**REQUEST FOR QUOTATION  
SPECIFICATION OF STANDARD GOODS**

**Procurement No:** **27-G006-25**

## Specification

### Background

The Ministry of Infrastructure and Sustainable Energy (MISE) Headquarters has high daytime electricity demand, currently supplied by the Public Utility Board (PUB), which relies heavily on imported diesel fuel. Rising fuel cost, supply risks, and national sustainability commitments highlight the need for renewable energy solutions. Solarizing the MISE HQ will reduce operating costs, improve energy security, and demonstrate government leadership in clean energy transition.

The main objective is to lower power consumption and grid dependence at MISE HQ through the installation of a solar photovoltaic system. This project will reduce electricity costs, enhance resilience, and contribute directly to the Kiribati Energy Roadmap targets of increasing renewable energy share and reducing reliance on fossil fuels.

### Requirements

All supporting documentation must be in English.

For Tender Opening: **refer to template 2: Instruction**, for the requirement details such as follows

* Cover letter
* Recent Certified Business Registration
* Operational license
* Tax Clearance certificate
* Certificate of Compliance Form
* Technical component
* Financial Components including annual financial report/statement

For Tender Evaluation:

* Technical components including materials bill of quantity, delivery, etc... (**refer to template 5: evaluation criteria**)
* Financial Components (Quotation, etc)

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| --- | --- | --- | --- | --- | --- |
| **TECHNICAL REQUIREMENT and SPECIFICATIONS FOR TENDER – MISE Head Quarters Solar Power Off-Grid System PROJECT** | | | | | |
| **Item** | **Specifications Required** | **Specifications Offered** | | **Notes, Remarks, References** | **Evaluation Committee Notes** |
| **1** | **General Requirements**  The Solar PV off-grid project under this Terms of Reference (TOR) must include but not necessarily be limited to the following job activities; |  | |  |  |
| **1.1** | Design a PV Solar off-grid Systems for Ministry of Infrastructure and Sustainable Energy. The Solar PV unit must be in the rage of 75kwh to 100kwh and it will continuously supply a 3 phase 415V AC (240V AC single phase), 50Hz balanced sine wave electricity The Solar PV unit shall be of the modular type to allow for further expansion of the installed capacity. |  | |  |  |
| 1.2 | Supply of Major System Components for the system in clause (I) above. | |  |  |  |
| 1.3 | Provide technical support if required to Kiribati Ministry of Infrastructure and Sustainable Energy technical staff during installation of the Solar System | |  |  |  |
| 1.4 | Design should incorporate 3 phase diesel generators for use as back up. Design should aim to reduce the run time of the generator to a minimum to reduce fuel costs and CO2 emissions. | |  |  |  |
| 1.5 | All wiring and system designs must Conform to Australia & New Zealand standards. | |  |  |  |
| 1.6 | System Performance Figures as per item 3.0 | |  |  |  |
| 2 | **Photovoltaic System**  General terms and conditions where the PV Arrays will be installed include; | |  |  |  |
| 2.1 | A Minimum Array Size should be equivalent to 70kWp systems. | |  |  |  |
| 2.2 | Photovoltaic cells shall be of a mono-crystalline or poly-crystalline silicon type. Amorphous and thin film type cells are not acceptable under this tender. Cells shall be fitted on overhead mounting structure. | |  |  |  |
| 2.3 | Suitable for an environment of high ambient temperature, high humidity and high level of atmospheric salt. | |  |  |  |
| 2.4 | Solar modules can be Polycrystalline OR Monocrystalline Solar Panel | |  |  |  |
| 2.5 | The system must be designed to suit tropical costal conditions. All system components are to be fully integrated and compatible | |  |  |  |
| 2.6 | Area occupied by PV Array installation must be minimized as much as possible. Refer to item 3.1 | |  |  |  |
| 2.7 | **Lifetime**  The major components and equipment shall be designed to last at least 20 years of outdoor exposure under the local conditions. | |  |  |  |
| 2.8 | **Information required from the Tenderer**  Performance of equipment  Tenders must include details of prior qualifying service, a statement attesting that the materials offered are identical to those used in prior service and the names and addresses of at least two users not affiliated with the manufacturer or Tenderer who are willing to corroborate the stated field experience.  Detailed drawings of the array structures and the module arrangement shall be provided. This shall include the angle of tilt of 10° as well as the foundation details for the structure proposed. The drawings shall state the thickness of the material and clearly indicate the structural soundness of the structure.  Structures with panels installed shall be rated for winds up to 150 km/h. | |  |  |  |
| 2.9 | Warranty  The required module shall have a manufacturing warranty of 10 years and a performance warranty of 25 years | |  |  |  |
| 3 | **Photovoltaic Support Structure (Rack)** | |  |  |  |
| 3.1 | PV modules need to be install on MISE HQ main office, suitable Roof Top mounting Support Structure that could fit in the Area dimension shown below and to withstand corrosive, heavy load and strong wind. Details are as follows.   |  |  |  | | --- | --- | --- | | ***Project Site*** | ***Area Size (m2)*** | ***Mounting type*** | | 1. MISE HQ Office | 385 | Roof top mounting | | 1. Awira Hall | 132 | Roof top mounting | | Total Area | 517 |  | | |  |  |  |
| 3.2 | The material of rack and mounting brackets of the solar arrays must be designed to withstand corrosive maritime climate and strong winds as stated in 3.3. All support structure components including brackets and fasteners must be able to resist outdoor exposure without any appreciable corrosion | |  |  |  |
| 3.3 | Tilt angle shall be adjustable to give maximum energy generation suitable to the design of system as outlined in item 3.1 | |  |  |  |
| 3.6 | A manual containing construction and assembly of the mounting structures and mounting of modules must be provided with tender | |  |  |  |
| 3.7 | Engineering Diagrams for Framing should be supplied with tender | |  |  |  |
| 4 | **Battery Energy Storage System (BESS)** | |  |  |  |
| 4.1 | BESS should cater for daily energy consumption of MISE-HQ 70kW. This should be powered for 8-9hrs daily. Tenderers should take into account safe conditions to maximize the BESS life cycle and the life span of the Solar System. The battery technology preferred in this project should scale up to at least 500kWh for future expansion of the system. | |  |  |  |
| 4.2 | **BESS technical requirements**  The battery should be of lithium batteries or equivalent advanced technology that will meet the energy requirements for MISE-HQ  The tender technical evaluation will be based on lifespan, maintenance, and technological advancement of the battery. | |  |  |  |
| 4.3 | **BESS Performance**  The BESS performance shall meet the following requirements.   1. The manufacture of the batteries is to be optimized for tropical environments, where operating temperatures vary between -30 °C and 60 °C. 2. While in service, Lithium batteries are not to be discharged more than 80%. 3. not less than 6,000 Cycle @ 70% EOL 4. Battery cases are to be made of impact-resistant material. 5. Modules should be scalable up to a maximum of 6,300 kWh. 6. It may require an HV battery if suit a design. | |  |  |  |
| 4.4 | Batteries should have a life expectancy of 7 years or more | |  |  |  |
| 4.5 | The batteries shall be designed to operate in a tropical, marine environment subject to intermittent salt spray, continuous exposure to high ambient temperature (25-45 °C) and humidity approaching 100%. | |  |  |  |
| 4.7 | **Battery accessories**  The Contractor should provide all necessary battery accessories to ensure safe and reliable integration of the Battery Energy Storage System (BESS) with the inverter for supplying AC loads. Accessories shall include, but not be limited to, battery management system, disconnect switches, fuses, surge protection, interconnection busbars, racks or enclosures, monitoring and communication interface, and all required cabling and earthing. All equipment shall comply with relevant IEC/UL standards and be supplied with warranties, test reports, and operation manuals. | |  |  |  |
| 4.8 | **Lifetime and warranties**  A warranty of a minimum of 10 years is required for Lithium  This warranty is to be with the manufacturer, not the supplier. If an extended warranty is to be purchased, this is to be done by the tenderer. Warranty conditions are to be included in the tender.  Tenderers must include a statement of warranties in effect, including what specifically is covered under warranty and requirements for obtaining compensation for batteries which have failed under warranty | |  |  |  |
| 6 | **Inverters and Chargers (Hybrid & Off-grid System)** | |  |  |  |
| 6.1 | **Hybrid Inverter Performance**  The performance shall meet the following requirements:   1. Inverter shall be a hybrid type 2. The inverter shall have a sinewave output with total harmonic distortion must be less than 3% at unity power factor. 3. Inverters are to be rated for three-phase power output at 415 V, 50 Hz, grid connection form 3L + N + PE. 4. Three single phase inverters shall be configured into a three phase 415V network. 5. The overload capability of the inverter shall allow generation of at least 150% of the nominal power for more than 3 minutes; 6. The inverters’ peak efficiency must be greater than 90%, and greater than 92% at maximum output.   The no-load power consumption shall be less than 1.5% of the rated output power | |  |  |  |
| 6.2 | Pure sine wave output | |  |  |  |
| 6.3 | The inverter shall have the following protective features:   1. Output protection: Electronic overload and short-circuit protection. An AC output wire fuse is not acceptable. 2. Over-temperature protection. 3. Battery low voltage and over voltage protection. 4. Inverters are to be rated to IP54, and be suitable for passively cooled, indoor locations. 5. Inverter electronic components must be sealed from contact with salt air and include external heat sinks for cooling. If fans are used for cooling, they are not blowing air directly over electronic components, but rather over a heat sink. | |  |  |  |
| 6.4 | **Full Technical Specification**  Tenderers are to provide manufacturers’ data sheets for the inverters, in English. Information that must be provided include;   1. Nominal AC power output under continuous operation; 2. Maximum AC power output (including length of operation at maximum power output); 3. Rated DC input voltage range & maximum DC charging/discharging current; 4. Rated AC output voltage range; 5. Rated AC output frequency range; 6. Efficiency curve as a function of load; 7. Harmonic distortion rate; 8. Power factor; 9. Connector type for DC inputs; 10. IP rating; 11. Operating temperature range; 12. Compliance to standards; 13. Physical Size and Weight; | |  |  |  |
| 6.5 | Minimum IP 54 Enclosure | |  |  |  |
| 6.6 | Integrated 2 wire Generator Control  Load Shedding Control Capability | |  |  |  |
| 6.7 | **Lifetime and warranties**  Tenderers must include a statement of warranties in effect, including what specifically is covered under warranty and requirements for obtaining compensation for inverters which have failed under warranty. If as a result of the failure of one inverter (or any related equipment) the inverter is not available for a period of longer than three (3) consecutive days the warranty period shall be extended for that period of non-availability | |  |  |  |
| 7 | **Other Components** | |  |  |  |
| 7.1 | **Technical specifications**  Full technical specifications shall be provided by the Tenderer.   * Major components datasheets (Solar Module, PV Inverter, BESS, and Battery Inverter/charger) | |  |  |  |
| 7.2 | **Additional documentation**  The Tenderers shall provide the following additional documentation:   * System Operation & Maintenance Manual; * Commissioning Sheet; | |  |  |  |
| 7.4 | Salt Resistant AC Junction Box with all integrated Circuitry and fusing for connection of solar inverters, Battery Inverters Generator and Load | |  |  |  |
| 7.5 | AC Load Shedding Contactors | |  |  |  |
| 7.6 | Cables for DC and AC circuit form.  a. PV array to DC Junction Box  b. DC Junction Box to solar inverters c. Solar inverters to AC Junction Box  d. AC Junction Box to Battery Inverters  e. Battery inverters to battery bank and cell interconnects (If necessary) | |  |  |  |
| 7.7 | Suppliers shall commit to providing back-up online technical support during installation when required. | |  |  |  |
| 7.8 | Design and electrical diagram shall be provided by Tenderer/ Suppliers | |  |  |  |
| 7.9 | **Services**  As part of the tender the Kiribati Ministry of Infrastructure and Sustainable Energy requires a daily schedule of rates from the contractor for the following Services. | |  |  |  |

Relate Service

Tenderers are to provide a proposed system design for PV Solar off-grid systems with the bill of materials quotation emphasized in the **TECHNICAL REQUIREMENTS and SPECIFICATION FOR TENDER** section

### Delivery Time

<insert requested delivery time, if general, otherwise in the table below>

The timeframe required to complete all activities is approximately 8 months, of which 3 months is for international order delivery time (as depicted in orange in the table below)



## Description of the Goods

*Here, list all items to be Tendered*

*(This part may be replaced by a proprietary Supplier description)*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Pos. | Description | Number | Delivery Time (to be Tendered) | Price (to be Tendered) |
| **1** | 70kW PV Solar System with required accessories |  |  |  |
| **2** |  |  |  |  |
| **3** |  |  |  |  |
| **4** |  |  |  |  |