



REQUEST FOR QUOTATION (RFQ)

Supply and Installation of 10 kWp Grid Interactive Solar PV Systems

RFQ Reference: NPL10-34-2021	Date: 22 July 2021
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SECTION 1: REQUEST FOR QUOTATION (RFQ)

UNDP kindly requests your quotation for the provision of goods, works and/or services 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: _____

A handwritten signature in blue ink, appearing to read 'Shiva Prakash Adhikari', written over a horizontal line.

Name: Shiva Prakash Adhikari

Title: Procurement Associate

Date: 22 July 2021

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>5.30 pm Nepal Time, 05 August 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</p> <p><input type="checkbox"/> Dedicated Email Address</p> <p><input type="checkbox"/> Courier / Hand delivery</p> <p><input type="checkbox"/> Other Click or tap here to enter text.</p> <p>Bid submission address: https://etendering.partneragencies.org, Event ID No. NPL10-34-2021</p> <ul style="list-style-type: none"> File Format: PDF Format 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: 35 MB It is recommended that the entire Quotation be consolidated into as few attachments as possible. <p>For eTendering method, click the link https://etendering.partneragencies.org and insert Event ID information</p> <ul style="list-style-type: none"> Insert BU Code and Event ID number: NPL10-34-2021 <p>In case your company is not registered in the e-Tendering Module, please use the following temporary username and password to register your company/firm: Username: event.guest Password: why2change</p> <p>Bidders who will be registered on the e-Tendering will be able to download the complete bidding documents from the e-Tendering website at: https://etendering.partneragencies.org. Bidders can download the complete tender documentation from the e-Tendering upon registration.</p> <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>
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 checked="" 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 service is delayed by [XXX days]</p> <p><input type="checkbox"/> Others []</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	Quotations shall be quoted in Nepalese Rupees
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> <p>Refer to Clauses 19 – 24 under Solicitation policy for details on the applicable provisions on Joint Ventures, Consortium or Association.</p>
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> <ul style="list-style-type: none"> 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 b) they have the same legal representative for purposes of this RFQ; or 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; 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 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.
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> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> be inclusive of VAT and other applicable indirect taxes <input type="checkbox"/> be exclusive of VAT and other applicable indirect taxes
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> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Annex 2: Quotation Submission Form duly completed and signed <input checked="" type="checkbox"/> Annex 3: Technical and Financial Offer duly completed and signed and in accordance with the Schedule of Requirements in Annex 1 <input checked="" type="checkbox"/> Company Profile <input checked="" type="checkbox"/> Registration certificate <input checked="" type="checkbox"/> Tax registration and the latest tax clearance certificate <input checked="" type="checkbox"/> List and value of similar projects/services performed for the last three year services plus client's contact details who may be contacted for further information on those contracts <input checked="" type="checkbox"/> Product brochures, specifications, certifications, quality certifications, and related documents <input checked="" type="checkbox"/> Names and curriculum vitae of individuals who will be involved in completing the services <input checked="" type="checkbox"/> All relevant documents from the manufacturer(s) <input checked="" type="checkbox"/> Drawings as specified in the Scope of Work section of Annex 3

Quotation validity period	Quotations shall remain valid for 90 days from the deadline for the Submission of 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 <input type="checkbox"/> Permitted
Alternative Quotes	<input checked="" type="checkbox"/> Not permitted <input type="checkbox"/> Permitted
Payment Terms	<input checked="" type="checkbox"/> Lump-sum basis <input type="checkbox"/> Other Click or tap here to enter text.
Conditions for Release of Payment	<input type="checkbox"/> Passing Inspection (as mentioned in the specifications), Complete Installation <input checked="" type="checkbox"/> Passing all Testing and Certifications as specified in Annex 1: Schedule of Requirement <input type="checkbox"/> Satisfactory Performance on Monthly basis <input checked="" type="checkbox"/> Written Acceptance of Goods, Services and Works, based on full compliance with RFQ requirements <input type="checkbox"/> Others
Contact Person for correspondence, notifications and clarifications	E-mail address: query.procurement.np@undp.org Attention: Quotations shall not be submitted to this address but to the address for quotation submission above. Otherwise, offer shall be disqualified. 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.
Clarifications	Requests for clarification from bidders will not be accepted any later than 7 days before the submission deadline. Responses to request for clarification will be communicated by posting queries and UNDP responses in UNDP procurement page by 5.30pm Nepal Time, 29 July 2021.
Evaluation method	<input checked="" type="checkbox"/> The Contract or Purchase Order will be awarded to the lowest price substantially compliant offer <input type="checkbox"/> Other Click or tap here to enter text.
Evaluation criteria	<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 <input type="checkbox"/> Comprehensiveness of after-sales services <input checked="" type="checkbox"/> Earliest Delivery /shortest lead time <input type="checkbox"/> Others Click or tap here to enter text.

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, UNDP 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.
Type of Contract to be awarded	<input checked="" type="checkbox"/> Purchase Order <input type="checkbox"/> Contract Face Sheet (Goods and-or Services) (this template is also utilised for Long-Term Agreement) and if an LTA will be signed, specify the document that will trigger the call-off. E.g., PO, etc.) <input type="checkbox"/> Contract for Works <input type="checkbox"/> Other Type/s of Contract
Expected date for contract award.	By August 15, 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.

ANNEX 1: SCHEDULE OF REQUIREMENTS

BoQ of 10kWp Grid Interactive Solar PV System								
S.N.	Component	Description of Components	Unit	Capacity/ number (A)	Rate (NRs.) (B)	Amount for Bheerkot Municipal Hospital [C]=(A*B)	Amount for Bardibas Hospital [D]=(A*B)	Total Amount (NRs.) [C+D]
1	Solar Array	Individual module of minimum of 300 Wp, Mono, Mono PERC or Poly Crystalline having minimum module efficiency of 17%	kWp	10				-
2	Grid Tied Inverter	Three Phase, 400V, 8 kW Grid Tie PV Inverter having MPPT Input and efficiency greater than 97%	kW	8				-
3	Battery	VRLA Gel Tubular Battery of Total Minimum Capacity of 48 kWhr (Individual battery capacity: Minimum 2V 1000Ah@C/10) with rack, cables and accessories	kWh	48.0				-
4	Bi-directional Battery Inverter	3-phase bi-directional inverter of Total Minimum Capacity 30 kVA having inbuilt control system for grid import/export. The individual inveter block should be of minimum of 5kVA.	kVA	30				-
5	Mounting Structure for Ground Mounted	Solar PV Module support structure for ground mounted PV System, hot dipped galvanized iron of minimum of 85 micron metal frame with complete set	kWp	10				-
6	Combiner Box	PV Combiner Box (Protection Class: IP65) with DC Fuse for PV strings as per PV module datasheet , DC MCB, DC SPD, Earthing, DC Breaker)	Set	1.00				-

7	Cables	DC and AC copper cables & Accessories all complete. Th DC cable from combiner box to each PV inverter should be minimum of 16mm ² .	meter	25.00				-
8	Vertical Air Terminal Rod with down conductor	Vertical air terminal rod of 1.5 m length and dia of 15mm with down conductor having atleast 25x3mm copper strip of at least 10m length.	Set	1.00				-
9	Metal pole to install vertical air terminal	Galvanized MS pole of 6 m, minimum of 3 inch diameter and 3 mm thickness	Nos.	1.00				-
10	Three phase AC SPD	Type 1 + 2, Nominal Voltage 230 V, I _{max} 20 kA, as per IEC: 61643-11:2011 at Main Distribution Box	Set	1.0				-
11	DC SPD	Type 1 + 2, Nominal Voltage 1000 V, I _{max} 20 kA, as per IEC 61643-31:2018 or EN 50539-11:2013 at the input side of Inverter	Set	1.0				-
12	Earthing System	Maintenance free 2 m copper rod earth Electrode of 20 mm diameter, Back-fill chemical compound of minimum 25 Kg, Earth Resistance value must be less than 5 Ohm round the year.	Set	1.00				-
13	Main Distribution Board	Main Distribution Board with Isolator and MCCB	Set	1.0				-
14	Online Monitoring System	Online Monitoring System with Web based monitoring portal, Router etc	Set	1.0				-
15	Wiring for Back-up Loads	Separate Wiring for Back-up Loads upto MCBs of main and sub distribution boxes in the hospital	LS					-
16	Installation Testing and commissioning	Installation, Testing and Commissioning of 10kWp Grid Interactive Solar PV systems	LS	1.0				-

17	Transportation	Transportation up to installation site in Bheerkot Municipal Hospital, Syangja district	LS	1.0				-
18	Transportation	Transportation up to installation site in Bardibas Hospital, Mahottari district	LS	1.0				
19	Training	Operational Training to nominated technician/operator in Bheerkot Municipal Hospital, Syangja district	LS	1.0				-
20	Training	Operational Training to nominated technician/operator in Bardibas Hospital, Mahottari district	LS	1.0				
21	Annual Maintenance Contract	Maintenance cost for five years (Bheerkot Municipal Hospital, Syangja district)	LS	1.0				
22	Annual Maintenance Contract	Maintenance cost for five years (Bardibas Hospital, Mahottari district)	LS	1.0				-
	I	Sub Total of Bills						
	II	Contingency (I)						
	III	Grand Sub Total (I+II)						
	IV	VAT 13% of III (except solar modules)						
	V	GRAND TOTALS (III + IV)						

Delivery Requirements

Delivery Requirements	
Delivery date and time	Bidder shall complete the supply, installation and commissioning of the two 10 kWp Grid Interactive Solar PV Systems within 3 months after Contract/PO signature.
Delivery Terms (INCOTERMS 2020)	DDP
Customs clearance (must be linked to INCOTERM)	<input checked="" type="checkbox"/> Not applicable Shall be done by: <input type="checkbox"/> Name of organisation (where applicable) <input type="checkbox"/> Supplier/bidder <input type="checkbox"/> Freight Forwarder
Exact Address(es) of Delivery Location(s)	1. Bheerkot Municipal Hospital, Bheerkot Municipality, Ward No. 1, Helu, Syangja, Gandaki Province 2. Bardibas Hospital, Bardibas Municipality, ward no. 2, Mahottari district

Distribution of shipping documents (if using freight forwarder)	Click or tap here to enter text.
Packing Requirements	Click or tap here to enter text.
Training on Operations and Maintenance	Required
Warranty Period	As indicated in Annex 3: Schedule of Requirement
After-sales service and local service support requirements	As indicated in Annex 3: Schedule of Requirement
Preferred Mode of Transport	

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:	NPL10-34-2021	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? <i>(If yes, provide a Copy)</i>	<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 <i>(If yes, provide a Copy)</i>	<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

Yes	No	
		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 Organisation'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.
<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/SERVICE

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:	NPL10-34-2021	Date: Click or tap to enter a date.

Technical Specifications

The purpose of the Technical Specifications (TS) is to define the technical characteristics of the goods and related services that are required to be procured for the system installation. The TS, as a part of the schedule of supply, constitute a contract document and are, therefore, a part of the contract. The bidder must furnish documentary evidence in the form of data sheets, quality test certificates, drawings and detailed description of goods with essential technical information. All data, drawings, catalogues and other technical documents shall be bound separately from the Bid documents.

The Bidder shall furnish a clause-by-clause commentary on specification. The bidders are required to mention their characteristics of proposed goods with related service stating Complied or Non-Complied or Partially Complied. In the case of Non-Complied or Partially Complied comment provided by the bidder, the bidder has to propose its alternative specification to satisfy UNDP's requirements. If the deviation mentioned by the bidder is satisfactory, it will go for further evaluation. Otherwise, any one or more non-complied or partially complied or not mentioned anything or otherwise mentioned of particular category of goods and related services are subject to rejection of bid. It is mandatory to submit document from manufacturer showing the proposed technical parameters and highlight the parameters in the technical specification.

The power generation system components shall comply with the standard set forth under Nepal Photovoltaic Quality Assurance (NEPQA) 2015.rev1, wherever applicable.

1. SOLAR POWER GENERATION COMPONENTS

The bidder must clearly respond to the technical specifications and standards asked for the system components in their technical proposal. The bidder must provide the data sheet and technical specifications of all the components including IV curve, efficiency curves, test certificates/reports, warranty certificate, international standards.

1.1 Solar Photovoltaic (PV) Module

General Description

The total required PV array capacity must be at least 10 kWp. The PV modules shall comply with following standards and technical specifications:

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
2	Manufacturer's experience in manufacturing PV modules: At least 10 years		
3	The manufacturer shall have: ISO 9001, ISO14001, OHSAS 18001/ISO 45001 Certificates		
4	Peak Power of Individual Module under STC: At least 300 Watt-peak		
5	Array Capacity: At least 10 kWp		
6	PV Module Efficiency: At least 17%		
7	Cell type: Crystalline		
8	No. of Cells per Module: At least 72		
	Power Tolerance: 0 to 3%		
	Fill Factor: At least 75%		
9	Degree of Protection (Junction Box): At least IP67 according to IEC 60529		
10	Operating Temperature: Minimum range of -20°C to +50°C		
11	Nominal Module Operating Temperature: 42±3 °C		
12	System Voltage: At least 1000 VDC		
13	A letter provided by principal PV module manufacturer in their letter head stating the warranty period for their PV module. Product Warranty: ≥ 10 years Power Output Warranty: first year: ≥ 97% of STC power 10 years: ≥ 90% of STC Power 25 years: ≥ 80% of STC Power linear warranty ≤ 0.6% per year from year 2 and onwards		
14	Local Certification required: RETS Certificate (PIT Certificate must be submitted with Bid and RST Certificate must be submitted before the installation)		
15	International Certification: IEC 61215:2005 2 nd Edition or IEC 61215-1:2016 or IEC 61215-1:2021 and IEC 61215-2:2016 or IEC 61215-2:2021 for Terrestrial photovoltaic (PV) modules - Design qualification and type approval – Part 1: Test requirements and Part 2: Test Procedures. IEC 61730-1:2004 or IEC 61730-1:2016 IEC 61730-2:2004 or		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	IEC 61730-2:2016 for PV module safety qualification, IEC 62804 for detection of potential induced degradation (PID) The test certificates must be provided. The PV Module must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECCE website. The enlisted CBTL or NCB must have Scope of PV Module Testing.		
16	All PV modules offered for the project must be of same type, same model, same power rating and from the same manufacturer		
17	The Bidder must submit the technical datasheet of PV Module		

1.2 Battery

The total required battery bank size must be at least 48 kWh, VRLA Tubular Gel (OPzV). The batteries shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing Battery: At least 10 years		
3	The manufacturer shall have: ISO 9001, ISO 14001, OHSAS 18001/ISO 45001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from battery manufacturer in their letter head signed and stamped		
5	Battery Type: VRLA Gel Tubular with rack and properly sized cables accessories.		
6	Individual Battery Capacity: VRLA 2 Volts (single cell), at least 1000 Ah@C10 at 25°C		
7	Battery bank nominal voltage: 48VDC and shall match the inverter and charge controller requirement		
8	Cycle usage: At least 1,500 cycles at 80% Depth of Discharge (DoD)		
9	No. of batteries in parallel: Maximum up to 3 strings per inverter		
10	Average Self Discharge: ≤3% per month at 25°C		
11	Operating Temperature: Minimum range of -20°C to +50°C		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
12	Battery Rack: the battery rack must be made of hot dip galvanized MS of at least 85 microns		
13	Material for Battery: The installation materials for each battery set must be supplied complete in all including mounting racks, cell connecting copper flexible cables of at least 70mm ² or copper bus bars of suitable size, stainless steel screw, bolts, washers, insulated terminal post covers, cable shoes, fixing accessories.		
14	Quality certificate validation by AEPC or Third party assigned by AEPC		
15	International Certification: IEC 60896-21&22 for VRLA Tubular Gel. The Test Certificates or Test Reports from IEC accredited independent laboratory must be provided. The battery must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website.		
16	All batteries offered for the project must be of same type, same model, same Ah rating and from the same manufacturer		
17	The Bidder must submit the technical datasheet of Battery		

1.3 Solar Charge Controller

The total required capacity of charge controller shall be at least 10 kW inbuilt in battery inverter or separate component. The charge controllers shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model:		
2	Manufacturer's experience in manufacturing charge controllers: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from charge controller manufacturer in their letter head signed and with company stamp		
5	Charge Controller PV handling Capacity: At least 10 kW (single or multiple stackable units)		
6	Charger Peak Efficiency: At least 95%		

7	Type: Advanced microprocessor control type Maximum Power Point Tracking (MPPT) solar charge controller		
8	Charging stage: Three stage charging to provide quick and safe charging for battery		
9	Protection Function: Over charge, over discharge, PV reverse polarity protection, PV short circuit, over temperature,		
10	Operating Temperature: Minimum range of -20°C to +50°C		
11	RETS Certification or Quality certificate validation by AEPC or third party assigned by AEPC		
12	International Certification: IEC 62109. The Test Certificate or Test Report from UL or from IEC accredited independent laboratory must be provided. The charge controller must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website. The enlisted CBTL or NCB must have scope of Charge Controller Testing.		
13	All charge controllers offered for the project must be of same type, same model, same power rating and from the same manufacturer		
14	The Bidder must submit the technical datasheet of Solar Charge Controller		

1.4 PV Inverter

The total required PV inverter capacity must be at least 8 kW. The PV inverter shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing inverters: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001, OHSAS 18001/ISO 45001 Certificates		
4	Warranty: Manufacturing warranty of minimum 5 years from inverter manufacturer in their letter head signed and stamped		
5	Inverter type: Three Phase Grid Connected and Multi-MPPT String		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
7	Rated Power: Total Cumulative Capacity of at least 8 kW @25°C		
8	AC output Voltage: Three Phase 400±10% Vac (L-L) Single Phase 230 ±10% Vac (L-N)		
9	Isolation: Transformerless		
10	Output Frequency: 50 Hz ± 2.5%		
11	Output Wave form: Pure Sine Wave		
12	Peak efficiency: At least 97%		
13	Euro efficiency: At least 97%		
14	Inverter efficiency: The efficiency when operating loads at power levels within 40% to 90% of the rated load must be greater than 90%. The bidder must submit efficiency curve of the inverter to justify operational efficiency		
15	Total Harmonic Distortion (THD): < 5%		
16	Power factor at nominal power: >0.99 Power Factor Range: 0.85 lag to 0.95 lead		
17	Degree of Protection: At least IP66 according to IEC 60529		
18	Protection: DC reverse polarity, DC side disconnect, grid monitoring, AC short circuit		
19	Operating Temperature: Minimum range of -20°C to +50°C		
20	The inverter must have grid interactive mode and able to interface with off-grid inverter & must be capable of providing energy directly to the load bypassing the batteries and excess energy to charge the batteries		
21	Communication Interface: Modbus or RS232 or RS485 or Ethernet pack embedded, should communicate with other equipment and monitoring system and must have data logging features		
22	Quality certificate validation by AEPC or third party assigned by AEPC		
23	International Certifications: IEC 61727:2004, IEC 62116:2014, IEC 62109-1:2010 & IEC 62109-2:2011 The Test Certificates or Test Reports from IEC accredited independent laboratory must be provided. The inverter must be certified Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	IECEE website .The enlisted CBTL or NCB must have scope of Inverter Testing.		
24	All PV inverters offered for the project must be of same type and from the same manufacturer		
25	The Bidder must submit the technical datasheet of PV inverter		

1.5 Bi-directional Inverter or Battery Inverter

The total required battery inverter capacity must be at least 30 kVA. The battery inverter shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model:		
2	Manufacturer's experience in manufacturing inverters: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001, OHSAS 18001/ISO 45001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from inverter manufacturer in their letter head signed and stamped		
5	Inverter type: Off Grid Inverter, Either 1-phase or 3-phase combined output, AC interactive		
6	Inverter arrangement: Stackable		
7	Rated Power: Total Cumulative Capacity of at least 30 kVA @25°C. (Individual Inverter Capacity shall be minimum 5 kVA)		
8	Battery rated voltage: 48VDC		
9	Surge Handling Capacity: The surge capacity shall be at least 150% for 3 sec		
10	Output Wave form: Pure Sine Wave		
11	Peak Efficiency: At least 95%		
12	Inverter efficiency: The efficiency when operating loads at power levels within 40% to 90% of the rated load must be greater than 90%. The bidder must submit the efficiency curve of the inverter to justify operational efficiency		
13	Total Harmonic Distortion (THD) < 5%		
14	Power factor at nominal power: >0.99 Power Factor range: 0.85 lag to 0.95 lead		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
15	Degree of Protection: At least IP21 according to IEC 60529		
16	Low battery disconnect/cut off voltage: Configurable		
17	Battery Equalization: Automatic		
18	Protection: AC short circuit, AC overload, battery deep discharge		
19	Operating Temperature: Minimum range of -20°C to +50°C		
20	Features: capable to support in battery backup and must be compatible with PV inverter.		
21	Communication Interface: Modbus or RS232 or RS485 or Ethernet pack embedded, should communicate with other equipment and monitoring system and must have data logging features		
22	RETS Certification or Quality certificate validation by AEPC or third party assigned by AEPC		
23	International Certifications: IEC 62109 The Test Certificate or Test Report from IEC accredited independent laboratory must be provided. The inverter must be certified by Certification Body Testing Laboratory (CBTL) or National Certification Body (NCB) enlisted in the IECEE website .The enlisted CBTL or NCB must have scope of Inverter Testing.		
24	All battery inverters offered for the project must be of same type, same model, same power rating and from the same manufacturer		
25	If the separate MPPT charge controller is used with battery inverter, both must be from the same manufacturer		
26	The Bidder must submit the technical datasheet of battery inverter		

1.6 DC Combiner Box

The DC combiner box refers to the box where the PV modules/strings are collected and cables are routed towards PV inverter. The DC combiner box shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
2	Manufacturer's experience in manufacturing combiner boxes: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from combiner box manufacturer in their letter head signed and stamped		
5	The PV string combiner box must be rated for exterior installation suitable for the site conditions, shall be UV and weather resistant. Degree of Protection: At least IP65 according to IEC 60529		
6	The junction box must be provided with copper bus bars with suitable termination blocks.		
7	The combiner box must include the string fuses as recommended by PV module manufacturer. The PV string fuse must be provided in both positive & negative sides in the box and must have IEC 60947-3.		
8	Fuses must be cylindrical type mounted on appropriately sized non exposed type fuse block or fuse holders. The fuse holders/block may be DIN rail adapted. Degree of Protection: At least IP20 according to IEC 60529		
9	The combiner box must have DC circuit breaker and must have IEC 60947-2.		
10	The combiner box must have appropriately sized DC surge protection device. The SPD must have IEC 61643-31:2018 or EN 50539-11:2013 and grounded adequately.		
11	The SPD must be Type 1+2, 5kA nominal discharge and 20 kA maximum discharge current. Degree of Protection: At least IP20 according to IEC 60529		
12	The fuse, circuit breaker and SPD must be designed for at least nominal voltage of DC 1000V.		
13	All cables must be connected properly and cable entering/outings into/from the box must be sealed properly (use of		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	cable glands, copper cables lugs, cable ties) so that dust and insects, mice cannot enter the box		
14	The Bidder must submit the technical datasheet of DC combiner box, DC Fuse, DC circuit breaker and DC SPD.		

1.7 Grid Connected AC Combiner Box

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing combiner boxes: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from combiner box manufacturer in their letter head signed and stamped		
5	The Grid Connected AC combiner box must be rated for exterior installation suitable for the site conditions, shall be UV and weather resistant. Degree of Protection: At least IP65 according to IEC 60529		
6	The combiner box must be provided with copper bus bars with suitable termination blocks.		
7	The combiner box must have AC 4P MCB: At least 40A connecting the output of Grid Connected Inverter AC 4P MCCB: At least 100A connecting the input of AC Distribution Board and must have IEC 60947-2.		
8	The combiner box must have appropriately sized AC surge protection device. The SPD must have IEC 61643-11:2011 and grounded adequately.		
9	The SPD must be Type 1+2, 5kA nominal discharge and 20kA maximum discharge current. Degree of Protection: At least IP20 according to IEC 60529		
10	The MCCB and SPD must be designed for at least nominal voltage of AC 400V.		
11	All cables must be connected properly and cable entering/outings into/from the		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	box must be sealed properly (use of cable glands, copper cables lugs, cable ties) so that dust and insects, mice cannot enter the box		
12	The Bidder must submit the technical datasheet of Grid connected AC combiner box, AC MCCB and AC SPD.		

1.8 Control System

The purpose of control system is to establish the communication between PV inverter and battery inverter, support to interconnect with national grid. The control system can be isolated or in-built in Power Conditioning Unit (PCU). The control system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model:		
2	Manufacturer's experience in manufacturing control system: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from manufacturer in their letter head signed and stamped		
5	No. of phase: 1-phase or 3-phase		
7	Degree of protection: At least IP21 according to IEC 60529		
8	Certification: CE		
9	The Bidder must submit the technical datasheet of Control System		

1.9 Battery Fuse/MCCB

The battery fuse/DC MCCB shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Battery fuse box: For battery protection		
3	Compatibility: Battery and Inverter		
4	Type/rating: as per system design and requirement		
5	Warranty: 3 years		
6	The Bidder must submit the technical datasheet of battery fuse or DC MCCB		

1.10 Monitoring System

The monitoring system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing monitoring system: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from monitoring system manufacturer in their letter head signed and stamped		
5	RS485 or Modbus communication port for receiving data from inverters, charge controller, etc		
6	RS232 or LAN port or Modbus for local monitoring or network monitoring		
7	Internet connection via GSM modem, CDMA, GPRS, 3G, 4G, ADSL, VSAT		
8	Automatic store data into SD card when communication is failed minimum storage capacity 8 GB		
9	The system must have remote monitoring software with the latest software/hardware configuration and service connectivity for web based data monitoring. The system must have necessary software/app compatible with the inverter.		
10	The bidder must submit the technical datasheet of Monitoring System.		

1.11 Support Structure for PV Modules

The PV array mounting structure sketches are presented in the drawing section for the reference. The support structure shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name		
2	Manufacturer's experience in manufacturing support structure: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
4	Tilt angle and orientation: Optimum PV production angle at given latitude/longitude of the site, oriented towards south		
5	Mounting structure design and foundation or fixation mounting arrangements shall consider all static and dynamic loads suitable for site. Support structure design and foundation or fixation mounting arrangements should withstand wind speed up to 170 km/hr		
6	<p>The solar PV module structure must be made of MS hot dip galvanized suitable sections of rectangular tubes, angles and channels. The minimum standards to be followed are:</p> <p>Vertical leg (Main leg): Minimum 40mmx80mmx2mm Rectangular tube</p> <p>Rafter: Minimum 40mmx80mmx2mm Rectangular tube</p> <p>Purlins: Minimum 40mmx80mmx2mm Rectangular tube or</p> <p>Angles: Minimum 50mmx50mmx5mm</p> <p>Column bracing or supporting bracing: Minimum 40mmx40mmx5mm angle</p> <p>Base plate: 200mmx200mmx6mm</p> <p>The horizontal spacing between 2 vertical legs must be between 1.5-2 meters as per load conditions.</p> <p>The PV array must be designed with cross section with maximum 2 numbers for vertical placement and 4 numbers for horizontal placement. There must be minimum of 25mm uniform spacing between the modules.</p> <p>The minimum thickness of galvanization must be at least 85 microns throughout the surface.</p>		
7	The mounting structure and its accessories shall be able to resist at		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	least 20 years of outdoor exposure without suffering damage or corrosion.		
8	Mounting structure shall be installed in such a way that PV array shading is minimized as much as possible considering site condition		
9	The Minimum clearance between ground level and bottom edge of the PV modules/arrays must be at least 80cm for ground based and for inclined roof top system, the clearance must be at least 20cm for easy maintenances.		
10	Roofing: The structure must not cause any damage to the roofing, (appropriate procedure must be applied) in case of roof-top system. There should be 25mm gap between modules for air circulation. The gap between roof and module should be at least 30cm.		
11	Stainless Steel (SS 304) nuts & bolts should be used for fixing modules with the structure. Stainless Steel (SS 304) or Galvanized nuts, , washers, mounting clamps should be used for fixing structure and compatible with materials which it is being fixed. In case of welding structure, the galvanization should be done after the fabrication work.		
12	The foundation of PV structure shall be minimum 0.8 meter deep with 0.3(L) x 0.3(B) size with 0.3m thick stone soling with sand filling and 0.3(L) x 0.3(B) x 0.8(H) pillar in 1:2:4 PCC with 0.3m pillar above ground.		

1.12 Cables and Accessories

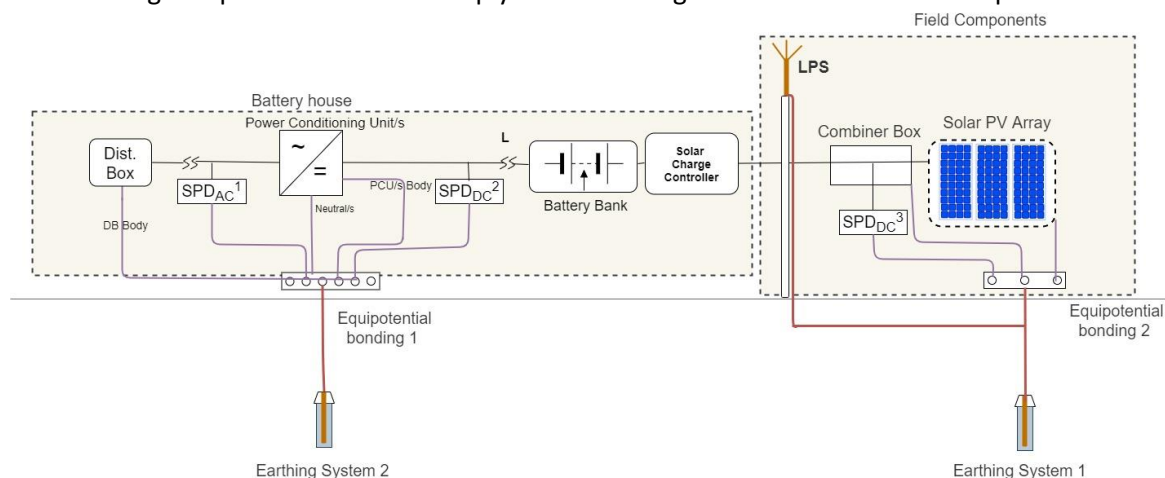
The cables and accessories shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand		
2	Manufacturer's experience in manufacturing cables: At least 5 years		
3	The manufacturer shall have: ISO 9001 Certificate		
4	The cables sizes shall be selected considering the power loss, current		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	carrying capacity, voltage drop and the period of short circuit to meet the anticipated currents.		
5	The PV string cable must be copper multi-strand, PVC insulated and UV resistant.		
6	The PV string cable must be specific for PV application with double insulation layers.		
7	The PV string cables must be laid underground, in trenches, and through pipe sleeves and suitable size of HDPE Pipe with PN6 Class wherever required and necessary according to relevant IEC standards and best installation practice.		
8	For ground mounted PV array, the DC cable from PV array to PV inverter must be multi core, copper XLPE insulated armoured with extruded PVC inner sheath.		
9	For roof mounted PV array, the DC cable from PV array to PV inverter must be multicore, copper multi-strand and PVC insulated.		
10	The AC cable must be multicore, copper multi-strand and PVC insulated.		
11	The cables must be laid underground, in trenches, and through pipe sleeves wherever required and necessary according to relevant IEC standards and best installation practice.		
12	The underground installation cables must be laid at depth not less than 0.75m below ground level with fine sand and then covered by brick and compacted soil.		
13	The allowable voltage drop from PV Module or PV Array to PV inverter must not exceed 3%, battery to battery inverter must not exceed 1% and from inverter to AC distribution board must not exceed 5%.		
14	The Bidder must submit the technical datasheet of DC and AC Cables.		

1.13 Generation System Earthing and Protections

The earthing and protections must be done separately for following points of the system such as PV module frame & array structure, Equipment Earthing, System Earthing, Lightning Protection System (LPS) Earthing. The earthing and protections shall comply with following standards and technical specifications.



S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model		
2	Manufacturer's experience in manufacturing Earthing System: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from earthing system manufacturer in their letter head signed and stamped		
5	All the metallic parts of the PV modules frame must be interconnected by insulated multi-stranded copper earth wire of minimum cross section of 6mm ² and tinned copper compression lug		
6	The PV modules frame and array structure, SPDs, DC combiner boxes, Grid connected AC combiner box, battery rack, inverters, AC distribution board must be connected to equipotential bonding system by insulated multi-stranded copper earth wire of minimum cross section of 16mm ² . The equipotential bonding system must be connected to the earth termination system by insulated multi-stranded copper earth wire of minimum cross section of 16mm ² . The maximum allowable earth resistance is 10 Ohms.		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
7	The underground earth cable must be of bare copper earth conductor with minimum cross section of 16mm ² .		
8	The cables must be laid underground, in trenches, and through pipe sleeves wherever required and necessary according to relevant IEC standards and best installation practice.		
9	The underground installation cables must be laid at depth not less than 0.75m below ground level with fine sand and then covered by brick and compacted soil.		
10	Earthing 1: PV modules frame and array structure, SPDs, DC combiner boxes, Grid connected AC combiner box, battery rack, inverters, AC distribution board (Ground Mounted) Earthing 2: PV modules frame and array structure, SPDs, DC combiner boxes, Grid connected AC combiner box, battery rack, inverters, AC distribution board (Roof Mounted)\ Earthing 3: LPS (Ground Mounted) Earthing 4: LPS (Roof Mounted)		
11	The Bidder must submit the technical datasheet of Earthing System.		

1.14 Lightning Protection System

The lightning protection system shall comply with following standards and technical specifications.

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
1	Manufacturer Name/Brand/Model:		
2	Manufacturer's experience in manufacturing Lightning Protection System: At least 5 years		
3	The manufacturer shall have: ISO 9001, ISO 14001 Certificates		
4	Warranty: Manufacturing warranty of at least 5 years from lightning protection system manufacturer in their letter head signed and stamped		
5	The lightning protection system must be designed according to the IEC 62305.		
6	Air Termination System		
	The air terminal rod must be at a minimum height of 1.5 meter above the		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	highest point of the PV array to be protected.		
	The length of air terminal rod must be at least 1 meter.		
	The air terminal rod must be made of solid copper.		
	The diameter of air terminal rod must be at least 15mm.		
	The air terminal rod must have at least 4 spikes and arrester base.		
	The air terminal rod must be rated to withstand a discharge current capacity of 200kA.		
	The air terminal rod must be installed on a separate concrete base as a free standing air terminal mast. The mast must be made of solid GI pipe of at least 75mm diameter and 3mm thickness.		
	The quantity of air terminal rods to be used must be at least 2 no, one for ground mounted and another for roof mounted.		
	The separation distance between the air terminal rod and the closest metallic part of PV array must be as per IEC 62305.		
	Each terminal rod must have separate earth termination system.		
	The air termination system must comply with IEC 62305.		
7	Down Conductor:		
	The size of down conductor must be at least 25mm width x 3mm thickness copper strip, connecting the lower extremity of air terminal rod to the earthing electrode of earth termination system		
	The cable must be buried at minimum 0.5 height at ground level.		
	The copper strip must be connected to the earth electrode with the use of copper compression lug.		
	The earth termination system must comply with IEC 62305.		
8	Earth Termination System:		
	The earth electrode must be of Pipe-in-Pipe technology.		
	The length of earth electrode must be at least 2.5 meters.		

S.N.	Specifications Required	Specifications Offered with Compliance	Reference Document (Specify Document)
	The earth electrode must be made of copper.		
	The earth electrode must have outer diameter of at least 50mm and inner diameter of at least 18mm.		
	A hole of minimum 100mm diameter or as per manufacturer's recommendation must be dug for the length of electrode.		
	The earth enhancement material must be at least 50kg for each earthing electrode.		
	The maximum allowable earth resistance is 5 Ohms.		
	The earth inspection pit of each earthing electrode must be made of solid concrete with the minimum dimension of 300mm x 300mm x 300mm. The cover must be marked with the word "Earth".		
	The earth termination system must comply with IEC 62305.		
9	The Bidder must submit the technical datasheet of Air Termination System, Down Conductor and Earth Termination System.		

1.15 Grid connected solar PV System Electrical Protection

Protection system shall be provided to isolate faulty section as quickly as possible, to limit damage and to maintain healthy systems in stable operating condition. The system will feature a high degree of selectivity and discrimination between faulty and healthy circuits. In general the protection system shall be provided for

- Solar PV modules and solar charge controller
- Battery Bank
- PV and Battery Inverter and power conditioning devices

All the components of solar PV system, both AC and DC must be grounded to a low impedance ground. Grounding conductors and bus bar should be tested and determine the "grounding system" resistance, this should be 5 ohm or less. The solar PV plant structure shall be grounded properly using adequate number of earthing kits indicated under the list of goods and related service. All metal casing/shielding of the solar PV system shall be thoroughly grounded to ensure safety of the power plant. The solar power system shall be provided with lightning and over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the grid connected solar PV power system network.

1.16 Human and Equipment Safety

Following safety affairs are proposed:

- A suitable Fire Protection system shall be incorporated inside the control room where the battery bank, power conditioning devices, cabling and communication systems will be setup.
- Safety Signage: High visibility warning signs such as electrical shock, acid burn, explosion etc shall be placed at the recommended sections.
- Maintenance and safety equipments shall be used while handling electrical work at the site such as eye glass, electrical safety gloves, acid spill kit etc.

1.17 Operation, Maintenance Manual and Training Program

The bidder shall provide operation and maintenance manual and training to the beneficiary, in English and Nepali language upon completion of the grid connected solar PV system installation.

The bidder shall prepare and provide operation and maintenance manual to UNDP for review and approval not later than **two weeks** before the planned testing and commissioning date. The Operation and Maintenance Manual shall include information as minimum but not limited to followings:

- Basic System design and configuration
- Schedule for maintenance plan
- Schedule of corrective maintenance
- Contact details of Contractor and Component Supplier
- Troubleshooting instructions
- Safety and Safe Operation procedure
- DO's and Don'ts
- Emergency shutdown procedure
- Energy meter recharge

1.18 System Warranty and Guarantee

- 1) The complete system must be warranted against any manufacturing/design/installation defects for a minimum period of five (5) years.
- 2) Solar PV modules used in power plant must be warranted as indicated in the above section of technical specification.
- 3) The Warrantee/ Guarantee Card to be supplied with the power plant must contain the details of the system supplied. The manufacturers can provide additional information about the system.
- 4) During the Warrantee/Guarantee period, purchaser will have all the rights to cross check the performance of the solar power plant. Purchaser may carry out the frequent inspections of the system installed and randomly pick up its components to get them tested at any test center. If during such tests any part is not found as per the specified technical parameters, purchaser will take the necessary action. The decision of purchaser in this regard will be final and binding to the Bidder.

1.19 System Testing and Commissioning Requirement

Shop Test

The bidder must submit the test report of the equipment from the accredited laboratory.

Site test

As per standard norms, following tests shall be carried out at the field.

- Full load test shall be conducted at site for a minimum duration of five hours with a maximum allowable downtime of 5% (for any and all reasons cumulatively) of the total test duration.
- Transmission and distribution system voltage drops testing: voltage drop at any line end shall not exceed 10% of nominal value.

- The power and energy output of solar PV array will be measured with the help of Electrical Power Analyzer for a whole day. Alternatively, same test and observation can be made through the 3-phase inverter unit integrated in the same system. The output energy at full sunny day shall be at least 90% of nominal value designed at 4.5 hours average sunshine.
- Each finished component or item installed at site shall be inspected against applicable requirements as indicated in the technical specifications.

1.21 System Operation and Maintenance

Operation and Maintenance of solar PV system is essential for the reliable and sustainable power supply to the proposed site. For the first five (5) year the Supplier/Contractor shall be fully responsible for any kind of operation and maintenance jobs required to the solar PV system.

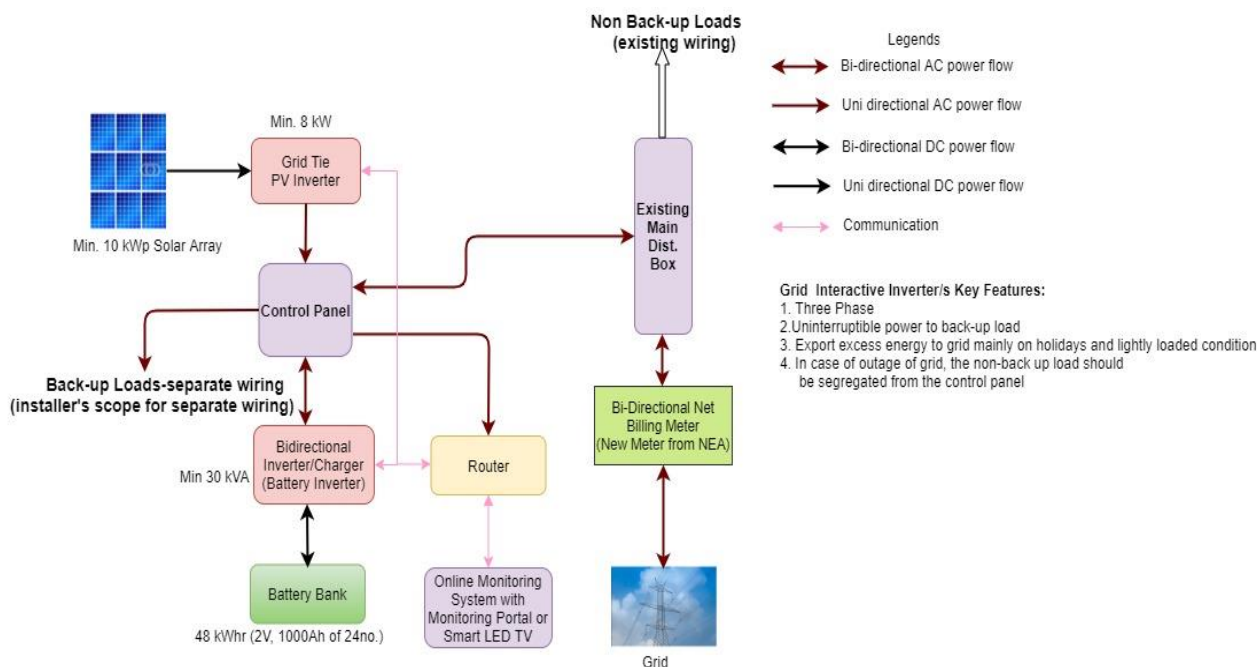
1.22 Drawings

The purpose of drawings is to specify locations, dimensions, size, materials to be used, and other characteristics of the Goods and Related Services. The bidder shall prepare all the required drawings and include them in the technical proposal document and will be part of the system design and technical bid. Purchaser may request the Contractor to provide additional relevant drawings for approval during Contract execution.

List of drawings to be submitted with bid document:

1. Typical Block Diagram of solar PV system

Typical Block Diagram of Solar PV System



2 Scope of Work

Scope of work shall include design, planning, engineering, procurement, construction / erection, testing, commissioning and five years of operation and maintenance of grid interactive solar PV project. This project requires supply and installation of 10 kWp grid connected solar PV system, one each at:

1. Kalika community Hospital, at Bheerkot Municipality, Ward No. 1, Syangja district and
2. Bardibas Hospital, Bardibas Municipality, Ward no. 2, Mahottari district

Summary of Scope and division of responsibilities shall be as follows:

- i. The bidder should conduct site visits(s) if required to be familiarized with the required end product quality and analysis of the identified installation site before the submission of the bid. All the liabilities for site visit shall be the responsibility of the bidder itself.
- ii. Complete design of PV power systems as per the requirement of the tender document and specified specification in bid document in technical specifications sections.
- iii. The bidder shall provide complete installation diagrams and line diagrams indicating major equipment, components and related accessories, their wiring and placement, protection system, solar PV array installation diagram, along with the bid.
- iv. Bidder shall be responsible to supply, sourcing, procurement, transportation of all equipment, required insurance till the time of commissioning of system, electrical components, communication components, structural components, civil engineering material, mechanical engineering components, construction machinery and all other construction equipment as required for development, implementation, construction, testing, and commissioning
- v. Bidder shall be responsible for all the management activities related to Installation, Testing and Commissioning of proposed solar grid connected solar PV system and associated liabilities.
- vi. The bidders shall provide the technical catalogue with the detail information of each equipment, components and accessories along with its country of origin and manufacturer.
- vii. The bidder shall provide the schedule of works (Design, supply, installation, commissioning and related services).
- viii. Bidder shall provide security on site as per insurance requirements and per all applicable codes and standards.
- ix. Training to hospital nominated technician/operator from the beginning of operation and maintenance, handing over the plant to hospital, provision of all the documentation necessary for the correct performance and maintenance for the life cycle time of Solar PV System.
- x. The successful bidder must visit the site within two weeks from date of signing of contract and submit the final design and field visit report.
- xi. The 10 kWp PV System will be rooftop based or can be done as per availability of space.
- xii. The bidder must provide the necessary warranty and guarantee as mentioned in the technical specifications (Annex I).

The solar system shall be designed, manufactured, erected and configured in such a way that it will achieve high life expectancy, high availability and reliability with minimum power generation costs.

Compliance with Requirements

	Your 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.