Control and SCADA/HMI systems
5. DC Supply Systems.
6. AC Supply Systems including LV switchboards
7. Modular Containerized Gensets
8. Battery Energy Storage System (BESS)

The scope of work for EPC contractor for lot 2 shall include the design, supply, installation and commissioning of PV systems with a total capacity of 4.0 MW at multiple sites on Majuro. The individual systems and components include:

1. Approximately 2.6 MW floating PV systems on the Majuro Water Reservoirs, including supply of new transformers and control system.
2. New liners for three reservoirs
3. Rooftop PV systems on existing school buildings at 16 buildings at 5 schools, including all new cabling and pole top or pad mount transformers to connect to the distribution network, and a new kWh meter for each site.
4. Shed mounted PV systems over seven basketball courts, including shed construction
5. Canopy-mounted PV system over small water reservoir near the hospital, including canopy construction

6. Provision of monitoring and control systems for all PV systems including communication cables for connection to the existing fibre-optic network
7. The contractor shall be responsible for connecting the PV systems to the local distribution network at either 13.8kV or 4.1kV as required for the location.
8. The contractor shall be responsible for all civil works associated with the PV systems including any vegetation clearing required for access around the reservoirs, arrangement of crane access, trenching, and any temporary fencing required.

OBJECTIVE OF THE ASSIGNMENT

The objectives of the consulting services of OES shall be to ensure that the EPC contract(s) Lots 1 & 2 are implemented with a high standard of workmanship and quality, on schedule, and within the budget, in accordance with the specifications and drawings of the EPC Contracts, to acceptable environmental and social standards and in accordance with the MEC's requirements and the WB's procedures including Safeguard Policies.

The implementation period for OES contract is expected to be about 15 months. The selection process will be in accordance with the Quality-and Cost-Based Selection method approaching open international market.

SCOPE OF THE ASSIGNMENT

The OES shall assist MEC to provide a comprehensive technical and management services during construction. As the Owner's Engineer for Supervision (OES), the OES shall advise MEC during the design, supply, installation and commissioning and the first three months of operation of the PV systems.

The OES shall carry out an Inception Mission to Majuro, RMI in coordination with MEC. The objective of this mission shall be to identify specific conditions of the EPC contracts lot 1 and lot 2, meet the MEC, the EPC contractor and other interested stakeholders and gather all the information required to conduct the following tasks.

Task 1: Review of designs and specifications prepared by EPC contractor

The OES shall review the design drawings, Equipment drawings, technical specifications, the acceptance test proposals and quality assurance program prepared by EPC contractor, which form the basis of the construction and equipment contract documents, and draft the responses of approval or amendment of the documents for MEC's decision. The OES shall assume responsibility for the adequacy of such designs and shall submit in writing to the MEC any changes. The OES shall prepare and draft appropriate variation orders of the construction and equipment contracts to incorporate such changes.

The OES shall review the construction drawings prepared by the EPC contractor in accordance with contractual conditions, and draft the responses of approval or revision of the drawings. The construction drawings shall clearly impart the final design of the works and shall be revised and supplemented to meet field conditions as the works progress. The OES shall also review layouts and details of temporary facilities to be constructed by the EPC Contractor for MEC's decision.

The OES shall review and finalize the detailed O&M manuals for the complete plant and all subsystems provided by the EPC Contractor under the construction and equipment contracts for MEC's approval. The OES shall also provide additional technical support to the MEC as needed for successful implementation of the EPC Contract.

Task 2: Construction Supervision, quality control, testing and commissioning and acceptance tests in accordance with the contract documents.

The OES shall assume full responsibility for the contract management and construction supervision of the works performed by EPC contractor. Some of the important functions are:

- a. Review EPC Contractor's Programs of Work and any changes made thereto during construction for MEC's approval.
- b. Scrutinize all items of equipment, plant, materials, etc. to be incorporated in the works for MEC's approval.
- c. Check surveys and bench marks established by the EPC Contractor at each site of work and ensure accuracy of surveys and bench marks connecting various sites.
- d. Inspect the manufacture of equipment at the Contractor's workshops anywhere in the world, carry out the required tests (if any required), and certify its adequacy and quality before items are packed and shipped to the sites of works, jointly with the MEC. The list of equipment to be inspected is as follows but not limited to:
 - PV modules
 - Medium speed diesel gen sets
 - Inverters
 - Transformers
 - Control Systems
 - Cables
 - PV output monitoring system
- e. Perform tests on materials as and, when required, to confirm the suitability of materials for use in the works.
- f. Review construction drawings, schedules and process proposed by the EPC Contractor for MEC's approval.
- g. Review and confirm the delivery of material to the site
- h. Supervise in interconnection and synchronization of solar power plant to existing MEC grid substation in safe manner.
- i. Supervise the installation of the electrical and mechanical equipment in a satisfactory and safe manner in accordance with the specifications and contract requirements
- j. Monitor and supervise on site testing and commissioning of all equipment
- k. Review and confirm the acceptance test proposals made by the EPC Contractor and conduct the acceptance test including supervision of resolution of possible defects found during acceptance tests to ensure that they meet the requirements and specifications.
- l. Providing additional technical support to MEC as needed for successful implementation of the EPC Contract.

All procurements under the contracts lot 1 and lot 2 (nevertheless executed by the EPC Contractor or others) need to be monitored carefully and informed to the MEC and the Bank immediately the suspicious indications perceived by the OES.

Task 3: Progress monitoring and contracts management of EPC Contract

This Task of OES will include overall monitoring of progress and contracts management of EPC contract. The activities will include but not limited to the following.

- a. Hold regular meetings with the EPC Contractor to review and monitor progress, technical issues, and measures to achieve the targeted cost, quality and schedule control of EPC contracts lot 1 and lot 2.
- b. Monitor the manufacturing and delivery of equipment to ensure smooth and timely completion of the EPC contracts lot 1 & lot 2.
- c. Manage safety, social, and environmental related issues during the construction cooperating with MEC.

- d. Prescribe the format for monthly payment certificates of the EPC Contractor
- e. Measurement, verification and confirmation of quantity and quality of works completed, which would serve as certification of EPC Contractor's invoices for approval and release of payments to the contractor according to the EPC Contract terms.
- f. Prepare, process and issue variation orders with MEC's approval as required.
- g. Issue stop orders of work with prior approval of the MEC.
- h. Make recommendations to and draft responses for the MEC to settle claims from the EPC Contractor
- i. Update the procurement and cost of contract works every month
- j. Supervise the MEC in taking over the work under EPC contracts lot 1 and lot 2 and prepare items of work to be completed by the EPC Contractor until the commissioning of the PV Solar Farms.
- k. Prepare items of work to be completed by the EPC Contractor during Maintenance/Defects Liability Period.
- l. Prepare a "Completion Report" for the works under the contract, including a summary of final costs

The OES shall formulate and establish procedures for the proper management, administration and quality assurance of all contracts for the construction under the EPC contracts lot 1 and lot 2 as well as the OES's own services, and shall effect monitoring and control of these procedures.

Task 4: Operation and Maintenance Support

Between 6 and 12 months after the commissioning test, the OES shall assist MEC in carrying out the facility performance check in order to prepare claims before the warranty period expires. During the three months of operation of the PV systems after the warranty period of 12 months, the OES shall assist MEC in carrying out operation and maintenance tasks related to the EPC contracts lot 1 and lot 2.

KEY DELIVERABLES AND TIMELINE

The assignment is expected to begin in January 2020 and should be completed no later than March 2021.

Within 60 days of award of the Consulting Contract, the OES shall prepare, and submit to the MEC for consent, a detailed program of all of the activities related to the execution of the EPC contracts lot 1 and lot 2. The OES's program shall be based on the reviewed and accepted programs of the EPC contractor and shall include all activities that interface or otherwise relate to the work being done by the different sub-Contractors or other involved parties including MEC. When this program has been approved by the MEC, it shall become the new base-line program for monitoring the execution of the contract(s) (the progress monitoring with milestones) and shall not be modified or revised by the OES without the prior consent of the MEC.

If updating of the contracts lot 1 and lot 2 program is required, a revised program shall be prepared by the EPC Contractor and reviewed by the OES, and resubmitted to the MEC for its consent. When approved, this program will become the new baseline program for all future work. During the performance of the work, the OES shall monitor this program and shall provide update reports on a monthly basis together with his monthly report on progress of the works. The monthly updates of the OES's program shall be monitored against the approved program and all variations shall be noted. The future impact of major variations shall be determined and analyzed. Necessary corrective measures or re-planning of the OES's work shall be established by the OES. The MEC shall be notified of corrective measures. When approved, this program will become the new baseline program for the EPC contracts lot 1 and lot 2.

The OES shall prepare and submit reports and deliverables as specified. All reports and deliverables should be submitted electronically (by email) in English in Microsoft Word format, accompanied by Microsoft Excel spreadsheets and Microsoft PowerPoint as necessary.

Monthly and Quarterly Progress Reports. The OES shall, no later than the 10th of each month during the Construction phase, prepare a brief technical progress report summarizing the work accomplished by the EPC Contractor. The report should outline any technical problems encountered and give recommendations on how these problems may be overcome.

Technical Reports. The OES will produce as necessary technical reports and position papers dealing with technical matters arising during the implementation of EPC contracts lot 1 and lot 2. In particular, for each major design change, the OES shall prepare a design review report containing: a) the data on which the original as-tendered design was based; b) complete record of all new design data relevant to the design review; c) as-built record showing the location and detailed dimensions of all work carried out to date under the EPC contracts lot 1 and lot 2; d) copy of all previously approved Change Orders and Contract Addenda; e) drawings clearly showing both the original design and the proposed revised design; f) rescheduled list of quantities and costs, relevant to the proposed revised design; g) drawings showing the exact location of the proposed design changes; and, h) approval of payments based on completion of the works as per the Design, Supply and installation EPC contracts lot 1 and lot 2.

Commissioning Reports should include the goods compliance report, environmental management plan compliance report, technical commissioning reports, system data logging and test reports, and system operations report.

Final Completion Report.

All reports and documents except monthly reports will be submitted in English in 2 (two) hard copy and soft copy. The MEC will review the reports and documents and provide comments to the OES within 2 (two) weeks of receipt. The OES will address the comments of MEC and submit them as a Final Report before the end of the assignment.

Deliverable	Timeline
Commissioning Reports	Commissioning + [2] weeks
Monthly Reports	Monthly
Technical Reports	As required
Final Report	Commissioning + 4 weeks 9 months
Warranty completion report	Expiration of warranty period + 4 weeks.

The OES shall check and review the following reports prepared by the EPC contractor, which shall be in a format agreed with the MEC and which shall be submitted in number of copies to be agreed with the MEC for MEC's approval.

- a. The monthly report shall be coordinated with the requirements set forth in "EPC contracts lot 1 and lot 2 Program" to include submittal of the following:
 - 1) Cumulative expenditure record and estimated cost at completion of each item, Variation Order and claim for the Contracts on construction, equipment, and consulting services;
 - 2) Record of Variation Orders issued and being prepared; and
 - 3) Claims received, under consideration and settled.

- b. Quarterly contracts lot 1 and lot 2 progress monitoring reports (summary reports on instrumentation monitoring or similar construction performance system) and quarterly financial monitoring reports.
- c. Technical reports on instrumentation monitoring or similar construction performance.
- d. Completion Reports for all major structures or elements of the contract works, incorporating as-built records and drawings, within 60 days of issue of any Taking-Over Certificate. Completion Reports shall also include details of construction methodology, concrete quality, geological condition etc.
- e. Provide any special reports as requested by the MEC.

As-Built Drawings

At the conclusion of the EPC contracts lot 1 and lot 2, OES will receive and review the EPC contractor's filed copy redlined record drawings of contract and shop drawings. OES shall review the redlined drawings to determine that they are an accurate representation of the installed work. At the completion of his review, OES will return these drawings to the EPC contractor. The EPC contractor will produce as-built drawings of all contract drawings in electronic format using AutoCAD 2000 (or latest version) software. OES will verify, based on available information, the accuracy and transmit all drawings to MEC. OES will provide MEC with copies of all changes or notices.

ORGANIZATION AND STAFFING

For effective implementation, the work shall be carried out by a fully integrated team of international staff consisting of the Project Manager/Solar Expert, EPC management Specialist, Civil Engineer (foundations, structures, and supporting procurement) and Electrical Engineer (having expertise in grid interconnection and procurement). This team shall operate as an independent and self-sufficient entity with the Project Manager entrusted with full responsibility and authority to act on behalf of the OES. The assignment of the staff shall be shown on a Staff Time Schedule and will become part of OES Contract.

In order to maintain close liaison between project management, design, and construction supervision, the Civil and Electrical engineer must be assigned for the full duration of their involvement and shall be based at Majuro during the contract period except when no works relevant to their expertise are being implemented.

During this time, they shall report to the Project Manager directly.

Project Manager

The focal point of the project organization is the Project Manager, the principal contact and communication channel with the MEC. He shall be a solar expert with international experience. The Project Manager shall have total project responsibility for the work and for providing the requisite leadership, direction, and supervision. The Project Manager shall provide overall technical direction and coordination of the Services. He shall be accountable to the MEC for day-to-day performance of the project team including the civil and electrical engineers based at Majuro and shall be vested with sufficient authority to act. He shall liaise with the MEC's Project Chief on various issues, technical, financial, or otherwise. He shall also manage and coordinate the assignment of special experts (foreign/local), with prior approval of the MEC, as required. He shall exercise all standard management functions including planning, scheduling, directing, organizing, and controlling; and shall be involved in key technical activities; and assigned to specific technical tasks to achieve maximum efficiency and benefit to the implementation of EPC contracts lot 1 and lot 2.

The Project Manager shall be a Solar Engineer with 10 years of general experience and 5 years of experience in solar power construction projects. He shall have an experience as a team leader with experience of at least one solar project of installed capacity of 5 MW or above. He should be able to communicate fluently in English Language and must be physically fit to carry-out the rigors of the contract in a challenging environment.

EPC Management Specialist

The EPC Management Specialist will provide technical review of the designs, technical specifications, monitoring and evaluation of the work done by EPC contractor for both lot 1 and lot 2.

The EPC Management Specialist must have a master’s degree(s) in power sector engineering, or other related fields. The EPC Management Specialist should have at least 15 years of electricity sector experience; experience in implementing grid connected renewable energy projects highly desirable.

Civil and Electrical Engineers

The Civil & Electrical Engineers shall possess 10 years of general experience and 3 years of experience in photovoltaic projects. They will work in close coordination with the Project Manager and shall be responsible for the design and supervision works as required, and shall be responsible for their related fields individually. They must be physically fit to carry-out the rigors of construction supervision in a challenging environment.

Expected Level of Effort

The estimated person-months required for the assignment is specified below:

International Expert (Key Staff)		
No.	Position	Total Man Month
A1	Project Manager/Solar Expert	6 months (at least 3 months on the site)
A2	EPC Management Specialist	6 months (at least 3 months on the site)
A2	Civil Engineer	12 months (at least 8 months on the site)
A3	Electrical Engineer	12 months (at least 8 months on the site)

OES's Facilities

Housing and Office for OES
The OES shall arrange its own accommodation and office.

OES's Transportation
The OESs shall arrange the rental vehicles including all necessary costs, such as drivers, fuels, maintenance fees, and insurances.

Equipment and Miscellaneous
The OES shall arrange the office equipment including computers with necessary software at their own.

International Trips and Hotel Accommodation in Majuro
The cost of all travel and accommodation shall be included and arranged by the OES.

REQUIREMENT FOR THE OES

General

To provide the consulting services for the duration of the Project, the OES team of engineers and other specialists, shall be experienced in the design and supervision of construction of solar projects including power stations, civil structures, transmission lines, grid substations, and other appurtenant works.

Emphasis is placed on the need for relevant design and construction supervision engineers to have knowledge and previous experience of similar works to those at the Project site. It is particularly

important that the engineers shall have substantial previous experience in dealing with contractual matters and contract claims for several grid-connected solar and diesel gen sets projects.

The benchmarks for OES Company are as follows:

- a) Must have valid registration and at least 5 years' experience in utility scale solar PV projects.
- b) Must have experience as owners engineer in at least 1 PV projects in pacific region or similar environment.
- c) Must have worked as owners engineer including civil works in at least 2 grid connected at 11 kV or more solar projects larger than 2 MWp at least one of them involving floating solar PV technology and total track record more than 10 MWp solar PV projects.