

*RFP Fee: Rs. 2,000/-
(Non-Refundable)*

RFP FORM

RFP # CW/1A/23-24

**Design, Supply, Installation, Testing &
Commissioning of 125.28 kWp Grid Tied
Utility Interactive Photo Voltaic Solar
Power System Car Port & Roof Mounted at
IBA Girl's Hostel**

Date of Issue : March 12, 2024

Last Date of Submission : March 26, 2024 (11:00 AM)

Date of Opening of RFP : March 26, 2024 (11:30 AM)

Company Name: _____

NTN: _____,

SRB Registration Number: _____

GST Registration Number: _____

Pay Order / Demand Draft # _____,

Dated:

Amount of Rs. _____, Drawn on Bank:

Request for Proposal (RFP)

The Institute of Business Administration, Karachi (IBA) invites sealed bids from active taxpayers of firms/companies/distributors/suppliers registered with relevant authorities against the following RFP for a donor-funded project namely “**Design, Supply, Installation, Testing & Commissioning of 125.28 KwP Grid Tied Utility Interactive Photo Voltaic Solar Power System Car Port & Roof Mounted at IBA Girl's Hostel**”

Ref. No.	Procedure	Bid Security
Design, Supply, Installation, Testing & Commissioning of 125.28 kWp Grid Tied Utility Interactive Photo Voltaic Solar Power System Car Port & Roof Mounted at IBA Girl's Hostel (CW/1A/23-24) Site Visit & Prebid Meeting: March 21, 2024 at 11 AM at IBA Main Campus	Single Stage One Envelope	2%
RFP Fee & Dates		
Document Fee: Rs. 2,000/- Issuance start date: March 12, 2024, from 9 AM Issuance end date & time: March 26, 2024, till 11:00 AM Submission date & time: March 12, 2024, to March 26, 2024, from 9 AM to 11:00 AM Opening date & time: March 26, 2024, at 11:30 AM		

- RFP documents may be downloaded FREE from the website. Alternatively, it can be collected after submission of paid Fee Challan from the Office of **Head of Procurement, IBA Main Campus, University Enclave, Karachi** on any working day (Monday to Friday).
- The RFP fee challan is to be generated from the IBA website <https://www.iba.edu.pk/tenders> which may be deposited in any branch of Meezan Bank Ltd.
- Sealed bids should be dropped at Project Office, IBA Main Campus, University Enclave, Karachi. Bids will be opened on the same date & venue in the presence of the bidders' representatives who may wish to attend. In case of a holiday, the RFP shall be opened/received on the next working day at the same place and time.
- Bid Security in form of a Pay Order or Demand Draft has to be submitted in favour of “IBA Karachi” along with the RFP.

Special Conditions:

- Ready Stock is required, the supply must be completed at IBA within 120 days from Purchase Order.
- Payment will be made directly by the Donor in vendors account in PKR.
- This RFP will be awarded as One Job.

N.B. IBA Karachi reserves the right to reject any bid or cancel the bidding process subject to the relevant Rules.

Registrar

Main Campus, Karachi University Enclave, Karachi-75270

UAN: 111-422-422, Fax: (92-21) 99261508 ext: 2507

Email nmalik@iba.edu.pk ; tenders@iba.edu.pk

IBA Website <https://www.iba.edu.pk/tenders>

C O N T E N T S

1. Introduction	Page 4
2. Instructions	Page 5
3. Bidding Data	Page 7
4. Terms & Conditions	Page 8
5. Integrity Pact	Page 10
6. Bidder Qualification Criteria	Page 11
7. Bill of Quantity	Page 12

1. Introduction

Dear bidder

Thank you for your interest in responding to the IBA's advertisement which floated on IBA website on March 12, 2024, to "Design, Supply, Installation, Testing & Commissioning of 125.28 kWp Grid Tied Utility Interactive Photo Voltaic Solar Power System Car Port & Roof Mounted at IBA Girl's Hostel".

The Institute of Business Administration, Karachi (IBA) is the oldest business school outside North America. It was established in 1955 with initial technical support provided by the Wharton School of Finance, University of Pennsylvania. IBA has zealously guarded the high standards & academic traditions it had inherited from Wharton & USC while adapting and adjusting them over time.

IBA has secured funding from an esteemed US based donor organization for the subject project. The donor is expected to pay directly to the selected vendor against a triparty agreement.

We expect to avail services/works/items of high standard that meet our prime & basic specifications through this transaction.

Please contact Mr. Hassan Ilyas on 38104700 ext: 2507 for any information or query.

Thank you.

-sd-

Registrar

2. Instructions

(a) **Sign & Stamp**

It is necessary to fill in the RFP Form meticulously and sign & stamp every page. Moreover, attach the required supporting documentation according to the requirement. The RFP document will be accepted ONLY on the IBA's prescribed RFP Document available on IBA's Website.

(b) **Filling of RFP Form**

It is mandatory to fill in the RFP Form in writing in ink or type. Do not leave any column/item blank. If you want to leave the item/column unanswered please, write 'Doesn't Apply/Doesn't Arise'. If you need more space, please attach a paper & clearly mention the item/column name or number etc that referred to the column/item of the RFP Form.

(c) **Collection of RFP**

You can collect the RFP Document from the office of the Head of Procurement, Ground Floor, Fauji Foundation Building, IBA Main Campus, University Enclave, Karachi from March 12, 2024, to March 26, 2024, from 9:00 AM to 11:00 AM. It may be downloaded from IBA Website as well.

(d) **Communication**

Any request for clarification regarding technical specifications should be submitted in writing to:

Contact Person (IBA):	IBA Project Office Senior Manager Project (Contracts) Institute of Business Administration, Main Campus, University Enclave, Karachi
Tel #:	021 38104700; Ext 2517
Email:	nmalik@iba.edu.pk ; tenders@iba.edu.pk

Stamp & Signature

(e) Submission of Documents and Address

Separate envelopes clearly labelled 'Original Document' and 'Bid Security' must be submitted on or before the last date to submit the RFP documents. RFP Documents can be dropped at Procurement Office, IBA Main Campus, University Enclave, Karachi till 11:00 AM on March 26, 2024. **RFP Documents received by fax or email will not be accepted.**

(f) Rights

Competent authorities reserve the right to accept or reject any quotation/RFP without any reason thereof.

(g) Delivery & Commissioning Point

Design, Supply, Installation, Testing & Commissioning will be delivered at IBA Girls Hostel, Karachi. IBA is not liable to pay any Custom duty, Levies, Taxes, Demurrage or any other charges, Warehousing, Logistics etc.

(h) Clarification / Proof

Please submit copies of certificates of registration with the Sales Tax and Income Tax departments. The manufacturer/firms/companies/distributors/suppliers should also provide a copy(ies) of the certificate(s) etc as proof of their claim.

(i) Conditional / Optional / Alternate Bids

Such bids will not be accepted.

Stamp & Signature

3. Bidding Data

- (a) **Name of Procuring Agency:** IBA, Karachi.
- (b) **Brief Description of Works:** Design, Supply, Installation, Testing & Commissioning of 125.28 kWp Grid Tied Utility Interactive Photo Voltaic Solar Power System Car Port & Roof Mounted at IBA Girl's Hostel
- (c) **Procuring Agency's Address:** Main Campus, University Enclave, Karachi.
- (d) **Amount of Bid Security:** Bid Security of 2% of the total amount/cost will be submitted along with RFP Documents in the shape of PAY ORDER / DEMAND DRAFT only in the name of the Institute of Business Administration, Karachi.
- (e) **Period of Bid Validity (days):** Forty-Five (45) Days.
- (f) **Deadline for Submission of Bids along with time:** The last date for submitting the RFP Document in a sealed envelope is March 26, 2024, by 11:00 AM at IBA, Project Office, Main Campus, University Enclave, Karachi. The RFP will be opened on the same day at 11:30 AM in the presence of representatives who may care to attend.
- (g) **The Venue, Time, and Date of Bid Opening:** The RFP will be opened on March 26, 2024, at 11:30 AM at IBA Project Office, Main Campus, University Enclave, Karachi in the presence of representatives who may care to attend.
- (h) **No extension shall be granted.** The Design, Supply, Installation, Testing & Commissioning of all the equipment must be completed within 120 days of issuance of PO. The Institute may revoke the PO and accept no deliveries after passing due date and any cost incurred by the vendor shall be sole responsibility of it and the institute is not responsible for compensation of any kind.
- (i) **Liquidity damages:** Liquidity damages at the rate of 2% per month of the total contract amount will be imposed on delayed completion of project.
- (j) **Deposit Receipt No:** _____ **Dated:** _____
- Amount** (in words and figures): _____
- Pay Order / Demand Draft #:** _____, **Amount: Rs.** _____
- Drawn on Bank:** _____, **Dated:** _____

 Stamp & Signature

4. Terms & Conditions

a. Performance Security

The successful bidder should provide **5%** Performance Security of the total value of the Purchase Order in the form of a Pay Order or bank guarantee before the signing of the Contract. The Performance Security shall extend at least three months beyond the Completion of the contract.

b. Currency

All currency in the proposal shall be quoted in PKR.

c. Ownership

The ownership of all products and services rendered under any contract arising as a result of this RFP will be the sole property of the IBA, Karachi.

d. Arbitration and Governing Law

This RFP and any contract executed under this RFP shall be governed by and construed in accordance with the laws of Pakistan. The IBA and all Manufacturers / firms / companies /distributors/suppliers responding to this RFP and parties to any contract executed pursuant to this RFP shall submit to the exclusive jurisdiction of the Pakistani courts. The arbitration proceeding will be governed by the Arbitration Act, of 1940, and Pakistan's substantive and procedural law. The venue shall be Karachi.

e. Acceptance of RFP

The IBA reserves the right not to accept the lowest and to annul the bidding process without assigning any reason whatsoever.

f. Support Capabilities

The Manufacturers/Firms/Companies/Distributors/Suppliers should indicate the support capabilities for all the solar power system provided during the course of the warranty.

g. Compliance with specifications

The manufacturer/firms/companies/distributors/suppliers shall provide information as per requirements given in BOQ. However, manufacturers/firms/companies/distributors/suppliers can submit multiple solutions. Manufacturers/firms/companies/distributors/suppliers may not propose/supply any kind of refurbished solar power system equipment or components in their proposals except for the printer. Vendors are strictly advised against editing or cutting on the BOQ form.

h. Bid Evaluation:

The bid will be considered as the Most Advantageous Bid on most closely conforming to evaluation criteria and other conditions specified in the bidding document and having the least evaluated cost.

i. Cancellation

IBA reserves the right to cancel any or all of the above items if the material is not in

accordance with its specifications or if the delivery is delayed.

j. Delivery Time

Ready Stock. The Design, Supply, Installation, Testing & Commissioning should be completed at IBA within 120 days from the date of award.

k. Physical Inspection:

Physical Inspection at the manufacturer/distributor site may be carried out.

l. Invoice

The invoice/bill should be submitted directly to the IBA which shall be shared with the donor after due verification for payment.

m. Stamp Duty

The Stamp duty of 0.35% against the total value of the contract will be levied accordingly.

n. Payment:

Payment will be made by the Donor in PKR in the following tranches:

- a. 50% - After delivery of equipment at site and verified by IBA engineer
- b. 40% - After completing the project as per BOQ with the entire satisfaction of the IBA
- c. 10% - After the net metering of the KE

Stamp & Signature

Integrity Pact

- (a) Its intention is not to obtain of any Contract, right, interest, privilege, or other obligation or benefit from the IBA or any administrative or financial offices thereof or any other department under the control of the IBA through any corrupt practice(s).
- (b) Without limiting the generality of the forgoing the Bidder represents and warrants that it has fully declared the charges, fees, commission, taxes, levies etc, paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within the IBA directly or indirectly through any means any commission, gratification, bribe, gifts, kickback whether described as consultation fee or otherwise, with the object of obtaining or including the Provide & Supply or service contract or order or other obligations whatsoever from the IBA, except that which has been expressly declared pursuant hereto.
- (c) The Bidder accepts full responsibility and strict liability for making any false declaration/statement, not making full disclosure, misrepresenting facts or taking any action likely to degrade the purpose of declaration, representation, and warranty. It agrees that any contract/order obtained aforesaid shall without prejudice to any other right & remedies available to the IBA under any law, contract, or other instruments, stand void at the discretion of the IBA.
- (d) Notwithstanding any right and remedies exercised by the IBA in this regard, Bidder agrees to indemnify the IBA for any loss or damage incurred by it on account of its corrupt business practice & further pay compensation to the IBA in any amount equivalent to the loss of any commission, gratification, bribe, gifts, kickback given by the company/firm/supplier/agency/bidder as aforesaid to obtain or induce Provide & Supply/work/service or other obligation or benefit in whatsoever from the IBA.

Note:

This integrity pact is a mandatory requirement other than auxiliary services/works.

Stamp & Signature

5. Bidder Qualification Criteria

Sr. No.	Mandatory Eligibility Criteria (attach supporting document)	Remarks Yes / No
1.	Minimum 3 years of similar or relevant experience.	
2.	Last 3 years' turnover with a minimum of Rs.30 million as Annual Return verifiable through financial Statements.	
3.	Sales tax registration certificate with last month's return copy both FBR and/or SRB and NTN certificates at the time of submission of the bid.	

Note:

<u>Photovoltaic Solar System works</u>	
	General: The system is designed to cover the Essential loads in IBA Girl's Hostel
1	The system will be grid interactive connected which will allow many power source options. The system will import from the grid when loads are being more than the generated from PV and supply surplus electricity to the grid when PV generates more than the loads.
2	Contractor shall submit shop drawings for all civil, electrical and a complete photovoltaic solar system works, including a single line diagram showing all the components of the PV system, DC & AC distribution boards, PV Arrays layout, connections, and cables, wire cross section for all the system to be approved by the Engineer before executing the work.
3	Contractor shall submit the catalogs of each component showing the requested specifications stated at the bill of quantity.
4	The contractor shall submit the Manufacture testing certificate, country of origin, certified characteristics, test performance curves, spare parts regular (as recommended by manufacturer, maintenance manuals and manufacturers warranty for each component of the system.
5	As-built drawings shall be submitted after handing over the work.
6	All junction boxes and DBs will be lockable type.
7	Upon completion of the installation, the contractor shall organize an onsite training program involving nominated employer's staff. Such a program shall be carried out during the commissioning phase. The cost of the training shall be deemed to have been included in the quotation.
8	The price includes all builder's works, making good and reinstatement including necessary materials and workmanship as well as removal of unwanted materials to dump sites approved by the engineer to complete the job successfully.
9	All the following items include Supply, Installation, Testing, Commissioning and Operate of the complete PV Solar System
10	Contractor must provide one year maintenance of complete Solar System (excluding routine cleaning)

Stamp & Signature

6. Bill of Quantity:**SUMMARY OF BID PRICES**

Item No.	Description	AMOUNT (PKR)	TOTAL UNIT GENERATION YEARLY KWh
(A)	Design, Supply, Installation, Testing & Commissioning of 125.28 kWp Grid Tied Utility Interactive Photo Voltaic Solar Power System Car Port & Roof Mounted at IBA Girl's Hostel		
	TOTAL COST OF THE PROJECT (Exclusive of taxes)		
	TOTAL COST OF THE PROJECT PER WATT (Exclusive of taxes)		
	TAXES		
	TOTAL COST OF THE PROJECT (Inclusive of taxes)		
	TOTAL COST OF THE PROJECT PER WATT (Inclusive of taxes)		

Sr No	Product	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
1	MODULE MOUNTING STRUCTURE CAR PORT						
	Designing, Supplying, Fabrication & Installation of PV Module Mounting structure (MMS) for Car Port minimum height 10'-0" from FFL/Road Level. The Module Mounted Structure (MMS) shall comprise of Corrosion resistant anodized Aluminium section. The mounting structures and the foundations must be designed structurally to be suitable to withstand all static loads (weight of modules, wind loads etc.) min wind speed pressure 145Km/hour in harsh environment. The design submission must be as per ASTM-A36, ASTM-123 and ASCE 7-10, for anodized aluminum AL6005/6063. The mounting structure components are bonded together to guarantee potential equalization. The tilt angle shall be not more than 10 deg for self-cleaning purposes and not less than 5 deg for optimal exposure to direct solar irradiation. The work is to be carried out strictly as per approved drawing, design and specification and the rate quoted is inclusive of the following:	Watt	50460				
a	Designing of the structure as per design specification approved						
b	Layout at Site						
c	Footing & Foundation work as per drawing and specification						
d	Placing of Anchor Bolts & Base Plate as per design & length & Details						
e	The tilt angle is to be maintained as recommended.						
f	Cleaning walkways complete in all respects for solar PV modules						
g	The Contractor shall remove all the debris and clear the site as per direction						
h	The Contractor shall submit the detail technical shop drawing before execution of work.						
i	After the work is finished, the contractor shall submit the as-built drawing.						

b	MODULE MOUNTING STRUCTURE ROOF MOUNTED	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	Designing, Supplying, Fabrication & Installation of PV Mounting structure (Aluminium/ Hot Dip Galvanized steel), Roof Mount Fixed Tilt angle. The Module Mounted Structure (MMS) shall Comprising of Corrosion resistant anodized aluminum Section or Hot dipped galvanized Steel Profile. The mounting structures and the civil pads must be designed structurally to be suitable to withstand all static loads (weight of modules, wind loads etc.) min wind speed pressure 150Km/hour in harsh environment. The design submission must be as per ASTM-A36, ASTM-123 and ASCE 7-10, for anodized aluminum AL6005/6063. The mounting structure components are bonded together to guarantee potential equalization. The tilt angle shall be not more than 10 deg for self-cleaning purposes and not less than 5 deg for optimal exposure to direct solar irradiation. The work is to be carried out strictly as per approved drawing, design and specification and the rate quoted is inclusive of the following:	Watt	74820				
a	Designing of the structure as per design specification approved						
b	Layout at Site						
c	Footing & Foundation work as per drawing and specification						
d	Placing of Anchor Bolts & Base Plate as per design & length & Details						
e	The tilt angle is to be maintained as recommended.						
f	Cleaning walkways complete in all respects for solar PV modules						
g	The Contractor shall remove all the debris and clear the site as per direction						
h	The Contractor shall submit the detail technical shop drawing before execution of work.						
i	After the work is finished, the contractor shall submit the as-built drawing.						

2	PV Modules-125.28KWp:	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	<p>Supply, Installation, Testing & Commissioning (SITC) Mono Crystalline N-type 144 Cells Photovoltaic Solar Modules Tier 1 Type anti-reflective high transparency low iron tempered glass, with earthing provision. The modules STC parameters must be as under</p> <p>(a) Min Power Pmax 580 or above Wp rated power</p> <p>(b) Open circuit voltage (Voc) +/- 5% 48.47V-53.57V</p> <p>(c) MPP Voltage Vmpp 41.2V - 41.8V</p> <p>(d) MPP Current Impp 12.75A - 13.04A</p> <p>(e) Short Circuit Current Isc +/-5% 13.65A - 13.92A</p> <p>(f) Module Efficiency 21.35-22.75%</p> <p>(g) Operating Temp. Degree Centigrade -40 ~ +85</p> <p>(h) Maximum System Voltage 1500V UL 1000V IEC</p> <p>(i) Maximum Series Fuse Rating 25 A</p> <p>(j) Junction Box Protection Degree, IP 68</p> <p>(k) Connection box, 4.0mm2 conductor cross section,</p> <p>(m) Cable with, MC4 male and female connectors,</p> <p>(o) Anodized Aluminum Frame and Support Bars</p> <p>(p) PVC duct, Clamps & Accessories, support and labels to be stalled under PV Array.</p> <p>The Contractor shall provide manufacturer warranty for solar panel for a period not less than 25 years.</p> <p>Contractors must submit all the required certificates for each PV solar panel from manufacturer as per specification.</p> <p>All works and materials must be according to the drawings, specifications and supervisor engineer instructions and approval.</p>	Watt	125280				

3	GRID-TIED INVERTER (PCU)	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
i)	<p>Supply, Installation, Testing & Commissioning (SITC) DC/AC grid tie 3-phase inverter with data communication unit with Ethernet connection. The inverter must be suited to any PV module configuration and depending on the system design and installation proposed and for the future extended also. (Leading Market brand, having annual production greater than 1GW). The DC max power input rating should be at least 1.2 times that of AC power at standard test condition (STC). The inverter unit shall be suitable for indoor and outdoor installations with IP65. The inverter must include the safety concepts such as (triple protection with Opti protect, electronic strings fuses, self-learning string failure detection, DC surge arrester type (2) to ensure max availability. All works and materials must be according to the drawings, specifications and supervisor engineer instructions and approval.</p> <p>Make: Sungrow/Huawei/SMA or equivalent Power Rating: 100KW & above.</p>	EACH	1				
	Brief specification is as under:						
a	Max Input DC Voltage: 1100V						
b	MPPT Operating Voltage Range: 200V~1000V,						
c	Min 10 Independent MPPT Trackers,						
d	Minimum Efficiency 98.0%,						
e	Warranty: 10 Years						
f	Certification Required: CE. IEC 61727, IEC 62109-1/2, EN 50530, IEC 61727, IEC 61683						

4	<u>BREAKER BOXES</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
a	DC BOX						
i)	<p>Supply, Installation, Testing & Commissioning (SITC) of DC box/Array Junction Box with all accessories for indoor usage with proper cable glands as per cable size. DC Combiner Box shall be provided One SPD (Surge Protection device) and Two DC Fuse Protection 1Pole per string. Outdoor usage(IP Rating 54) with dust & waterproof enclosure.</p> <p>DC Fuse Protection 1 Pole 20A/25A,1000VDC, Qty=28 DC SPD's Type II, Qty=14</p> <p>Fuse Make: Schnieder/ABB/Zjbeny or Equivalent DC SPD's Make: Schnieder/Dehn/Zjbeny or Equivalent</p>	EACH	1				
b	AC COMBINER BOX (LV PANEL)						
i)	<p>Supply, Installation, Testing & Commissioning (SITC) of AC Combiner Box (LV Panel) with wall mounted, locally fabricated in 16 gauge, Colour Code: RAL7035, MS Powder Coated, Copper Glands, Lugs, Phase indication lights, Digital Ammeter & Voltmeter, Busbar Tin Coated for 3 Phases, Neutral & Earth with Polycarbonate cover. Glands at Bottom In & Out, CT's, Energy meter with all related accessories for outdoor usage (IP Rating 54) with dust proof enclosure.</p> <p>AC Breaker 250A adj,4P, MCCB,400V/415V, Qty:01 AC SPD 4Pole, 40kA with HRC Fuses Energy Meter: Janitza or Equivalent CT's: Ficco/Saci or Equivalent</p> <p>MCCB Make: Schnieder/ABB/Terasaki or Equivalent</p>	EACH	1				

5	CABLES	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
a	DC CABLES						
	<p>Supply, Installation & Testing of DC Cable, 1 Core 6mm² Cu/XLPO/XLPO cable complete in all respect with accessories to connect the PV solar cells together and to the inverter directly to have a complete operational circuit, clamps, trays and cable end terminations which shall be DC plug and socket connectors. The allowable voltage drops for DC cables between PV Arrays and inverter are less than 1%. Minimum voltage capacity 1500VDC, Highest permissible voltage conductor/conductor should be 1.8kV DC, Standard Double insulated: Cross link polyolefin, Tinned copper conductor: Certified from DIN VDE 0295 CL.5, Fine-wire, IEC 60228 CL.5, Cable should be Certified from TUV Approved. Standard: EN50618</p> <p>Make: Pakistan Cable/Fast Cable/Jiukai or Equivalent as Engineer Approved.</p>	Meter	2700				

b	AC Cables	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	Supply, Connecting and termination of the power cables with all required works in different sizes of ducts/pipes, Cable lugs, clamps and all needed fittings to connect cables terminals from source to destination. According to drawings, specifications, instructions, and demand of the supervising engineer as follow: Brand: Pakistan Cable/Fast Cable or Equivalent as Engineer Approved.						
i)	4C x 120mm ² , 0.6/1kV Cu/XLPE/PVC Pure Copper	Meter	25				
c	Earthing Cables						
	Supply, Installation & Testing of Earthing Cable, Including PVC Pipe with related accessories. Brand : Pakistan Cable or Equivalent as Engineer Approved.						
i)	1 core 2.5/4 sqmm, CU/PVC/FLEX (Green)	Meter	360				
ii)	1 core, 16 sqmm, Bare Conductor	Meter	30				
iii)	1 core, 50 sqmm, CU/PVC/FLEX (Green)	Meter	30				
v)	1 core, 10 sqmm, CU/PVC/FLEX (Green)	Meter	60				

6	<u>EARTHING SYSTEM</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
i)	Supply, Installation, testing and commissioning of Earth Electrodes (Rod Type) for Earthing System with 25mm Dia 3 meters (10feet) long driven copper rod, complete with clamps lugs, washer/bolts, connected with 2x70mmsq bare copper 50mm Dia G.I pipe/UPVC pipe class 'D/E' up to Earth chamber, job includes cad-welding of copper conductor to earth electrode rod at one end and provision/fixing of cable lugs at other end, including all accessories and RCC inspection chamber, heavy duty G.I. Cover having earth symbol, etc. as per the specifications and Drawings and to the entire satisfaction and approval of the Engineer. Earthing result should be less than 5 Ohm for AC combiner, less than 1 Ohm for DC combiner and less than 5 Ohm for structure/lighting protection system.	Each	5				

7	<u>LIGHTNING PROTECTION SYSTEM</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	Air-Terminal						
i)	<p>Supply, Installation, Testing & Commissioning of Early Streamer Emission (ESE) type lightning Air terminal.</p> <p>Supporting Mast The mounting pole used to support the lightning air terminal shall be minimum length of 05 Mtr. noncorrosive and made up of medium class GI / SS pipe of 1.5" diameter having base plate at bottom for securely fixing the mast on roof top. The mounting pole and supports shall be securely fixed with the brackets to withstand the maximum wind velocity of that area. All the work should be carried out as per the specified specifications and instruction of the Engineer-in-Charge. Minimum Protection Radius: 80 Mtr.</p>	Each	1				
	Lightning Strike Counter:						
ii)	<p>Supply, Installation, Testing & Commissioning of non-electronic & non-resettable (Not require any external power supply) type lightning strike counter to count the lightning stroke having display with IP-67 enclosure including all accessories and connection.(6/7 digit)</p>	Each	1				

8	<u>FUEL SAVER</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	<p>Design, Supply, installation, testing and commission of Deif/Encombi or Equivalent Fuel Saver Controller System Solution for the Integration of PV Power Plant into Electrical Network based on Gensets.</p> <p>Fuel Save controller should performs the following tasks:</p> <ul style="list-style-type: none"> a) Monitoring of the genset's power and operating status b) Monitoring of the load and grid status c) Calculation of suitable values for the maximum power output of the PV inverters according to defined parameter settings and the current status of gensets and load d) Control and communication interface to PV inverters e) Internal logging of all relevant system data f) Provision of relevant system data for local and remote monitoring g) Emergency shutdown of the PV inverters in case of a system malfunction h) Online Dashboard access to monitor solar power plant, Gensets & Grid and hourly plant report. <p>The bidder shall provide the complete technical details of the system</p>	Each	1				

9	<u>WEATHER STATION</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	<p>Design, Supply, installation, testing and commission of weather monitoring system along with all necessary equipment and software which should be capable of monitoring the solar radiance, wind velocity, module cell temperature, ambient temperature, humidity, wind direction and rain fall level. All sensors must be of class-A. The performance monitoring system shall use the present weather information and compare the solar power generated with the typical power to be produced with respect to the present available solar irradiance. The deviation of power generation shall be embedded in the automatic report generation documents, any degradation or performance deviation shall be alerted to the user through email. Based on this, users initiate the maintenance/cleaning of solar panel, trouble shooting of the solar power system, etc.</p> <p>The weather data stored in the database server shall be retrieved and displayed in the user intranet browser in user friendly tabular and graphical format. The user shall select the date range to view the history of weather data with date and time stamping. The automatic report generation feature in the server shall automatically generate the report based on the events or time duration and convert the same report in to PDF, word, Excel, html and other formats and shall send to the specified e-mails as an attachment. The row, column, content, user email-id shall be specified during the configuration setting by the user. The automatic report generation shall monitor the various user defined events continuously. For generating automatic reports and emailing process shall not require any human intervention.</p>	Each	1				

10	<u>NET METERING</u>	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
	Service of Grid study as per K.E/Nepa approved criteria complete in all respects or directed by Engineer. This includes the services charges of Load Inspector (N.O.C) fees & Consultant Grid Study Fees & service charges for complete process IBA shall be paid only K.E or Nepa fees challan.	Each	1				
11	CABLE TRAY						
i)	Supply and installation of following sizes 16SWG heavy duti G.I Perforated Cable Tray 100mm x 75mm with 16 SWG G.I. Covers as per details given in the drawings and specifications. Complete with all installation material such as angle iron support of size, MS round bar, elbows, Tee, Nuts, Bolts, Washer, Hilti drop-in anchour, etc. Complete in all respect, as per the specification and drawings.	Meter	45				
ii)	Supply and installation of following sizes 16SWG heavy duti G.I Perforated Cable Tray 150mm x 75mm with 16 SWG G.I. Covers as per details given in the drawings and specifications. Complete with all installation material such as angle iron support of size, MS round bar, elbows, Tee, Nuts, Bolts, Washer, Hilti drop-in anchour, etc. Complete in all respect, as per the specification and drawings.	Meter	20				

12	CIVIL & MISCELLANEOUS WORK	Unit	Qty	Unit Price (PKR)	Amount With out Tax (PKR)	Tax	Amount with Tax (PKR)
i)	Supply and installation of 3-inch UPVC conduit class E with sockets, Bends, Elbows, T-Joints, Clamps for DC cable, including excavation, sand bedding, back-filling, manholes etc, complete in all respects.	Meter	30				
ii)	Supply and installation of 2-inch UPVC conduit sockets, Bends, Elbows, T-Joints, Clamps, complete in all respects.	Meter	60				
iii)	Providing & Supply of adjustable & moveable trolley type ladder with working plate form for cleaning of Solar PV Modules, Maximum height of 10'-0"	Each	1				
iv)	Removal/Cutting of trees at some designated place.	Job	1				
v)	Supply & Installation of Inverter & LV Panel fiber shed as per Engineer instructions and approval.	Job	1				

Grand Total Rupees (in words):

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7. PROJECT SPECIFIC REQUIREMENTS

S. No.	Description	Bidders Offered Specification
1	The solar PV module to module clearance on the ground must be 1m.	
2	All DC Cables should be single core tin-copper, double insulated XLPO/XLPO, UV resistant and compliance with H1Z2Z2-K	
3	DC breakers/fuses to be included in the design to allow for safe maintenance and access of DC strings. All DC breakers will be installed in a separate isolator box (beneath) where the inverters are being installed. DC breakers/fuses will be completely packed and holes with PG glands should be equal to No. of cable entering in the box.	
4	Each MPPT should have its separate DC side breaker rated to the operational voltage	
5	The fill factor for DC cable trays should not exceed 50%.	
6	Cable Trays to be perforated to allow for ventilation and water dissipation. Proper gland to be used at edges.	
7	All AC LV Power cables from inverter till termination point should be multicore having insulation to 90 deg Celsius XLPE/PVC non-armoured copper conductor.	
8	DC and AC voltage drop not to exceed 2% for all cables. PCSIR or any third-party inspection report for DC cable cross-section needs to be shared. Third-party test report is required if using any imported cable.	
9	All LV panels must be equipped with an Energy Analyzer for proper energy accounting.	
10	DC Cables electrical connection with DC breakers to be ensured with tinned copper O/U lugs.	
11	All equipment's temperature rating will be as per operating temperature conditions.	
12	Equipotential bonding PV arrays to be ensured as per standard. Earthing Pit resistance for DC/AC to be equal to or less than 5 ohms.	
13	Remote monitoring systems will be deployed to allow for the effective monitoring of Solar PV systems, Diesel Engine and Grid.	
14	All nuts, bolts, washers, and screws for the project should be Stainless steel (SS 304).	
15	All lugs will be of tinned copper.	
16	Lightning protection to be ESE type- Level II/III Protection.	
17	The Bidder shall consider the conditions found at the site to avoid any corrosion problems, especially with equipment installed outdoors.	
18	All material that is not naturally corrosion-resistant shall be treated or finished to protect surface and functional integrity under the ambient conditions prevailing at the site.	

19	To protect metallic accessories from corrosion two anticorrosive coats of paint will be made on material.	
20	Electrical power points needed for cleaning via motorized solution or other methods will be in the bidder's scope.	
21	4mm2 and 6mm2 MC4 connectors type, Amphenol must be used.	
22	In landscape orientation the cable must be directly connected with another panel. No jumper cable in interconnection of panel will be allowed.	
23	Short circuit rating of LV panel must be same as existing LV panels. The LV panel bus bar dimensions should be according to operating current. SPD sizing must be according to the LV panel and solar PV system requirement.	
24	Water distribution network for cleaning on roof will be in the scope of the bidder. The client will provide water access points.	
25	Backup supply for the weather monitoring system must be in the bidder's scope.	
26	DC voltages there is a high probability of solar PV module undergoing PID degradation. Design to ensure PID is mitigated via product selection or design is encouraged.	
27	Passive method to reduce PID losses involves low PID modules that have third-party inspected test data in controller environments.	

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It is hereby certified that the terms and conditions have been read, agreed upon and signed.

M/s _____

Contact Person _____

Address _____

Tel # _____

Fax _____

Mobile _____

Email _____

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