



REQUEST FOR QUOTATION (RFQ)

RFQ Reference: RFQ/UNDP/SOLAR/ LDSP/RRF /2021/102	Date: 9/ Sept/ 2021
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SECTION 1: REQUEST FOR QUOTATION (RFQ)

UNDP kindly requests your quotation for the provision of **supply, installation, commissioning, and after-sales services for Off-Grid Solar PV FOR Cape Mount (Robert sport), River Gee (Fish Town) and Sinoe (Green Ville) county service centers** as detailed in Annex 1 of this RFQ.

This Request for Quotation comprises the following documents:

Section 1: This request letter

Section 2: RFQ Instructions and Data

Annex 1: Schedule of Requirements


Annex 2: Quotation Submission Form

Annex 3: Technical and Financial Offer

When preparing your quotation, please be guided by the RFQ Instructions and Data. Please note that quotations must be submitted using Annex 2: Quotation Submission Form and Annex 3 Technical and Financial Offer, by the method and by the date and time indicated in Section 2. It is your responsibility to ensure that your quotation is submitted on or before the deadline. Quotations received after the submission deadline, for whatever reason, will not be considered for evaluation.

Thank you and we look forward to receiving your quotations.

Issued by:

Signature:  9-Sept-2021

Name: Mulugeta Abebe

Title: Deputy Resident Representative

Date: September 9, 2021

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SECTION 2: RFQ INSTRUCTIONS AND DATA

Introduction	<p>Bidders shall adhere to all the requirements of this RFQ, including any amendments made in writing by UNDP. This RFQ is conducted in accordance with the UNDP Programme and Operations Policies and Procedures (POPP) on Contracts and Procurement</p> <p>Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the Bid by UNDP. UNDP is under no obligation to award a contract to any Bidder as a result of this RFQ.</p> <p>UNDP reserves the right to cancel the procurement process at any stage without any liability of any kind for UNDP, upon notice to the bidders or publication of cancellation notice on UNDP website.</p>
Deadline for the Submission of Quotation	<p>September 23,2021</p> <p>If any doubt exists as to the time zone in which the quotation should be submitted, refer to http://www.timeanddate.com/worldclock/.</p> <p>For eTendering submission - as indicated in eTendering system. Note that system time zone is in EST/EDT (New York) time zone.</p>
Method of Submission	<p>Quotations must be submitted as follows:</p> <p><input checked="" type="checkbox"/> E-tendering platform</p> <p>Bid submission address: https://etendering.partneragencies.org</p> <ul style="list-style-type: none"> ▪ File Format: PDF ▪ File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard. ▪ All files must be free of viruses and not corrupted. ▪ Max. File Size per transmission: 2MB, virus-free and no more than 3 E-mail transmissions. ▪ Mandatory subject of email: NOT APPLICABLE ▪ Multiple emails must be clearly identified by indicating in the subject line “email no. X of Y”, and the final “email no. Y of Y. NOT APPLICABLE ▪ It is recommended that the entire Quotation be consolidated into as few attachments as possible. ▪ The bidder should receive an email acknowledging email receipt. <p>[For eTendering method, click the link https://etendering.partneragencies.org and insert Event ID information]</p> <ul style="list-style-type: none"> • EVENT ID - LBR 10-RFQ-SOLAR-LDSP/ RRF-2021/102 <p>Detailed instructions on how to submit, modify or cancel a bid in the eTendering system are provided in the eTendering system Bidder User Guide and Instructional videos available on this link: http://www.undp.org/content/undp/en/home/operations/procurement/business/procurement-notices/resources/</p>
Cost of preparation of quotation	<p>UNDP shall not be responsible for any costs associated with a Supplier’s preparation and submission of a quotation, regardless of the outcome or the manner of conducting the selection process.</p>
Supplier Code of Conduct, Fraud, Corruption,	<p>All prospective suppliers must read the United Nations Supplier Code of Conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN. The Code of Conduct, which includes principles on labour, human rights, environment and ethical conduct may be found at: https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct</p> <p>Moreover, UNDP strictly enforces a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of UNDP vendors and requires all bidders/vendors to observe the highest standard of ethics during the procurement process and contract implementation. UNDP’s Anti-Fraud Policy can be found at http://www.undp.org/content/undp/en/home/operations/accountability/audit/office_of_audit_an_dinvestigation.html#anti</p>

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Gifts and Hospitality	<p>Bidders/vendors shall not offer gifts or hospitality of any kind to UNDP staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches, dinners or similar. In pursuance of this policy, UNDP: (a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question; (b) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a UNDP contract.</p>
Conflict of Interest	<p>UNDP requires every prospective Supplier to avoid and prevent conflicts of interest, by disclosing to UNDP if you, or any of your affiliates or personnel, were involved in the preparation of the requirements, design, specifications, cost estimates, and other information used in this RFQ. Bidders shall strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have a conflict of interest shall be disqualified.</p> <p>Bidders must disclose in their Bid their knowledge of the following: a) If the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of UNDP staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving goods and/or services under this RFQ.</p> <p>The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to UNDP's further evaluation and review of various factors such as being registered, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this RFQ, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.</p>
General Conditions of Contract	<p>Any Purchase Order or contract that will be issued as a result of this RFQ shall be subject to the General Conditions of Contract</p> <p>Select the applicable GTC:</p> <p><input type="checkbox"/> General Terms and Conditions / Special Conditions for Contract.</p> <p><input type="checkbox"/> General Terms and Conditions for de minimis contracts (services only, less than \$50,000)</p> <p><input type="checkbox"/> General Terms and Conditions for Works</p> <p>Applicable Terms and Conditions and other provisions are available at UNDP/How-we-buy</p>
Special Conditions of Contract	<p><input type="checkbox"/> Cancellation of PO/Contract if the delivery/completion is delayed by [indicate number of days]</p> <p><input type="checkbox"/> Others [pls. specify]</p>
Eligibility	<p>A vendor who will be engaged by UNDP may not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization. Vendors are therefore required to disclose to UNDP whether they are subject to any sanction or temporary suspension imposed by these organizations. Failure to do so may result in termination of any contract or PO subsequently issued to the vendor by UNDP.</p> <p>It is the Bidder's responsibility to ensure that its employees, joint venture members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by UNDP.</p> <p>Bidders must have the legal capacity to enter a binding contract with UNDP and to deliver in the country, or through an authorized representative</p>
Currency of Quotation	<p>Quotations shall be quoted in United States Dollars</p>
Joint Venture, Consortium or Association	<p>If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the JV, Consortium or Association jointly and severally, which shall be evidenced by a duly notarized Agreement among the legal entities, and submitted with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between UNDP and the designated lead entity, who shall be acting for and on behalf of all the member entities comprising the joint venture, Consortium or Association.</p>

	Refer to Clauses 19 – 24 under Solicitation policy for details on the applicable provisions on Joint Ventures, Consortium or Association.
Only one Bid	<p>The Bidder (including the Lead Entity on behalf of the individual members of any Joint Venture, Consortium or Association) shall submit only one Bid, either in its own name or, if a joint venture, Consortium or Association, as the lead entity of such Joint Venture, Consortium or Association.</p> <p>Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following:</p> <p>a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or</p> <p>b) they have the same legal representative for purposes of this RFQ; or</p> <p>c) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of, another Bidder regarding this RFQ process;</p> <p>d) they are subcontractors to each other's Bid, or a subcontractor to one Bid also submits another Bid under its name as lead Bidder; or</p> <p>e) some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this RFQ process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.</p>
Duties and taxes	<p>Article II, Section 7, of the Convention on the Privileges and Immunities provides, inter alia, that the United Nations, including UNDP as a subsidiary organ of the General Assembly of the United Nations, is exempt from all direct taxes, except charges for public utility services, and is exempt from customs restrictions, duties, and charges of a similar nature in respect of articles imported or exported for its official use. All quotations shall be submitted net of any direct taxes and any other taxes and duties, unless otherwise specified below:</p> <p>All prices must:</p> <p><input checked="" type="checkbox"/> <input checked="" type="checkbox"/> Must be exclusive of VAT and other applicable indirect taxes</p>
Language of quotation	<p>ENGLISH</p> <p>Including documentation including catalogues, instructions and operating manuals.</p>
Documents to be submitted	<p>Bidders shall include the following documents in their quotation:</p> <p><input checked="" type="checkbox"/> Annex 2: Quotation Submission Form duly completed and signed</p> <p><input type="checkbox"/> Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1</p> <p><input type="checkbox"/> Company Profile / A catalogue or brochure should accompany your quotation</p> <p><input type="checkbox"/> Registration certificate; (Tax Certificate and Business Registration)</p> <p><input type="checkbox"/> List and value of projects performed for the last 3 years plus client's contact details who may be contacted for further information on those contracts.</p> <p><input checked="" type="checkbox"/> Statement of satisfactory Performance (Certificates) from the top XXXX clients in terms of Contract value in similar field; Conditional</p> <p><input checked="" type="checkbox"/> If Partnering with a local partner see below documentation to be provided:</p> <ul style="list-style-type: none"> • Profile of the local service provider including documentary evidence of relevant experience and services (if any) applicable to International supplier only <p>1. Design, supply, installation, testing commissioning and user training of:</p> <ul style="list-style-type: none"> • <u>Site 1</u> – One off-grid PV generator of 15 kWp with 30 kWh of total battery capacity. AC inverter 8.0 KVA. • <u>Site 2</u> – One off-grid PV generator of 15 kWp with 30 kWh of total battery capacity. AC inverter 8.0 KVA. • <u>Site 3</u> – One off-grid PV generator of 30 kWp with 85 kWh of total battery capacity. AC inverter 15.0 KVA. <p>.</p>

	<p>2. After-sales services of 1 year including maintenance (preventative and corrective) and technical support (on-site and/or remote), continued online system and performance monitoring.</p> <p>3. Training on operations and maintenance (operator and end-user), including provision of operation and maintenance documentation.</p>
Quotation validity period	Quotations shall remain valid for 120 days from the deadline for the Submission of Quotation. In exceptional circumstances, UNDP may request the Vendor to extend the validity of the Quotation beyond what has been initially indicated in this RFQ. The Proposal shall then confirm the extension in writing, without any modification whatsoever on the Quotation
Price variation	No price variation due to escalation, inflation, fluctuation in exchange rates, or any other market factors shall be accepted at any time during the validity of the quotation after the quotation has been received.
Partial Quotes	<input checked="" type="checkbox"/> Not permitted
Alternative Quotes	<input checked="" type="checkbox"/> Not permitted
Payment Terms	<ul style="list-style-type: none"> ✓ 50 percent after arrival, inspection of supplies ✓ 40 percent after completion, testing, Commissioning, and certification of works ✓ 10 percentage after 6 months of Turnover and evidence of after sales support
Conditions for Release of Payment	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Passing Inspection [from Supplies delivered up to Complete Installation] <input type="checkbox"/> Passing all Testing [specify standard, if possible] <input type="checkbox"/> Completion of Training on Operation and Maintenance [specify no. of trainees, and location of training, if possible] <input type="checkbox"/> Written Acceptance of Goods, Services and Works, based on full compliance with RFQ requirements <input type="checkbox"/> Others [pls. specify]
Contact Person for correspondence, notifications and clarifications	<p>E-mail address: Focal Person in UNDP: Procurement UnitAddress: UNDP, Procurement E-mail address: info.lr.procurement@undp.org</p> <p>Attention: Quotations shall not be submitted to this address but to the address for quotation submission above. Otherwise, offer shall be disqualified.</p> <p>Any delay in UNDP's response shall be not used as a reason for extending the deadline for submission, unless UNDP determines that such an extension is necessary and communicates a new deadline to the Proposers.</p>
Clarifications	Requests for clarification from bidders will not be accepted any later than Sept 13th, 2021, 3 days before the submission deadline. Responses to request for clarification will be communicated via UNDP LIBERIA DEDICATED EMAIL ADDRESS by info.procure.lr@undp.org
Evaluation method	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Technical responsiveness/Full compliance to requirements and lowest evaluated price <input checked="" type="checkbox"/> Full acceptance of the PO/Contract General Terms and Conditions
Evaluation criteria	<ul style="list-style-type: none"> <input checked="" type="checkbox"/> Full compliance with all requirements as specified in Annex 1 <input checked="" type="checkbox"/> Full acceptance of the General Conditions of Contract
Right not to accept any quotation	UNDP is not bound to accept any quotation, nor award a contract or Purchase Order
Right to vary requirement at time of award	At the time of award of Contract or Purchase Order, Click or tap here to enter text. reserves the right to vary (increase or decrease) the quantity of services and/or goods, by up to a maximum twenty-five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.- Not applicable

Type of Contract to be awarded	<input type="checkbox"/> Professional Service Contract
Expected date for contract award.	1 st October 2021
Publication of Contract Award	UNDP will publish the contract awards valued at USD 100,000 and more on the websites of the CO and the corporate UNDP Web site.
Policies and procedures	This RFQ is conducted in accordance with UNDP Programme and Operations Policies and Procedures
UNGM registration	Any Contract resulting from this RFQ exercise will be subject to the supplier being registered at the appropriate level on the United Nations Global Marketplace (UNGM) website at www.ungm.org . The Bidder may still submit a quotation even if not registered with the UNGM, however, if the Bidder is selected for Contract award, the Bidder must register on the UNGM prior to contract signature.- Not applicable

ANNEX 1: SCHEDULE OF REQUIREMENTS/ TERMS OF REFERENCE

Project	County Service Centres
Location	Sinoe (Green ville), Cape Mount (Robert sport), River gee County Service centres
Geographical coordinates	4.999444°, -9.037500° (04°59'58", -009°02'15"),6.755556°, -11.368611° (06°45'20", -11°22'07"),5.197873°, -7.875993° (05°11'52", -007°52'34")
Time zone	UTC+00, Africa/Monrovia [GMT]

This TOR sets the requirements for the supply, installation, commissioning, and after-sales services for Off-Grid Solar PV FOR Cape Mount (Robert sport),River Gee (Fish Town) and Sinoe (Green Ville) county service centers

The scope of the project includes:

4. Design, supply, installation, testing commissioning and user training of:
 - Site 1 – One off-grid PV generator of 15 kWp with 30 kWh of total battery capacity. AC inverter 8.0 KVA.
 - Site 2 – One off-grid PV generator of 15 kWp with 30 kWh of total battery capacity. AC inverter 8.0 KVA.
 - Site 3 – One off-grid PV generator of 30 kWp with 85 kWh of total battery capacity. AC inverter 15.0 KVA.

5. After-sales services of 1 year including maintenance (preventative and corrective) and technical support (on-site and/or remote), continued online system and performance monitoring.

6. Training on operations and maintenance (operator and end-user), including provision of operation and maintenance documentation.

Functionalities and general requirements:

OFF Grid Photovoltaic power system with battery to consist of **PV generator, module mounting structure, MPPT battery charger, battery inverter, surge overvoltage protection, LiFePO4 battery bank with BMS battery Management system, data logger with its sensors, and system monitoring via GSM/Ethernet.**

Technical and Operational Specifications

General

An energy audit of the electricity of the county service centers below shows expected daily power consumption. The table in Annex II is an end-use breakdown of power consumption of various

systems in the building. The systems in the building are mainly categorized into the following,

- Air conditioning

- Lighting, and

- Miscellaneous office equipment

Operational

The system will operate as follows:

The system will be an off-grid PV system with backup generators, supplying electricity directly to the building

The county service centers will be powered by the PV system as the primary power source and the existent generators as the backup and on some instances for charging the batteries.

All system components must meet guarantee/warranty terms and high-quality standards (provide certification) to ensure long-term sustainability of the PV system.

The local conditions have to be taken into consideration (proximity to the sea, strong wind).

The system will be constructed such that a user can perform routine maintenance and replacing works, and a technician can easily perform system diagnostics or replace components.

The bidder will provide the most appropriate system integration, components, assembly, and packaging that meet all specifications.

PV Modules

PV modules must be listed on any applicable UN's list of preferred Solar PV module list, and must qualify for eligibility under such program.

System must comply with IEEE 1262 "Recommended Practice for Qualifications of Photovoltaic

Modules", IEC 61215 "Crystalline silicon terrestrial photovoltaic modules –Design qualification and type approval" and IEC 61730-1 and 61730-2 "Photovoltaic module safety qualification, requirements for construction and testing.

The available roof space for the PV installation for the three county service centers is approximately 400 m² . The space must be modified with a PV mounting allowing the installation of all photovoltaic panels for the provision of a total installed power of 15 kW for Cape Mount, River Gee and 30 KW for Sinoe County service centers. The solar panel should be prepared for installation in saline environment, with protection of IP 66 and a safety of class II.

The available space must be assessed by the bidder to accommodate the selected Solar PV modules with adequate room for maintenance

Inverters and miscellaneous accessories

The inverter has to be specified for the maximum load of the PV system.

SMA, X tender series (or equivalent from reputable manufacturers) hybrid-connected inverter of below Technical characteristic are to be used:

- Sine wave current output
- High conversion efficiency
- MPPT • MPPT efficiency >95%
- Voltage input at wide range
- Frequency transformer isolation

- Perfect protection function and high system reliability
- Various communication interface
- Simple installation and operation
- Optional multilingual LCD
- Settable protection and operational factor

Technical parameters:

- DC side: Max. DC voltage: 48Vdc
- Max. Power voltage tracking range: 9—68Vdc
- Max. Input loop: 1 AC side:
- Rated voltage: 230 Vac
- Rated frequency: 50Hz
- Total current waveform distortion rate: 0.99 (rated power)
- System Max. Efficiency: 96% Europe efficiency: 95% Protection grade: IP20 (indoor)
- Internal power consumption at night: 0W
- Operating temperature: -20°C—+40°C Cooling-down method: forced air cooling
- Relative humidity: 0-95%,
- Non-condensation Display: LCD Communication interface: RS232/485、Ethernet/GPRS/GSM
- Other accessories needed for the installation and operation of the system shall be specified according to the installed PV capacity and the local conditions (roof of the building).

Electric Power Requirements:

- Power provided must be compatible with the onsite distribution system (single phase voltage and three phase voltage).
- Power capacity should be measured at the inverter AC output using the PV USA Test Conditions (PTC), i.e. 1,000 Watts/m², 20 °C ambient temperature and wind speed of 1 m/s.
- The System must include all the hardware needed for the solar PV.
- All systems must be installed in accordance with all applicable requirements of local electrical codes and the US National Electrical Code (NEC), including but not limited to Article 690, “Solar Photovoltaic Systems” and Article 705 - “Interconnected Electrical Power Production Sources” or the EU equivalent.
- Systems must be designed and installed using UL or ETL listed components, including mounting systems.
- Modules must be certified to UL 1703 - “Flat-Plate Photovoltaic Modules and Panels” or equivalent.

Inverters must comply with the following requirements or EU equivalent:

- IEEE 929-2000 - “Recommended Practice for Utility Interface of Photovoltaic Systems”

- UL 1741 - “Standard for Static Inverters and Charge Controllers for use in Photovoltaic Systems”
- Listed on the CEC list of eligible inverters

Other technical codes that will apply include:

- US AMSE PTC 50 (solar PV performance)
- ANSI Z21.83 (solar PV performance and safety)
- US NFPA 853 (solar PVs near buildings) or equivalent
- US NEPA 70 (electrical components) or equivalent
- IEEE 1547 (interconnections) or equivalent
- US National Electrical Safety Code - ANSI C2 - 1999 or equivalent
- All applicable CV Building Codes and requirements

The remaining components of the system (wiring, component, wiring, conduits, and connections) must be suited for conditions for which they are to be installed. Inverters, charge controllers and other accessories are located inside technical cabinets with a minimum NEMA 12 enclosure or equivalent.

- All structures and structural elements, including array structures, shall be designed in accordance with all applicable CV Building Codes and standards pertaining to the erection of such structures.
- All structural components, including array structures, shall be designed in a manner commensurate with attaining a minimum 25-year design life. Particular attention shall be given to the prevention of corrosion at the connections between dissimilar metals.
- The structural design should provide for easy and cost-effective repair or replacement of the roof.
- For rooftop installations where there is no parapet or the parapet is less than 1.5 meters, a 2-metre safety zone from the roof edge to the PV system must be maintained. Clear path of travel must be maintained around all rooftop equipment.

Cables, Wiring and Electrical Connectors

All external wiring, cabling, insulation material, junction boxes and combiner boxes must be UV-resistant, and terminals should be protected against dust and moisture. The wiring installation shall be both physically robust against bumping and tugging, and electrically robust. All wiring and connectors should have a design lifetime of 20 years.

Junction Boxes and External Enclosures

All junction boxes shall be rated as specified. Any junction boxes used externally shall have bottom entry glands, and with drip loop installed externally. They shall be located to facilitate inspections with sufficiently long wiring loops internally.

Electrical Connectors and Cable-Ends

All wiring must be neatly done and secured by means of appropriate fasteners at regular intervals. Wiring lengths shall be sufficiently looped to allow ease of connection and disconnection in the case of component replacement, and for maintenance. Any wiring connections whether internal, external, high voltage or low voltage shall be inside accessible junction boxes. No visible connections. Conductor lugs should be used to terminate all DC wiring. Lugs and connectors should be crimped or soldered, and mechanically and electrically sound. All DC electrical connections shall be treated with corrosion inhibiting paste.

External wiring

All external wiring and cabling shall be straight and aligned vertically or horizontally, and cables firmly attached to the walls or cable trays at least every 500mm. Cable entries into buildings shall be made good, and with drip loops as necessary.

Certification

All AC wiring shall be as per the requirements of the electricity standards of IEC

Earthing

The bonding of equipment should prevent dangerous voltage differentials arising between metallic equipment during fault conditions and provide alternative conduction paths to power cables should ground surges from nearby lightning strikes arise. The main earth point for the system shall be a systems earth electrode. It shall be located directly below each array structure.

The earth electrode shall be the common point for the casings of all balance of system components, and the array structure. The risk of lightning strikes varies according to location. However, for this site location the basic guidelines shall apply, as the electrical distribution is contained within one building.

Earth Electrode

Bare copper or bare galvanized steel, in stranded, strip or rod form earth rods should be used. The down conductors shall be connected to copper or galvanized/stainless earth spikes of minimum length 1200mm. The spikes shall be driven vertically into the ground till buried to a depth of 300mm. If necessary, several spikes shall be interconnected as a trench earth to achieve the required resistance of below 10 ohm.

Earth Connections

16mm² bare copper straps shall be used as earth straps to bind components to the earth electrode. Under no circumstances shall connection points, bolts, screws, etc. be used for bonding or earthing be utilized for any other purpose. It shall be the responsibility of the Contractor to supply and fit earth terminals or clamps on equipment that must be earthed where these are not provided.

PV Array Structure Earthing

Each array structure shall always be bonded directly to the earth electrode. If there is electrical discontinuity between module frames and the array structure, then 16mm² conductors shall be utilized for bonding the module frames to the structure. Since there are two PV arrays, it is recommended that a trench earth be used to bond the individual earth spikes together underground.

Equipment Earthing and Bonding

All metal other equipment and casings (as outlined below) shall be bonded together, as they are inter-connected by the power cables. The bonding shall be made using copper conductors of 10mm² minimum. A separate conductor shall be used specifically for that purpose.

- The array structure shall be bonded directly to the main earth electrode with a resistance of less than 1.7ohms.
- The inverter casings shall be bonded (directly or indirectly) to the main earth electrode with a resistance of less than 1.7ohms.
- The resistance between any enclosures in any one location, shall be less than 0.2 ohms.
- The earth resistance of the earth electrode shall be less than 10 ohms.

Lightning and Surge Protection

Lightning protection is designed inherently into the system configurations, earthing, and some level of surge protection is built into the inverters themselves. For added protection, there is a need for additional protection or surge arrestors on the inverter DC inputs. This shall take the form of Class 2 protection on the DC cables in the PV Array junction box or Enclosure.

To protect against surge overvoltage from the utility side it is required to install an SPD (Surge Protective Device) as near to the inverter as possible. This equipment will leak the energy of the overvoltage to the ground. For this reason, it is essential that earth terminals be of a good quality and moreover, it is required that all of the earth terminals be properly connected so as to assure equipotentiality. The required SPD has to be able to discharge high currents caused by an induced overvoltage, for that reasons, it needs to be a type 2 according with IEC 61643 standard. To ensure safety of the equipment, it needs to be at least 40kA as maximum current (Imax). The inverter is a very sensitive equipment, the SPD needs to have been tested, in addition, as a type 3. The type 3 SPDs are specially designed to protect the most sensitive equipment's.

Labelling, Safety Signs and Notices

There shall be labelling and signage as appropriate. All notices, labels or signs shall be durable and not removable except by determined and deliberate action. The inscriptions shall be legible and indelible. Where possible, standard approved symbolic safety signage shall be used. All distribution board labels shall be professional quality signage.

Compliance with Regulations and Codes

The entire installation must be carried out in accordance with the latest revisions and amendments of IEC & ISO international standards, and the standards currently in force in Liberia.

- IEC 62548 latest edition: Installation and safety requirements for photovoltaic generators.

Where compliance is required in terms of codes and regulations, which is not already covered elsewhere in the Specifications, variations required after contract award and site visits shall be covered by contract variation orders if any.

Electrical PV Acceptance and Commissioning Tests

The Acceptance Tests shall depend on the exact equipment supplied. Essentially, the Project Coordinator shall test the systems for electrical performance as specified. Quality of equipment and quality of installation inspections shall also be part of the Acceptance Tests.

Other Services

The Consultant shall develop a simplified training manual (with graphic illustrations) in basic solar PV system maintenance and security and shall conduct a one-day training in the maintenance and security of solar PV systems for selected representatives of the beneficiaries.

Certification

The Client shall certify completion and operational acceptance of the installation by issuance of completion and operational acceptance certificates respectively.

Certificate of Completion

The Consultant shall be issued a Certificate of Completion by the Client after completing the services in accordance with all the terms and conditions of the Service Contract.

Certificate of Operational Acceptance

The Consultant shall be issued a Certificate of Operational Acceptance one month after the issuance of Certificate of Completion, which shall be defect liability period of the service.

Provide the following general information.

Solar array will be roof mounted

The batteries, power electronics and ancillaries shall be in a technical cabinet and shall be pre-assembled and tested in a Factory/Lab environment before shipment.

OFF Grid Solar PV system will operate with batteries and must be designed with necessary features to supply directly the power generated by PV to the loads while simultaneously charging the batteries for later usage.

The battery banks of these systems should be sized to provide an autonomy ranging between 1.5 and 3 days of the rainy season. (1.5 days in sites benefiting from existing gensets, 3.0 days for the other fully autonomous sites).

The equipment's manufacturer shall be a reputable entity and active in the solar sector for at least 5 years. It must have a quality (at least ISO 9001) and Environmental (at least ISO 14001) management system certification.

All equipment installed shall be labelled with the equipment's brand name, model and other. The label should be highly discreet and unobtrusive, and readable only from very near distances of less than 1m.

The supplier shall carry out all civil and electrical works for solar solutions to be compatible with the existing electrical systems and distribution lines. They shall also ensure that each & every piece of electrical equipment & apparatus shall be connected to the main earth bus by means of branch main connection of earth continuity conductors.

For the actual work to be carried out at the site bidder needs to execute the work in consultation with UNDP representative/Inspector.

The Supplier shall provide all necessary components except otherwise specified, and accessories as well as manpower, etc., at the Supplier's own expense to install complete operational units. The equipment shall conform in capability, strength, quality and workmanship to the accepted industry standards and relevant international quality standards. Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The works of minor nature, which are not mentioned, shall be incorporated by the bidder.

The Supplier shall perform a detailed site assessment visit to the sites and confirm the suitability of the solution. The supplier will also inspect the solution and/or components prior to the installation and prepare an installation plan to collate the amount of work to be done.

Erection and commissioning of the supplied system on the specified site and do any other work urgently required as per site conditions.

The Supplier should remove the waste of works undertaken including the trash and dirt resulting from the works and attend to any snags caused by workmanship. The site should be returned to its initial state of cleanliness.

Local Partner:

Bidders are required to establish formal agreement with Local and/or Regional Representative for support in deployment of Solar PV System with regards to Site Visit, Installation; Commissioning; Training and After-Sales Services/Maintenance.

The bidder is requested to define a common deployment protocol for all teams on site to ensure the homogenization and quality of the plants' installation, commissioning and handing over.

Please include the following in the offer document:

- Letter signed by both parties confirming relationship between the supplier and local service provider.
- Profile of the local service provider including documentary evidence of relevant experience and services.
- Biannual maintenance by the local partner (for 1 year). Include the checklist for periodic inspection.
- A detailed list of services that are included in the O&M and after sales services.

Project Deliverables:

Deliverable 1:

- a) Detailed Planned Schedule of works.

- b) Detailed site survey report, including:
 - i. Identification for components' location(s),
 - ii. Identification of best available climatic data to be used in system sizing (at least monthly values of solar irradiance and temperature),
 - iii. Photo documentation and assessment of any shading objects,
 - iv. Review and calculation of consumption profile given by UNDP (appliances and daily use, including surge loads),
 - v. Selection of a suitable mounting system that does not compromise the integrity of the roof/ground.
- c) Design sizing and documentation, including (where applicable):
 - i. Site specific layout of the solar array.
 - ii. Appropriate sizing in piping lengths and sections for the entire installation.
 - iii. Bill of material (BoM) inclusive of technical specifications for the main components.
 - iv. Shop Drawings (*e.g. single line diagram, wiring layout including distances; protections; components etc.*).
- d) A Health, Safety and Environmental Management Plan.
- e) A description of the proposed performance and acceptance testing procedure that will be undertaken during commissioning phase.
- f) A letter certifying the compliance with requirements on warranties, spare parts and standards, etc.
- g) In case the PV modules are roof-mounted, supplier will take responsibility for structural integrity of the roof.

Deliverable 2:

- a) Pre-assembling and wiring: mounting of inverters, controllers and the likes done as much as possible in a factory/lab environment.
- b) Supply and delivery of the equipment at supplier Monrovia warehouse with all components needed for project delivery and operation.

Deliverable 3:

- a) Installation of complete Solar PV Plant with all components required for operation, and implementation of all related performance testing.
- b) Formal signed User Acceptance Test (UAT) and Commissioning of the Solar PV Plant, etc. Report shall be approved by the Project representatives beforehand.
- c) Submission of final Technical Report, inclusive of:
 - i. As-built drawings,
 - ii. Technical description of the final solution
 - iii. Testing/Commissioning report (inclusive of final testing and values),
 - iv. Datasheets,
 - v. Complete bill of materials (BOM),
 - vi. Static verification of mounting structure (if applicable),
 - vii. Warranty certification/documentation for the main components.
- d) Submission of photos, videos and visual material of the final system installed.
- e) Training on Operation and Maintenance (O&M) of the installed equipment for the beneficiaries' representatives (end users and beneficiaries' staff maintenance crews) and provision of training materials and O&M manuals. Inclusive of:
 - i. Basics on the Solar PV system commissioned (components and operation)
 - ii. Basic shutting-down procedures (in case it is necessary)
 - iii. Operation and Maintenance of the solar PV system (for future hand-over after maintenance period)
 - iv. Integration with gensets (where applicable)
 - v. All basic issues that might occur and the relevant troubleshooting.
 - vi. A special focus should be on using the online monitoring system and troubleshooting of basic errors and problems that occur frequently.
- f) Signaling labelling:
 - i. All components shall be labelled in English.
 - ii. Signs or labelling warning about safety hazards, e.g. smoking, water contact, etc.
 - iii. Emergency shutdown procedures (visual information) shall be provided.
 - iv. Panel with up keeping and operating instructions for the beneficiary shall be installed.
- g) Visual Material.

Deliverable 4:

- a) System monitoring inclusive of reporting as part of the maintenance service.
- b) After-sales services of 1 year: including maintenance (preventative and corrective) and technical support (on-site and/or remote) including continued online monitoring. This is inclusive of appropriate escalation or system modification procedures.
- c) The awarded LTA vendor must remain at the disposal of the beneficiary for at least two months (stabilization period) after handover/commissioning to assist in answering any technical or other related questions.
- d) Warranty and O&M for 12 months:
 - i. System Warranty: Required warranty period for all PV systems is 1 year from commissioning date. It should include monitoring, technical support and maintenance. This should be provided in the form of a warranty certificate/statement. During the referred warranty period, Bidder's shall further bear the cost of transporting equipment from its operating site to workshop appointed for provision of warranty services
 - ii. Warranty certification/documentation for the PV System Main Components including summary overview of warranty arrangements (technical and logistical).
 - iii. Overview of available warranty extension options for main components.
 - iv. Cost associated with warranty replacements during the warranty period will be borne by the supplier.
 - v. Cost associated with the maintenance and technical support for the PV system during maintenance subscription will be borne by the supplier.

Remote Monitoring:

Remote monitoring: real-time & historical data with a storage capacity for main data (energy measurements, consumption data and alarms).

The minimum parameters to be monitored are (instantaneous and historical values)

- Total energy (kWh) and power (kW) produced by PV
- Energy (kWh) and power (kW) fed into battery for charging and supplied from the battery
- Energy (kWh) and power (kW) supplied from the genset (where appropriate)
- Total consumption of loads
- Solar fraction
- Battery SOC and temperature
- Alarms and configuration records

The monitoring system shall have an LCD display in English and provide monitoring reports through:

- 1) Internet connectivity (LAN; Wi-Fi etc.) and,
- 2) GSM connectivity,
- 3) Ability to store for minimum 6 months of monitoring data locally (solar PV system) in the event of extended internet/GSM outage.

Bidders are required to include in their offers all the necessary elements (SIM cards, annual subscription, modem, data management/reporting) to make possible a monitoring system through GSM connectivity even for the sites with internet connectivity

Delivery Requirements

Delivery Requirements	
Delivery date and time	Bidder shall deliver and complete Installation within 12 weeks after Contract signature.
Delivery Terms (INCOTERMS 2020)	DAP
Customs clearance (must be linked to INCOTERM)	<input checked="" type="checkbox"/> Supplier/bidder, UNDP to provide Tax Exemption Documents where applicable to the most responsive Bidder.
Exact Address(es) of Delivery Location(s)	Cape Mount (Robert sport), River Gee (Fish Town) and Sinoe (Green Ville) c
Distribution of shipping documents (if using freight forwarder)	n/a
Packing Requirements	<p>The packing must be of a sturdy export quality of a commercial standard that will provide adequate protection of the goods for carriage by air, sea and/or road to final destinations worldwide, including remote locations under adverse climatic and storage conditions and high humidity.</p> <p>All wood packaging, including pallets and boxes, utilized in any shipment, have undergone the treatment, marking and documentation required to meet the specifications described in ISPM Nr 15: Guidelines for Regulating Wood Packaging Material in International Trade, available at www.ippc.int</p> <p>It is the responsibility of the vendor to provide complete packing as required for transportation. Hazardous chemicals and other dangerous goods must be packed and documented according to current legislation.</p>
Training on Operations and Maintenance	Training on operations and maintenance (operator and end-user), including provision of operation and maintenance documentation. All training Manual must be in English.
Warranty Period	12 months
After-sales service and local service support requirement	After-sales services of 1 year including maintenance (preventative and corrective) and technical support (on-site and/or remote), continued online system and performance monitoring

Preferred Mode of Transport	Sea
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Site 1: Cape mount and River Gee

Item	Description	Requirement	Observations/Quality assurance	Deviations/Non-compliance and provide details in technical proposal
1	Site assessment	Done. Vendors must conduct further site assessment	To fine-tune/adjust system design and to facilitate the planning of logistics/installations.	
2	Off grid PV system	8.0 KVA		
2.1	Solar Panels	15 kWp	Mono Crystalline modules with 10 years manufacturer guarantee	

2.2	Mounting structure (s)	required	To be fixed on the roof.	
2.3	Technical cabinet	required	Lockable, ventilated and waterproof	
2.4	Solar Battery charger/controller	required	MPPT solar input	
2.5	AC battery charger	required	Automatic when genset is working	
2.6	Battery bank	30.0 kWh LiFePO4	>90% DOD 4000 cycles guarantee	
2.7	Battery Management system	required	Protection from over-charge Protection from under-charge Battery-balancing Ability to report SOC	
2.8	Inverter continuous service	8.0 KVA 1 phase 230VAC	5 years warranty	
2.9	Monitoring	Local and remote	Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.	
3	Rewiring of existing electric installation	Required	To segregate non-critical loads and critical loads. The PV systems to power only the critical loads. Other loads categorized as non-critical – such as air conditioners – must be powered exclusively by gensets (if any) or other external electricity source.	
4	Anti-theft and anti-tampering measures	required		
5	Guarantee and O&M	required	System guarantees of 12 months, including two preventive maintenance visits and as many repairs as required.	

Site 2: Sinoe

Item	Description	Requirement	Observations/Quality assurance	Deviations/Non-compliance and provide details in technical proposal
1	Site assessment	Done. Vendors should conduct further site assessment	To fine-tune/adjust system design and to facilitate the planning of logistics/installations.	
2	Off grid PV system	15.0 KVA		
2.1	Solar Panels	30 kWp	Mono Crystalline modules with 10 years manufacturer guarantee	
2.2	Mounting structure (s)	required	To be fixed on the roof.	
2.3	Technical cabinet	required	Lockable, ventilated and waterproof	
2.4	Solar Battery charger/controller	required	MPPT solar input	
2.5	AC battery charger	required	Automatic when genset is working	
2.6	Battery bank	85.0 kWh LiFePO4	>90% DOD 4000 cycles guarantee	
2.7	Battery Management system	required	Protection from over-charge Protection from under-charge Battery-balancing Ability to report SOC	
2.8	Inverter continuous service	15.0 KVA 3 phase 400VAC	5 years warranty	
2.9	Monitoring	Local and remote	Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.	
3	Rewiring of existing electric installation	Required	To segregate non-critical loads and critical loads. The PV systems to power only the critical loads. Other loads categorized as non-critical – such as air conditioners – must be powered exclusively by gensets (if any) or other external electricity source.	
4	Anti-theft and anti-tampering measures	required		
5	Guarantee and O&M	required	System guarantees of 12 months, including two preventive maintenance visits and as many repairs as required.	

ANNEX 2: QUOTATION SUBMISSION FORM

Bidders are requested to complete this form, including the Company Profile and Bidder's Declaration, sign it and return it as part of their quotation along with Annex 3: Technical and Financial Offer. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	Click or tap here to enter text.	Date: Click or tap to enter a date.

Company Profile

Item Description	Detail
Legal name of bidder or Lead entity for JVs	Click or tap here to enter text.
Legal Address, City, Country	Click or tap here to enter text.
Website	Click or tap here to enter text.
Year of Registration	Click or tap here to enter text.
Legal structure	Choose an item.
Are you a UNGM registered vendor?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, insert UNGM Vendor Number
Quality Assurance Certification (e.g. ISO 9000 or Equivalent) (If yes, provide a Copy of the valid Certificate):	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment? (If yes, provide a Copy of the valid Certificate):	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does your Company have a written Statement of its Environmental Policy? (If yes, provide a Copy)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Does your organization demonstrate significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies or membership of trade institutions promoting such issues (If yes, provide a Copy)	<input type="checkbox"/> Yes <input type="checkbox"/> No

Is your company a member of the UN Global Compact	<input type="checkbox"/> Yes <input type="checkbox"/> No			
Bank Information	Bank Name: Click or tap here to enter text. Bank Address: Click or tap here to enter text. IBAN: Click or tap here to enter text. SWIFT/BIC: Click or tap here to enter text. Account Currency: Click or tap here to enter text. Bank Account Number: Click or tap here to enter text.			
Previous relevant experience: 3 contracts				
Name of previous contracts	Client & Reference Contact Details including e-mail	Contract Value	Period of activity	Types of activities undertaken

Bidder's Declaration

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Requirements and Terms and Conditions: I/We have read and fully understand the RFQ, including the RFQ Information and Data, Schedule of Requirements, the General Conditions of Contract, and any Special Conditions of Contract. I/we confirm that the Bidder agrees to be bound by them.
<input type="checkbox"/>	<input type="checkbox"/>	I/We confirm that the Bidder has the necessary capacity, capability, and necessary licenses to fully meet or exceed the Requirements and will be available to deliver throughout the relevant Contract period.
<input type="checkbox"/>	<input type="checkbox"/>	Ethics: In submitting this Quote I/we warrant that the bidder: has not entered into any improper, illegal, collusive or anti-competitive arrangements with any Competitor; has not directly or indirectly approached any representative of the Buyer (other than the Point of Contact) to lobby or solicit information in relation to the RFQ; has not attempted to influence, or provide any form of personal inducement, reward or benefit to any representative of the Buyer.
<input type="checkbox"/>	<input type="checkbox"/>	I/We confirm to undertake not to engage in proscribed practices, , or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we have read the United Nations Supplier Code of Conduct : https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct and acknowledge that it provides the minimum standards expected of suppliers to the UN.
<input type="checkbox"/>	<input type="checkbox"/>	Conflict of interest: I/We warrant that the bidder has no actual, potential, or perceived Conflict of Interest in submitting this Quote or entering a Contract to deliver the Requirements. Where a Conflict of Interest arises during the RFQ process the bidder will report it immediately to the Procuring Organization's Point of Contact.
<input type="checkbox"/>	<input type="checkbox"/>	Prohibitions, Sanctions: I/We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium members or subcontractors or suppliers for any part of the contract is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists and have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization.
<input type="checkbox"/>	<input type="checkbox"/>	Bankruptcy: I/We have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future.

Yes	No	
<input type="checkbox"/>	<input type="checkbox"/>	Offer Validity Period: I/We confirm that this Quote, including the price, remains open for acceptance for the Offer Validity.
<input type="checkbox"/>	<input type="checkbox"/>	I/We understand and recognize that you are not bound to accept any Quotation you receive, and we certify that the goods offered in our Quotation are new and unused.
<input type="checkbox"/>	<input type="checkbox"/>	By signing this declaration, the signatory below represents, warrants and agrees that he/she has been authorised by the Organization/s to make this declaration on its/their behalf.

Signature: _____

Name: Click or tap here to enter text.

Title: Click or tap here to enter text.

Date: Click or tap to enter a date.

ANNEX 3: TECHNICAL AND FINANCIAL OFFER - GOODS

Bidders are requested to complete this form, sign it and return it as part of their bid along with Annex 2: Quotation Submission Form. The Bidder shall fill in this form in accordance with the instructions indicated. No alterations to its format shall be permitted and no substitutions shall be accepted.

Name of Bidder:	Click or tap here to enter text.	
RFQ reference:	Click or tap here to enter text.	Date: Click or tap to enter a date.

Technical Specifications.

The equipment furnished to these specifications must meet or exceed all requirements herein. Modifications of or additions to basic standard equipment of less size or capability to meet these requirements will not be acceptable.

Site: Cape mount and River Gee

Item	Description	Requirement	Observations/Quality assurance	Deviations/Non-compliance
1	Site assessment	Done. Vendors must conduct further site assessment	To fine-tune/adjust system design and to facilitate the planning of logistics/installations.	
2	Off grid PV system	8.0 KVA		
2.1	Solar Panels	15 kWp	Mono Crystalline modules with 10 years manufacturer guarantee	
2.2	Roofing Mounting structure (s)	required	To be fixed on the roof.	
2.3	Technical cabinet	required	Lockable, ventilated and waterproof	
2.4	Solar Battery charger/controller	required	MPPT solar input	
2.5	AC battery charger	required	Automatic when genset is working	
2.6	Battery bank	30.0 kWh LiFePO4	>90% DOD 4000 cycles guarantee	
2.7	Battery Management system	required	Protection from over-charge Protection from under-charge Battery-balancing Ability to report SOC	
2.8	Inverter continuous service	8.0 KVA 1 phase 230VAC	5 years warranty	
2.9	Anti-theft and anti-tampering measures	68		
2.10	Monitoring	Local and remote	Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.	

3	Rewiring of existing electric installation	Required	To segregate non-critical loads and critical loads. The PV systems to power only the critical loads. Other loads categorized as non-critical – such as air conditioners – must be powered exclusively by gensets (if any) or other external electricity source.	
4	Anti-theft and anti-tampering measures	required		
5	Guarantee and O&M	required	System guarantee of 12 months, including two preventive maintenance visits and as many repairs as required.	

Bill of Quantities

Site: Cape mount and River Gee				
Item	Description	Quantity	Unit price	Total Price (USD)
1	Detailed site assessment, including assessment report			
2	Off grid PV system – Cape Mount and River Gee County service centre			
2.1	Solar Panels	68		
2.2	Roof Mounting structure (s)	1		
2.3	Technical cabinet	1		
2.4	Solar Battery charger/controller	5		
2.5	AC battery charger (if required as per annex2)	1		
2.6	Battery bank	1		
2.7	Battery Management system	1		
2.8	Inverter continuous service	1		
2.9	Anti-theft and anti-tampering measures	68		
2.10	Monitoring Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.			
3	Site preparation and civil works			
4	Ancillaries, protections and Cables			
5	Rewiring of existing electric installation (adding auto transfer switch)			
6	Installation and Commissioning of the PV system			
7	Training on Operations and maintenance of the PV systems and provision of training materials and Operation manuals			
	Total Cost			

Site: Sinoe

Item	Description	Requirement	Observations/Quality assurance	Deviations/Non-compliance
1	Site assessment	Done. Vendors should conduct further site assessment	To fine-tune/adjust system design and to facilitate the planning of logistics/installations.	
2	Off grid PV system	15.0 KVA		
2.1	Solar Panels	30 kWp	Mono Crystalline modules with 10 years manufacturer guarantee	
2.2	Roofing Mounting structure (s)	required	To be fixed on the roof.	
2.3	Technical cabinet	required	Lockable, ventilated and waterproof	
2.4	Solar Battery charger/controller	required	MPPT solar input	
2.5	AC battery charger	required	Automatic when genset is working	
2.6	Battery bank	85.0 kWh LiFePO4	>90% DOD 4000 cycles guarantee	
2.7	Battery Management system	required	Protection from over-charge Protection from under-charge Battery-balancing Ability to report SOC	
2.8	Inverter continuous service	15.0 KVA 3 phase 400VAC	5 years warranty	
2.9	Anti-theft and anti-tampering measures	80	required	
2.10	Remote Monitoring	Local and remote	Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.	
3	Rewiring of existing electric installation	Required	To segregate non-critical loads and critical loads. The PV systems to power only the critical loads. Other loads categorized as non-critical – such as air conditioners – must be powered exclusively by gensets (if any) or other external electricity source.	
4	Guarantee and O&M	required	System guarantee of 12 months, including two preventive maintenance visits and as many repairs as required.	

Bill of Quantities

Site: Sinoe				
Item	Description	Quantity	Unit price	Total Price (USD)
1	Detailed site assessment, including assessment report	(highly recommended)		
2	Off grid PV system – River Cess County service centre			
2.1	Solar Panels	80		
2.2	Roof Mounting structure (s)	1		
2.3	Technical cabinet	1		
2.4	Solar Battery charger/controller	5		
2.5	AC battery charger (if required as per annex2)	1		
2.6	Battery bank	1		
2.7	Battery Management system	1		
2.8	Inverter continuous service	1		
2.9	Anti-theft and anti-tampering measures	80		
2.10	Monitoring Local and remote- Remote monitoring system through GSM connectivity including SIM cards, annual subscription for one year, modem, data management/reporting.			
3	Rewiring of existing electric installation (adding auto transfer switch)			
4	Site preparation and civil works			
5	Ancillaries, protections, and Cables			
6	Installation and Commissioning of the PV system			
7	Training on Operations and maintenance of the PV systems and provision of training materials and Operation manuals			
	Total Cost			

Preliminary assessment of the Photovoltaic locations.

Lot No.	Name / Address	Current energy supply	Observations	PV field size (kWp)	Battery Capacity total (kWh)	Inverter AC output (KVA)	Inverter type
1	River Gee County Service center 5.197873°, - 7.875993° (05°11'52", - 007°52'34")	One 65 KVA Genset from the County, feeding other buildings as well, and running.	Air conditioning Units are the major loads in the building. Roofing length (24m X 11m) Available space for solar equipment needs civil works.	15.0	30.0	8.0	1 phase
2	Robert sport, Grand Cape Mount County Service Centre 6.755556°, -11.368611° (06°45'20", -11°22'07")	One 65 KVA Genset from the County, feeding other buildings as well, and running	Air conditioning Units are the major loads in the building. Roofing length approx (24m X 11m) Available space for solar equipment needs civil works.	15.0	30.0	8.0	1 phase
3	Sinoe County Service center 4.999444°, -9.037500° (04°59'58", -009°02'15")	One 65 KVA Genset from the County, feeding other buildings as well, and running	Roofing space is more than 400m ²	30.0	85.0	15.0	3 phase

Annex I

LOAD DATA (Sinoe County service centre)								
	No of offices	Occupancy of the building	Working Hours	No of Desktop Computers	No of air Conditioning Units	No of Printers	No of Light Bulbs	Any other Equipment
	25 offices	More than 50 persons	8 hours a day (8-5)	15-25	20	5 or more	50 or more	Water Pump
Load Data (Amps)				2 Amps	13.8 Amps	4 Amps	0.1 amps	20 Amps

Total Load (Amps)				24	69	8	3	20
Current Voltage in Premises	400 Voltage							

LOAD DATA (Cape mount Robert sport and River Gee)

	No of offices	Occupancy of the building	Working Hours	No of Desktop Computers	No of air Conditioning Units	No of Printers	No of Light Bulbs	Any other Equipment
	At least 13 offices	Approx. 20 persons	8 hours a day (8-5)	15	13	2	20	Water Pump
Load Data (Amps)				2 Amps	13.8 Amps	4 Amps	0.1 amps	20 Amps
Total Load (Amps)				24	69	8	3	20
Current Voltage in Premises	230 Voltage							

Compliance with Requirements

	You Responses		
	Yes, we will comply	No, we cannot comply	If you cannot comply, pls. indicate counter - offer
Minimum Technical Specifications	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Delivery Term (INCOTERMS)	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Delivery Lead Time	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Warranty and After-Sales Requirements	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Validity of Quotation	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Payment terms	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Other requirements <i>[pls. specify]</i>	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.

Other Information:

Estimated weight/volume/dimension of the Consignment:	Click or tap here to enter text.
Country/ies of Origin: <i>(if export licence required this must be submitted if awarded the contract)</i>	Click or tap here to enter text.

I, the undersigned, certify that I am duly authorized to sign this quotation and bind the company below in event that the quotation is accepted.	
<p><i>Exact name and address of company</i></p> <p>Company Name Click or tap here to enter text. Address: Click or tap here to enter text. Click or tap here to enter text.</p> <p>Phone No.: Click or tap here to enter text.</p> <p>Email Address: Click or tap here to enter text.</p>	<p>Authorized Signature:</p> <p>Date: Click or tap here to enter text.</p> <p>Name: Click or tap here to enter text.</p> <p>Functional Title of Authorised Signatory: Click or tap here to enter text.</p> <p>Email Address: Click or tap here to enter text.</p>

Compliance with Requirements

	You Responses		
	Yes, we will comply	No, we cannot comply	If you cannot comply, pls. indicate counter - offer
Delivery Lead Time	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Validity of Quotation	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Payment terms	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.
Other requirements [pls. specify]	<input type="checkbox"/>	<input type="checkbox"/>	Click or tap here to enter text.

<p>I, the undersigned, certify that I am duly authorized to sign this quotation and bind the company below in event that the quotation is accepted.</p>	
<p><i>Exact name and address of company</i></p> <p>Company Name Click or tap here to enter text.Address: Click or tap here to enter text. Click or tap here to enter text.</p> <p>Phone No.: Click or tap here to enter text.</p> <p>Email Address: Click or tap here to enter text.</p>	<p>Authorized Signature:</p> <p>Date: Click or tap here to enter text.</p> <p>Name: Click or tap here to enter text.</p> <p>Functional Title of Authorised Signatory: Click or tap here to enter text.</p> <p>Email Address: Click or tap here to enter text.</p>

