



**UNIVERSITY OF TURBAT  
OFFICE OF PLANNING & DEVELOPMENT**

**TENDER DOCUMENT**

**FOR**

**DESIGN, SUPPLY, INSTALLATION, TESTING AND  
COMMISSIONING OF 1 MW ON GRID SOLAR PV PLANT AT  
UOT BASED ON EPC MODEL**

**AT**

**MAIN CAMPUS OF UNIVERSITY OF TURBAT  
Ginnah, M-8 Road Turbat, 92600, Balochistan, Pakistan**



# UNIVERSITY OF TURBAT OFFICE OF PLANNING & DEVELOPMENT

## Introduction

University of Turbat is the second general University in public sector, chartered by the Government of Balochistan vide Act 2012 passed by the Balochistan Provincial Assembly in May, 2012. The main objective of the establishment of the University of Turbat in the Mekran region in Balochistan is to provide better opportunities of higher education to the students of Turbat (Kech) and adjoining districts of Panjgur, Gwadar and Awaran.

The proposal to solarize the University of Turbat is the part strategic Plan of University of Turbat. It is also aim of the management to make sustainable the institution financially and to reduce the expenses on account of electricity cost which is a huge burden on budget in such critical economical condition of the country.

UoT hereby invites companies to participate in the bidding process for procurement of 1.0 MW Grid Connected Solar PV Power Plant to be installed at main campus UoT. The responsibility of the successful bidder shall be to design, supply/install Solar Power Plant to the Purchaser as per the terms and conditions of this Tender Document.



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## INSTRUCTIONS TO BIDDERS

### Terms & conditions:

1. Sealed Envelope should clearly state “Name / Title of Tender.”
2. Bidder should be registered with Taxation Department and should possess N.T.N, G.S.T and BRA Certificates.
3. Bidder should possess PEC Certificate in C3 category or above.
4. The bidder must have AEDB V1 License under relevant category.
5. Location of the project is Main Campus University of Turbat, Kech, Balochistan.
6. Bidder is required to conduct site survey of the roof tops of all the buildings and parking areas for solar power plant along with power evacuation system up to nearest interconnection point before submission of their respective bids.
7. Procedure of bidding shall be a single stage – two envelopes: technical proposal and financial proposal, procedure.
8. Both technical proposal and financial proposal are required to be submitted in a single package containing two separate sealed envelopes at the office of the Planning and Development, UoT latest by 11:30AM on 20<sup>th</sup> September, 2022.
9. The envelopes shall be marked as “TECHNICAL PROPOSAL” and “FINANCIAL PROPOSAL” in bold and legible letters to avoid confusion.
10. TECHNICAL PROPOSALS will be opened on the same day i.e. on 20<sup>th</sup> September, 2022 at 12:00 PM at Conference Hall, UoT, in the presence of bidders who desire to attend.
11. FINANCIAL PROPOSALS shall be retained in the custody of the procuring agency without being opened.
12. Bidder/s who fulfill technical criteria, will be entertained for the opening of the respective FINANCIAL PROPOSAL/S. Time, date and venue for the opening of FINANCIAL PROPOSALS will be communicated to bidders accordingly.
13. Tender/TECHNICAL PROPOSAL, should be supported by earnest money of Rs.500,000/- (refundable) as bid security in the form of CDR/DD/Pay Order/Bank Guarantee/ Banker’s Cheque in favor of the University of Turbat. No offers will be entertained without bid security.



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14. The bid security to un-successful bidders will be returned after award of contract to technically/financially qualified lowest/successful bidder.
15. Rates are to be quoted on TCA (Total Cost of Acquisition) basis, which shall be calculated including but not limited to Licensing (where applicable), Insurance charges, clearing charges, installation, commissioning, training, transportation & labor charges incurred up to final destination (Main Campus University of Turbat, Kech, Balochistan), at the risk & cost of the Contractor / Business Firm.
16. Tenders must be quoted in Pakistani Rupees (PKR).
17. Country of origin & manufacture (separately), completion time, after-sales services & warranty conditions may be clearly specified under respective captions. Where completion time shall mean; time consumed in delivery till final destination, time required for fixation, installation, training & commissioning of the delivered equipment.
18. Validity of the bid should be at-least 90 days from the date of financial bids opening.
19. Evaluation of the successful bidder from those who are technically qualified for their financial proposals, shall be made on the basis of quoting the lowest price against setting up of 1.0 MW Solar Power Plant.
20. Solar system has to be commissioned within 6 months of signing of contract agreement.
21. Bidder shall provide the Gantt Chart of the Project.
22. Complete plant in running condition will be handed over to UoT within 6 months off the contract signing.
23. Payment terms to be finalized.
24. Tax Liability:
  - a. Complete Tax liability is to be borne by the Vendor/Supplier
  - b. Quoted prices shall be inclusive of all applicable Taxes, be filled item-wise as per the afore-mentioned format above and may not be applied to the sub-total of the package.
  - c. In case of any Tax exemptions, exemption certificate from the concerned Tax Office / Regional Tax Office pertaining particularly to this case may be provided; otherwise, taxes shall be deducted as per Government Policy / Rules.
25. Contractor shall carry out Operation & Management (O&M) for 1 year after commissioning and ensure the production of KWh specified in the technical proposal.



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26. Technically/financially qualified successful bidder shall be required to provide Performance Security in the shape of CDR/DD/Banker's Cheque/ Bank Guarantee, or Insurance Bond (by AA ranking Insurance Company) in favor the University of Turbat, amounting to 10% of the Work Order/Contract Agreement value at the time of acceptance of Letter of Intent (L.o.I).
27. Performance Security may be retained for at-least 12 months from Commercial Operation Date (COD) of Plant.
28. In case of late delivery, LATE DELIVERY PENALTY (Liquidated Damages) shall be imposed at the rate of 1% (of the value of items delivered late) per day, up to a maximum of 10% of the Contract Value.
29. Partial delivery is allowed.
30. All terms & conditions mentioned in the tender documents for technical/prequalification shall also apply.
31. Any change in the scope of work / terms & conditions will be communicated accordingly.



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### TECHNICAL QUALIFICATION CRITERIA

1. The bidder must have AEDB V1 License under relevant category for installation and cumulative experience of commissioning solar PV plants of 15 MW. (attach document/s)
2. The firm must have previous experience of installing single project of 1.0 MW at an educational institute (preferably) and upto 2.0 MW single project at any other industry; having experience of installing a single project of more than 2.0 MW at any industry would earn extra points to the participating firm.
3. List of Solar Power Plants completed by the bidder with site address, and contact details with date of installation of Plants. (attach document/s)
4. The bidder must have minimum three graduate engineers having valid PEC registration in Electrical/Mechanical/Energy engineering or equivalent disciplines and PEC registration Number and copy of valid membership Card. (attach document/s)
5. The bidder must be duly registered by the Pakistan Engineering Council (PEC) in category C3 or above of the Works and CE-01, CE-10, EE-03, EE-04, EE-05, EE-10, ME06 & EE-11 (Solar Energy) which is the mandatory requirement for the participating bidders. (attach document/s)
6. List of similar projects completed / in hand in Pakistan / worldwide. (attach document/s)
7. The bidder shall give an undertaking that the information and documents submitted in the offer are correct and authentic. (attach document/s)
8. The bidder shall provide an undertaking on stamp paper dully attested from the authority concerned that the “bidder has not been blacklisted.”
9. The bidder must have ISO 9001 certification. (attach document/s)
10. Terms & conditions mentioned in Instructions to Bidders will follow.
11. Bidder must be direct importer of Solar Modules and must have 1.0 MW Solar Modules in stock.



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### FINANCIAL QUALIFICATION CRITERIA

1. Company must be registered with Security Exchange Commission of Pakistan (SECP) for last three years. (attach document/s)
2. Company must provide audited financial statements along with audit report for last three financial years. (attach document/s)
3. Company must provide prove of registration with Taxation Authorities for Income tax and Sales Tax purposes. (attach document/s)
4. Company must provide detail of its subscribers and directors. (attach document/s)

#### **Approval**

The contractor shall be responsible for obtaining power generation license and all the related approvals from NEPRA/QESCO/WAPDA/K-Electric for the permission of the project.

#### **Net Metering / Wheeling**

The contractor shall ensure that the system installed will technically conform to all requirements pre- requisites for Wheeling/Net-metering as per DISCO/ PEPCO/NEPRA/or any other related organization requirements. Bidder shall be responsible for net-metering and all related processes to get Net Metering License as per UoT request.

#### **Term**

The Contractor after successful commissioning of Solar Power Plant (SPP) shall become the Operator and shall be responsible for operation and maintenance of the solar power plant for a period of One (1) year from the date of commercial operation and shall be responsible to give guaranteed Net Minimum Guaranteed Generation (NMGG).



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**Annexure – A**

### **QUALIFICATION CRITERIA**

NTN/ GST registered companies related to Solar Power Generation System / Authorized agent who fulfills the following criteria shall be eligible to apply:

- a. The bidder should have experience in design, manufacture, supply, Installation and commissioning of at least 1 MW at an educational institute (preferably) and upto 2.0 MW single project at any other industry; having experience of installing a single project of more than 2.0 MW at any industry would earn extra points to the participating firm.
- b. Bidders shall provide contact details for independent verification by UoT for such projects. UoT may visit installation sites for confirmation.
- c. The bidder shall give an undertaking that the information & document submitted in the offer are correct & authentic (Annexure – B)
- d. The bidder must have ISO 9001 certification (copy to be enclosed).
- e. The bidder must provide valid PEC registration certificate for execution of such projects.
- f. Audited Financial Statements for last three financial years (2018-19, 2019-20, 2020-21)
- g. Organizational profile.
- h. Detail address indicating name of contact person for the service unit or regional office or manufacturing set up in Pakistan.
- i. Detail address of your clients and name of contact persons to verify about your projects and reliability for post services.
- j. Bank statement for financial stability.
- k. Bidder must provide the documentary evidence to all above points.
- l. The bidder or its sub-contractor must be AEBD (Alternate Energy Development Board) approved vendor in respective category.





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**Annexure – B**

(To be submitted by bidders on official letter head)

Dated: .....

To,  
Project Coordinator  
Planning and Development Department  
UoT, Kech.

**Subject: Offer in Response to Tender Notice of 08.09.2022 for DESIGN, SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF 1.0 MW ON GRID SOLAR PV PLANT AT UOT BASED ON EPC MODEL**

Sir,

We the undersigned bidder, having read and examined in details the specification, general terms & conditions and special terms & condition of the tender, do are hereby submitting our offer to execute the contract as per specification as set forth in your bid document. In this connection, we enclose the following documents for your kind perusal.

- 1.
- 2.
- 3.

We also further declare:

The information & documents as enclosed herewith are correct & authentic and original documents are with us and same can be produced as and when required.

(Authorized Signatory)

Name:

Designation: Seal:



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Annexure – C

### SCOPE OF WORK

The contractor will be responsible for Design, Supply, Installation, Commissioning and Maintenance of Solar Plant for the period of 1 Years. Operator shall provide all day to day, weekly and monthly operation and maintenance procedures tasks. Operator shall perform the work and supply all required spare parts in a prudent and efficient manner and in accordance with manufacturers and systems designers' specifications, the Annual Operating Plan for the Plant and all operation and maintenance manuals.

#### **Operator shall use all reasonable and practical efforts**

- (1) To maximize plant capacity utilization,
- (2) To reduce plant downtime,
- (3) To optimize the useful life of the equipment of the power plant.

**After taking over the activity of O&M for the power plant, the operator shall be responsible for the operation and maintenance of the plant and shall perform all necessary services including applicable services listed below: -**

1. Provide all operations and maintenance services necessary and advisable to efficiently operate and maintain the plant, including all associated mechanical and electrical equipment's keeping in view the objectives set-forth herein above.
2. Maintain up-to-date operating logs, records and monthly reports regarding the operation and maintenance of the Plant, which shall include detail of power output, other operating data, repairs performed and status of equipment.
3. Regularly update and implement an equipment repair or replacement / overhaul and preventive maintenance program that meet the specifications of the equipment manufacturers and the recommendations of the manufacturers.
4. Perform the services required to provide all spare parts, or equipment's as required. Tools and equipment, required to operate and maintain the Plant in accordance with the



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recommendations of individual original equipment manufacturer.

5. Operate and maintain Plant fire protection and safety equipment.
6. The Contractor shall guarantee the installation for the following period from the date of issue of commissioning certificate.
  - Solar Modules: 12/25 Years
  - Inverter 15 Years
  - Mounting Structure 20 Years
  - Other equipment 5 years

Any damage or defect, that may arise after or remain undiscovered at the time of issue of commissioning certificate, same shall be rectified or replaced by the Contractor at his own expenses. This guarantee shall be applicable for the quality of works executed as well as for the equipment/fittings supplied by the Contractor.

### **Daily Generation Report:**

During the O&M period, the operator shall keep the measured daily data and provides the same to UoT in electronic) form. These data shall be transferred to UoT in a suitable form on weekly basis.

### **Personnel:**

The Operator shall employ only such personnel who are adequately qualified and experienced for operating and maintaining the Solar Power Plant.

### **Net Minimum Guaranteed Generation (NMGG):**

The operator shall be responsible for achieving NMGG submitted in the technical proposal. For any shortfall in the net minimum guaranteed generation corresponding to the offer, the compensation shall be adjusted from the performance security – in case of a 10% deviation from committed power generation, the bidder shall re do the installation and ensure the numbers are met.



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### **Insurance**

1. Operator shall maintain in force throughout the period of contract all the legally required insurance coverage.
2. Operator shall also provide insurance of solar power plant, which shall cover, fire, burglary, earthquake, and flood damage etc. or as required. In case of failure/damage of any equipment, Contractor will repair/replace the same without waiting for insurance claim at his own cost.

### **Measurement of Energy and Metering Systems:**

1. The operator shall provide cloud monitoring software, weather stations and energy meter for monitoring performance of Solar system.
2. UoT shall have the right to carry out surprise inspections of the Metering Systems from time to time to check their accuracy.
3. All testing and metering equipment shall conform to the relevant QESCO/WAPDA standards and applicable codes.
4. If either the Operator or the UoT find any inaccuracy in the Metering System, the operator or the UoT, as the case may be, shall notify the other party in writing within 24 hours for a joint inspection and testing or other agreed agency.
5. The Metering System shall be sealed in the presence of both parties.
6. When the Metering System and/or any component thereof is found to be outside the acceptable limits of accuracy or otherwise not functioning properly, it shall be repaired, re-calibrated or replaced by the Operator at his cost as soon as possible or as per requirement of UoT.
7. Meters shall be duly tested/ calibrated yearly by the Operator at his cost from WAPDA/QESCO accredited testing agency.
8. Any meter seal shall be broken by the Contractor's representative only in the presence of UoT representative whenever the Metering System is to be inspected, tested, adjusted, repaired or replaced with due permission of UoT.



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Annexure – D

## APPLICATION FORM FOR DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF 1.0 MW POWER ON GRID SOLAR PV PLANT AT UOT BASED ON EPC MODEL

1. Name of Company: \_\_\_\_\_
2. Complete Postal Address: \_\_\_\_\_  
\_\_\_\_\_
3. Tel No: \_\_\_\_\_
4. Email address: \_\_\_\_\_
5. Fax No: \_\_\_\_\_
6. Mobile No: \_\_\_\_\_
7. Authorized Representatives Name: \_\_\_\_\_
8. Authorized Representatives Designation: \_\_\_\_\_
9. Type of Business:
  - (1) Sole Proprietorship
  - (2) Partnership
  - (3) Corporation (Private Ltd)
  - (4) Corporation (Public Ltd)
10. National Tax Registration #: \_\_\_\_\_
11. Sales Tax Registration #: \_\_\_\_\_
12. BRA Registration #: \_\_\_\_\_
13. Bid Validity: \_\_\_\_\_ (Please specify in No. of Days).
14. Year of Establishment: \_\_\_\_\_
15. Similar work experience: (Please specify name of buyer & date of purchase. Attach Purchase Orders)
  - a.
  - b.
  - c.
16. Certificates / Awards (if any, please attach)
17. Company Profile: (Please attach if any)





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Annexure – F

## FINANCIAL CAPABILITY

**Name of Applicant or Partner of JV:**

<b>BANK DETAILS</b>	Name:
	Address:
	Contact Name:
	Tel:

Financial Information in PKR or Equivalent	Actual: Previous Three Years			Projected: Next Two Years	
	1	2	3	4	5
Total Assets					
Current Assets					
Total Liabilities					
Profit Before Taxes					
Profit after Taxes					

Source of Financing	Amount(PKR)

Attach audited financial statements for the last two years (for individual applicant or each partner of JV. (Also attach bank statement)







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Annexure – H

## FINANCIAL OFFER

(The format should be on the letter head of the Bidding Company/Lead Member of the Bidding Consortium)

Date: \_\_\_\_\_

From: \_\_\_\_\_ (Insert name and address of Bidding Company)

Tel: \_\_\_\_\_

Cell: \_\_\_\_\_

Email: \_\_\_\_\_

Website: \_\_\_\_\_

To,

Subject:

Dear Sir,

We submit our financial bid in response to Tender Document reference # \_\_\_\_\_ dated \_\_\_\_\_

S#	Description
1	1 MW solar system with high efficiency i.e _____ Million units(KWh) with less than 2% degradation for the 1 <sup>st</sup> year and not more than 0.55% degradation for subsequent 25 years.

1. Contract will be finalized with the firm quoting the lowest per unit charges/total project cost of solar Electricity provided to UOT after meeting criteria as prescribed in tender documents shall be deemed successful lowest evaluated bidder
2. Complete plant in running condition will be handed over to UOT after 6 months of issuance of PO. However the bidder will operate and maintain the system for 1 year after commissioning.
3. UOT reserve the right to either purchase equipment against above mentioned offers or continue services without purchasing

Thank You

Yours faithfully,

(Signature, name and Designation of person authorized by bidder)



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### Annexure – I

(To be Printed On Company's Letterhead)

(To be attached with Technical Offer)

- |    |   |        |
|----|---|--------|
| 1  | Bid Bond PO/DD No.  | -----  |
| 2  | Bid Bond PO/DD dated  | -----  |
| 3  | Bid Bond PO/DD issued by<br>(Bank Name)                                 | -----  |
| 4  | GST and NTN certificate (Attached)                                      | YES NO |
| 5  | Complete Technical specifications & catalog attached                    | YES NO |
| 6  | Project Time Line   | -----  |
| 7  | Validity of Acceptance  | -----  |
| 8  | Country of Origin   | -----  |
| 9  | Performance Bond to be provided   | YES NO |
| 10 | Company profile/ capability for completion of such projects. (Attached) | YES NO |
| 11 | Company Full address  | -----  |
|    | Contact Person  | -----  |
|    | Cell #  | -----  |
|    | E-mail  | -----  |
| 12 | Acceptance of terms & conditions of tender without any condition        | YES NO |

**Sign & Seal**



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### Annexure – J

#### SOLAR PV PLANT SPECIFICATIONS

Grid Connected Solar PV system without Energy Storage of quoted MWp (DC Capacity at STC) on EPC Basis to be installed at UoT with Roof mounted PV modules installations. Inverters design should be compatible with solar PV strings. A schematic electrical Single Line Diagram (SLD) of the entire System layout from the modules to the grid-connection, identifying and listing all of the following DC and AC components, must be provided by the Bidder. The system must be complete with protection devices (earthling, DC Isolators, manual switch, Lightning arrestors, surge protection and weather sensors etc.), solar mounting structure, all civil work including, concrete pads, car parking structure, AC Power distribution Cabinet etc. AC switchgear must have all the AC contactors, AC disconnects, Bus bars, manual switch, fuses and energy meter, Voltage, Current and Power factor meters etc. System must be capable of remote monitoring of energy parameters on LAPTOP and PCs. System must be complete with all components and accessories. Electrical equipment, breakers, transformers, switch yard protective equipment, CTs/PTs and other panels must conform to the specifications and standards of Current Pakistan/NEPRA Grid Code.

#### **SOLAR PV SYSTEM COMPONENTS**

- Solar PV Modules:
- Solar PV modules should be Tier-1 type as per latest Bloomberg List.
- Number of Cells and Type= 72 Cells or more Mono
- Bus bars = Not less than 09
- Each PV module size must be more than 535 Wp with positive power tolerance only
- The modules must have efficiency more than 20%.
- Fill Factor (FF) more than 78%.
- Modules must be as per IEC standard 61215 and 61730.
- Modules should be free of PID and must include PID free certificate.
- Minimum 12 years replacement warranty and 25 years performance warranty
- String configuration must be compatible with Inverters and vice versa.
- Size of total PV modules: As per quoted size at STC.
- Flash Test report and Module Test report as per standards 61215 and 61730 should be provided at the time of supply.
- Outdoor cable connectors should be ingress protected by IP 66 or above.
- Must be supplied with connected cables and MC4 connectors.
- Flash report of the PV modules must be submitted at the time of supply.



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- Pre-shipment Inspection Report must be submitted.
- Certificate of Conformance (COC) must be attached.
- Dynamic and loading capacity may be 2400 Pa or better'
- Each PV module in any Solar PV plant must have bar code or QR codes. The following information must be mentioned in the Bar Code or QR Codes used in each module (This can be inside or outside the Laminate but must be able to withstand harsh environmental conditions (Thunder storm, hail storm, hurricanes and wind storm).
  - Name of manufacturer of PV Module
  - Name of manufacturer of PV Cells
  - Month and year of manufacturing ( separately for solar PV module and solar cells)
  - Country of origin (Sedately for solar Cells and PV modules)
  - Name of Test Lab issuing IEC certificate / EN certification.
  - All tests as per latest version of IEC standards / EN certification

### **Solar On-Grid Inverters/PV Conditioning Equipment:**

- Type of Inverters = Grid Tied String Inverters.
- Number of MPPT inputs = 5 or More than 5.
- Output AC Voltage: 400V, Three Phase
- Make: USA/EUROPE/CHINA OR EQUIVALENT
- Size of each Inverter: As per string design but not less than 50KVA
- Total Inverter Size: As per PV string. PV to Inverter ratio may be set to optimum
- Maximum Efficiency: not less than 98%.
- Total Harmonic Distortion: THD< 3%
- Standards compliance: UL 1741, IEC 62109-1/2, IEC 62116, IEC 61683 for safety, grid connectivity and parallel operation.
- Degree of protection: Minimum IP 65 or above.
- Type-2 or better DC and AC SPDs.
- Built with data logger, communication interfaces protections and remote monitoring capability.

### **Module Mounting Structure: (Fixed/Single Axis/Double Axis)**

- a. The structure design shall be appropriate and innovative. It must follow the existing roof and parking areas profile.
- b. The structure shall be designed to allow easy replacement of any module and shall be in line with the site requirements.
- c. Design drawings with material selected and their standards shall be shared with UOT before commissioning.
- d. The support structure design & foundation shall be designed with reference to the existing roof structure and parking areas conditions in order to withstand wind speed



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applicable for the zone (Site Location), using relevant Pakistani wind load codes. The structures and foundations shall also conform to the seismic conditions pertaining to the zone using relevant Standards and codes.

- e. The structure must be designed with considering appropriate factor of safety. The bidder must provide the detail design and calculation for the structure design.
- f. The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation & tilt, absorb and transfer the mechanical loads to the roof structure or parking areas properly.
- g. The string structure may preferable be made of hot dipped galvanized steel of suitable size. The thickness of galvanization should be as per the relevant standards for galvanization but minimum of 80 microns. It is to ensure that before galvanization the steel surface shall be thoroughly cleaned of any paint, grease, rust, scale, acid or alkali or such foreign material as are likely to interfere with the galvanization process.
- h. The string structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.
- i. Nut & bolts, supporting structures including Module Mounting Structures shall have to be adequately protected from atmosphere and weather prevailing in the area.
- j. The string structure shall be grounded properly using maintenance free earthing.
- k. The bidder/manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings.
- l. For multiple module mounting structures located in a single row, the alignment of all modules shall be within minimum error limit.
- m. Cable should pass from Pipes and Cable-ties shall be used to hold and guide the Pipes (cables/wires) from the modules to inverters or junction boxes. All the cables should be aesthetically tied to module mounting structure.
- n. Bidder must submit all the quality test documents and test certificates complying with the requirement of the structure.
- o. Every major Component of the Plant should be suitably named / tagged numbered for easy traceability, identification and maintenance

### **Combiner Boxes:**

Must be manufactured with GI material with 99% copper strips in it for termination of PV strings and must comply with IP 65.

### **MC4 Connectors:**

Qty: As per design

Current rating: As per design Ingress protection: IP 65 or above

Standard Compliance: EN 50521:2008

### **Remote Monitoring:**

System must have capability for remote monitoring / remote string monitoring complete with



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communication interfaces, data logging and software. The contractor will have to configure the whole system and show monitoring on Laptop or PC the parameters like Load watts, PV watts, DC energy and AC energy generation.

### **Civil and Mechanical Work:**

The bidder shall have the sole responsibility for the whole civil and mechanical works for rooftop based solar mounting structures.

### **Manuals:**

The successful bidder will supply all the service and maintenance manuals in hard and soft copy of each component of the system after the signing of contract.

### **System Protections:**

System must be complete with all protections including DC and AC Disconnects, Surge protection, Lightening arresters, Grounding, weather sensors etc.

#### **a. Surge Protection:**

1. Surge protection shall be provided on the DC side and the AC side of the DG facility.
2. The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter and generator.
3. The AC SPDs shall be installed in the AC distribution Cabinet adjacent to the DG facility.
4. The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system.
5. The Lightening Arresters need to be provided for the buildings which are of more than 15 meters height only.

#### **b. Earthing Protection:**

Three separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure with a total earth resistance not exceeding 5 ohms as below:

1. Equipment earth (DC) &
2. System earth (AC)
3. LA

### **Metering:**

Solar system must be equipped with necessary metering for measurement of DC and AC Power and Energy, Power factor, Voltage, Current and Frequency.



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### **PV DC Cables:**

- 99.9% copper cables with conductor withstanding at temperature of 120 Degree.
- Cables must be double insulated suitable for 1000V DC transmission.
- Weather resistant, UV resistant, Ozone corrosion resistant, halogen free and flame resistant.
- Temperature range from -10 degree C to 120 Degree C.
- Test reports namely Conductor resistance test, Insulation resistance test, Pressure test and spark test must be provided.
- Outer insulation must be UV resistant.
- Preferably CU/PVC/XLPE

### **AC Power Distribution Cabinet:**

AC Power Distribution cabinet must contain AC circuit breakers, contactors, bus bars, energy meter and main switch with monitoring of Voltage, current, Power, Energy and power factor. The components must of high quality complying with national standards of switchgears.

### **Electric Substation and Transmission:**

Electric sub-station is available at locations and if needed as per bidder's design, the bidder has to build substation and include costs of building substation and transmission system for connectivity with the Grid and must account for in its tariff.

### **MV Switchgear Cubicle**

If Needed, contractor shall supply the MV panel with VCB including CTs/PTs, all protection /monitoring and interlocking devices and accessories of appropriate rating. The component must of high quality complying with national standard (Make: Schneider Electric / ABB / Siemens or equivalent).

### **Step Up Transformer**

If needed as per contractor's design, the contractor shall supply step up transformers with appropriate MVA ratings along with all protection and monitoring devices. The component must of high-quality complying with national standard (Make: PEL Electric/ Siemens or Equivalent).

### **Medium /Low Voltage Cable**

The contractor shall supply the required Low Voltage and medium voltage cables as per the design submitted. The component must of high-quality complying with national standard (Make: Pakistan Cables, FAST Cables or equivalent).



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### **Asset Performance Management**

The contractor must ensure that asset performance management team maximizes solar asset energy production throughout the plant life cycle through cloud based real time portfolio remote monitoring, maintenance strategy tools, network operating Centre and dedicated onsite maintenance and operation team.





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### SPECIAL INSTRUCTION

- 1) This document has been prepared, based on the workings carried out for the requirements and needs of the Procuring Agency, observing PPRA Rules 2004. Any grievance/accusation/suggestion (if so) refraining the responding agency from bidding, without prior consultation with the Procuring Agency would be an approach of misleading and/or misappropriation towards Procuring Agency.
- 2) Any conditional, partial, ambiguous, or called incomplete offer in any respect shall be ignored. No supplementary or revised offer after the opening of tenders shall be entertained.
- 3) Any erasing cutting crossing etc., appearing in the offer must be properly signed and stamped by the person signing the tender. Moreover, all pages of the tender must also be properly signed and stamped. Offers with any overwriting shall in no circumstances be accepted.
- 4) Sign & seal each & every page of bidding document before submission.
- 5) At any time prior to the deadline for submission of bids, the Procuring Agency, for any reason, may modify the Bidding Documents by amendment.
- 6) The interested firm(s) shall inform the Procuring Agency in writing (through mail/courier and electronic mail on the email detailed below) instantly on acquiring/downloading bidding document, so that bidders are informed in case of any change/amendment(s) made in the bidding document.
- 7) The Responding Organization must respond as per Terms of Reference (TOR).
- 8) A Bidder is not allowed to bid for selective items from the list of goods provided for in the Schedule of Requirements. A Bidder shall apply for the complete LOT. Partial items BID will not be entertained.
- 9) The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Documents. Failure to furnish all information required by the Bidding



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Documents or to submit a bid not substantially responsive to the Bidding Documents in every respect shall be at the Bidder's risk and may result in the rejection of its bid.

- 10) Any tampering, illegitimate inclusion or exclusion in any part of the Standard Bidding Documents shall lead to disqualification of the bidder.
- 11) The Procuring Agency may, in its discretion, extend the prescribed deadline for the submission of bids by amending the bidding documents in which case all rights and obligations of the Procuring Agency and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 12) The Procuring Agency reserves the right at the time of award of Contract to increase or decrease, the quantity of goods originally specified in the Schedule of Requirements without any change in unit price or other terms and conditions.
- 13) Any effort by a Bidder to influence the Procuring Agency in its decisions on bid evaluation, bid comparison, or Contract award may result in the rejection of the Bidder's bid. Canvassing by any Bidder at any stage of the bid evaluation is strictly prohibited. Any infringement shall lead to disqualification.
- 14) Within one week of receipt of the Contract Agreement Form, the successful Bidder and the Purchaser shall sign the Contract in accordance with the legal requirements in vogue.
- 15) If the successful Bidder, after completion of all codal formalities shows an inability to sign the Contract then its Bid Security shall stand forfeited and the firm may be blacklisted and de-barred from future participation, whether temporarily or permanently. In such situation the Purchaser may award the contract to the next lowest evaluated Bidder or call for new bids.
- 16) The Contract shall become effective upon affixation of signature of the Purchaser and the selected Bidder on the Contract document, and shall be governed for the period specified in the Bid Data Sheet and by the terms and conditions mutually agreed in the contract.



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- 17) On the date of signing of Contract, the successful Bidder shall furnish a Performance Guarantee for a percentage amount (10% of the total items' quoted price) as specified in the Bid Data Sheet (BDS), on the Form and in the manner prescribed by the Procuring Agency.
- 18) The Bid Security submitted by the bidder at the time of submitting its bid shall be returned to the Bidder upon submission of Performance Guarantee.
- 19) Failure to provide a Performance Guarantee by the Bidder is a sufficient ground for annulment of the award and forfeiture of Bid Security. In such event the Procuring Agency may award the contract to the next lowest evaluated bidder or call for new bid.
- 20) Before commencing supplies, the Supplier shall provide samples of specified items free of cost, if and as specified in the Schedule of Requirements of the product to the designated office or staff, as the case may be.
- 21) Bidding is open to all firms and consortiums meeting the following requirements:
  - a. Duly licensed by the Pakistan Engineering Council (PEC) in the appropriate category relevant to the value of the Works; for all local bidders,
  - b. For international bidders; registration/affiliation duly enlisted with any such international agency similar to Pakistan Engineering Council (PEC) is required. Joint Venture (J.V) with local firm.