

Original of EM-II certificate and UDYAM certificate to be produced for verification, if called for(if the bidder is not already registered with BPCL as MSE vendor).

"MSE bidders (Micro & Small Category) who are traders and registered under Services category, will not be considered for any benefits under MSE policy for procurement of goods. Similarly, MSE bidders who are registered under Manufacturer category, cannot be considered for any benefits under MSE policy for procurement of services".

Criteria for the award of tender quantity to MSE vendors:

" For general divisible tenders, in case bidder is registered as MSE quotes within the price band of L1+15 percent, such MSE shall also be allowed to supply a portion of the requirement by bringing down their price to L1 price where L1 price is from someone other than a micro and small enterprise. Such MSE shall be allowed to supply 25% of total tendered value.

"In case of more than one such MSE qualify as above; the supply of up to 25% shall be shared proportionately.

"Further, if L1 happens to be an MSE, the entire quantity (100%) shall be awarded to MSE vendor without any share to other MSE vendors.

"3% reservation for women owned MSEs within the above mentioned 25% reservation to be given.

"In case of non-divisible tenders, MSE quoting in the price band of L1+15% shall be awarded full/complete tendered value considering spirit of MSE preference policy subject to bringing down the price of MSE bidder to match L1 bidder.

Vendor may refer Govt. Policy for MSE PURCHASE PREFERENCE.

5. BID REJECTION CRITERIA FOR TENDER:

The following provisions of the bidding document must be adhered to without deviation, failing which the bid shall be considered to be non-responsive and rejected.

- a) Bid Validity
- b) Time schedule
- c) Security Deposit / Performance Bank Guarantee
- d) Scope of Work / Scope of Supply
- e) Price Reduction Schedule / Liquidated Damages for delay.
- f) Payment Terms
- g) Deviation to terms & conditions of RFQ / and its Addendum / Corrigendum if any.
- h) Presumptions etc. in Price Bid and "terms & conditions of tender".
- i) Defects Liability Period

j) Schedule of Rates / Prices

k) Any type of price information in Technical Bid/ un-priced bid.

6. All bidders quoting as MSE will be required to submit CA certificate along with MSE registration certificate / document (Not applicable in case of valid NSIC for tendered material) to avail the benefits under Public Procurement Policy as per MSMED Act 2006 / Public Procurement Policy order 2012. The CA certificate should be dated after the date of floating of tender and shall be specific to the tender for which the bid is being submitted. Format of the CA certificate is attached for reference.

Bidder shall have to submit copy of MSE registration certificate along with CA certificate. In case CA certificate is not submitted, bidder shall not be considered as MSE and benefits under Public Procurement Policy as per MSMED Act 2006 / Public Procurement Policy order 2012 shall not be available to the bidder.

7. BPCL Mumbai Refinery is an ISO:50001:2011 certified Refinery and is focused on energy efficiency. In line with the same, all contractors providing services for BPCL Mumbai Refinery should preferably deploy energy efficient equipment's such as energy efficient welding machines, LED temporary lighting and temporary window AC of BEE 4-star rating and above for execution of the work.

8. All vendors need to get technical queries clarified with BPCL technical person (contact details given above) before submitting the bid.

9. Confirm acceptance to PPLC policy. Refer attached relevant tender attachments. Vendor may refer Govt. Policy for PPLC PURCHASE PREFERENCE.

10. You can opt for purchase preference either under PPLC policy or under MSE policy, but not both.

You need to mention in your offer, that whether you want to opt purchase preference under PPLC or MSE policy.

**8.Other contractual stipulations**

A) For the attention of unregistered vendors who wish to participate for BPCLMumbai Refinery's tenders:

a. Vendors who have not received this RFQ directly are not eligible to participate in this tender.

b. However, if the said item/job falls in your manufacturing/service range, you may contact our vendor registration cell for getting yourself registered. The vendor registration form is available in our website <https://ebiz.bpc.co.in/VendorRegistration/>. You may visit the website for further details.

On completion of registration activities, you will be eligible to get/participate in all future limited

B) INTEGRITY PACT (IP)

2. Proforma of Integrity Pact (IP) shall be uploaded by the Bidder/s along with the bid documents (technical bid in case of 2 part bids), duly signed by the same signatory who is authorized to sign the bid documents. All the pages of the Integrity Pact shall be duly signed. Bidder's failure to return the IP duly signed along with bid documents shall result in the bid not being considered for further evaluation.

3. If the Bidder has been disqualified from the tender process prior to the award of the contract in accordance with the provisions of the IP, BPCL shall be entitled to demand and recover from Bidder Liquidated Damages amount by forfeiting the EMD/Bid Security as per provisions of IP.

4. If the contract has been terminated according to the provisions of the IP, or if BPCL is entitled to terminate the contract according to the provisions of the IP, BPCL shall be entitled to demand and recover from Contractor Liquidated Damages amount by forfeiting the Security Deposit/Performance Bank Guarantee as per provisions of the IP.

5. Bidders may raise disputes/complaints, if any, with the nominated Independent external Monitor(IEM). The IEM's name, address and contact number is given in tender attachment.

**9.Delivery**

For Supply:

12 weeks for Supply of items from the date of LOA/ PO whichever is earlier.

For Service (Installation /Site Work):

Total 6 weeks for Installation, testing & commissioning after receipt of material at site for complete system and from the date of instruction from BPCL site In-Charge

**Important Notice**

<b>Sr.No</b>	<b>Description</b>
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- |     |   |
|-----|---|
| 001 | Quotation received after due date will not be entertained   |
| 002 | Your quotation must specify exact amount or percentage discount, GST, Charges, Transport, Packing & forwarding, etc. as applicable.                         |
| 003 | In case you are unable to quote, kindly send the quotation with a regret for our records. Non-receipt of a regret will adversely affect your vendor rating. |
| 004 | No quotation will be accepted without your rubber stamp and signature.  |
| 005 | Your quotation must be strictly in enclosed envelope indicating Collective RFQ No., RFQ No. and due date.   |
| 006 | For all future correspondences please mention the vendor code Collective RFQ Number & RFQ Number.   |

**LIST OF ENCLOSURES**

To:M/s. BPCL ESTIMATE MUMBAI - 400038 India (300648)

-----Tear off Portion to be pasted on the envelope containing offer-----

**Collective RFQ No. : 1000392405**

Our Reference:  
RFQ No. : 6001670831  
Subject:

Due Date : 20.09.2022  
Due Time : 14:00:00

To,  
BHARAT PETROLEUM CORPORATION LTD-MUMBAI REFINERY  
P & CS DEPT .SOUTH BLOCK, 2ND FLOOR,  
MAHUL, CHEMBUR,  
MUMBAI  
400074

Purchase Group : N08-RF ELECTRICAL

SPECIFICATION AND SCOPE OF  
WORK  
FOR SOLAR POWER PV  
SYSTEM IN MUMBAI  
REFINERY

PR No: 16366133

Document No:

EST/REFINERY/PDR

## SCOPE OF WORK:

### SPECIFICATION AND SCOPE OF WORK FOR GRID CONNECTED SOLAR POWER PV SYSTEM

#### 1.0 INTRODUCTION:

BPCL proposes to install seven numbers of grid connected solar power PV system of total capacity 295 kWp for installation over various buildings inside BPCL Mumbai Refinery as mentioned in below table.

S. No	Location	No.of Unit	Capacity (Kwp)	Total Capacity (Kwp)	Remark
1	MRS-2&3 (Terrace)	2	20	40	Vendor shall visit each location before submission of quotation for collecting exact dimension of area and other details
2	MMBPL & Crude Oil Control room (Terrace)	2	40	80	
3	DHT S/S & CPP Control room 1(Terrace)	2	50	100	
4	CPP Control room 2(Terrace)	1	75	75	

The three phase 415 V power generated from the system shall be fed to the existing grid at the substations.

Vendor's scope of work shall include complete engineering, design, supply, delivery, installation, testing, commissioning and comprehensive maintenance for a period of 5 years beyond the warranty period of one year for the supplied solar power system. It shall be in the scope of vendor to generate, evacuate power and connect the same to refinery grid (grid voltage is 415 V AC.3PH + N).

Necessary MNRE approvals and statutory clearances if required for claiming and obtaining the subsidy and depositing in BPCL account shall be in the scope of vendor.

#### 2.0 CODES AND STANDARDS:

The system and equipment shall comply with relevant BIS and other Indian / International standards / MNRE guidelines and specifications as applicable. In case Indian standards are not available for any equipment, standard issued by IEC/ BS/VDE/IEEE/NEMA/NFPA or equivalent agency shall be applicable. In case of imported equipment, the origin of country

standard shall be applicable if these standards are equivalent or more stringent than the applicable Indian standards. The equipment shall also conform to special requirement / provision of applicable statutory regulations currently in force in the country. The solar power system offered and components used shall conform to the latest edition of the following and also the other Indian and International Standards as applicable:

### REFERENCE STANDARDS

IS : 12834 : 2013 (reaffirmed 2000)	Solar Photovoltaic Energy Systems- Terminology
IEC : 61215 Ed 2 or Latest	Crystalline silicon terrestrial photovoltaic (PV) modules- Design qualification and type approval
IEC : 60904-I (2006)	Photovoltaic Devices-Part-I: Measurement of Photovoltaic current – Voltage Characteristic
IS : 9000	Basic environmental testing procedure for Electronic and electrical items
IS : 9000	Safety Guidelines for grid connected photovoltaic systems mounted on the buildings
IEC 60364-7-712 (1997)	Electrical Installations of Buildings Part 7: requirements for special installations or locations.
IEC 60364-4-41	Protection against electric shock
IEC 61730	PV Module Safety Qualification
IEC 61701	Resistance to Salt mist and corrosion
UL 1703	Comply with the National Electric Code (NEC), OSHA and National Fire Prevention Association.

In case of any contradiction between various referred standards / specifications/ statutory regulations, the order of priority shall be statutory regulations / this scope of work specification / company standard / codes and standards / technical clarifications / confirmations provided by vendor.

### 3.0 SYSTEM DESCRIPTION:

#### 3.1 Solar Photo Voltaic (SPV) systems shall consist of mainly the following:

1. Solar panels
2. Module mounting structure
3. Junction boxes



4. Earthing System
5. Lightning Arrestors
6. Power conditioning unit (PCU) / String Invertors
7. Import & Export metering
8. Cable and other accessories

The PV array converts the light energy of the sun to DC power. The module mounting structure shall be used to hold module in position. The DC power shall be converted to AC to supply the electrical loads connected like lights, fans, motors etc.

Power from the solar panels shall be tied /integrated with the substation/ switch house MCC/PCC. DC distribution board may be provided in between solar array and PCU if required. It shall have MCCB of suitable rating for connection and disconnection of array section. It shall have meters for measuring the array voltage and array current. AC distribution board shall be provided in between PCU and loads depending on load. It shall have common digital energy meter, digital volt meter and digital ammeter. Energy meter shall be class 0.1 accuracy meter. Energy meter shall be communicable type with SIM (suitable for 3G and 4G) based remote monitoring system inclusive of all cables and accessories. The export energy meter shall be digital and shall have provision for RS 485 communication and 4 - 20 mA DC output corresponding to power generation in kW.

No electrical storage batteries shall be required as electricity generated by the solar panels will be fed to grid directly. The power output from the system shall be connected to grid through SFU. Cable from ACDB to substation/switch house MCC/PCC shall be supplied and laid by the BPCL.

The performance ratio (PR) of the system shall not be less than 76%.

One number digital photovoltaic pyranometer shall be supplied and connected with each solar plant for measurement of PR. Pyranometer shall display irradiance in W/m<sup>2</sup>. Necessary cable for connecting pyranometer to inverter shall be in the scope of the vendor.

Each solar system shall be supplied with SIM (suitable for 3G and 4G) based remote monitoring system inclusive of all cables and accessories. The export energy meter shall be digital and shall have provision for RS 485 communication and 4 - 20 mA DC output corresponding to power generation in kW. All inverters in solar power plant shall be inter connected for Modbus communication.

### **3.2 SPV Module:**

"Individual Solar PV (photo voltaic) module should be of capacity not less than 160 Wp confirming to IEC: 61215 Ed 2 or latest-Edition II, IEC 61701, IEC: 61730-I: 2007, IEC: 61730-II: 2007, UL 1703 certified, manufactured in India in a plant certified under ISO 9001: 2008 & ISO 14001 and also type tested by any one of the three accredited test laboratories under Ministry of New & Renewable Energy, Govt. of India. Solar PV module should be mono / polycrystalline solar cell of appropriate size.

“SPV modules of similar output with not more than +/- 3% tolerance in single string shall be employed to avoid array mismatch losses.

“The solar cell shall have surface anti-reflective coating to help to absorb more light in all weather conditions.

“Photo/electrical conversion efficiency of SPV module shall not be less than 15%.

“Fill factor of the module shall not be less than 72%.

“Each module shall have low iron tempered glass front for strength & superior light transmission. It shall also have touch multi-layered polymer back sheet for environmental protection against moisture & provide high voltage electrical insulation. Transitivity of glass shall be not less than 91%.

“Module junction box (weather proof) shall be designed for long life outdoor operation in harsh and corrosive refinery environment.

“The PV modules shall be suitable for continuous outdoor use.

“The bidder shall provide the sample solar PV module electrical characteristics including current-voltage (I-V) performance curves and temperature coefficients of power, voltage and current. However, the tabulated document with all the relevant data like voltage, current, power output for all the modules also to be provided.

“The PV modules shall be equipped with bypass diode to minimize power drop caused by shade.

“SPV module shall be highly reliable, light weight and shall have a service life of more than 25 years. SPV modules shall have a limited power loss of not more than 10% of nominal output at the end of 10 years and of not more than 20% of nominal output at the end of 25 years. The rated output of any supplied module shall not vary more than 3-5% from the average power rating of all ratings. Each modules, therefore, has to be tested and rating displayed.

“Whenever more than one module is required, identical modules shall be used.

“The solar modules shall have suitable encapsulation & sealing arrangements to protect the silicon cells from complete moisture proofing (IP 65) for the entire life of solar modules.

“The terminal box on the module should have a provision for opening for replacing the cable, if required.

“The array structure shall be grounded properly using maintenance free earthing kit as per IS: 3043 - 1987, tested & certified by CPRI.

### **3.3 Module Mounting Structure (MMS):**

The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels.

The structure shall be designed to allow easy replacement of any module & the array structure should be fabricated out of hot dipped galvanized MS angles/ channel of suitable size. However the metallic portion exposed after cutting/ drilling may be treated with cold zinc paint to prevent rusting at those locations.

The foundation for module mounting structure shall be preferably RCC construction or any other combination based on the local site condition requirement for which design details shall be submitted. The entire job of design, supply, shifting to site, installation etc. of the foundations is also in vendor's scope.

The support structure design & foundation shall be designed to withstand wind speed upto 200 kmph.

The clearance of the lowest part of the module structure & the developed ground level shall not be less than 500 mm.

The module alignment & tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation.

All fasteners shall be of stainless steel of grade SS 304. Kindly note that drilling shall not be carried out on building roof-top to fix the supports.

The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS4759.

Design drawing with material selected shall be submitted for prior approval of BPCL.

### **3.4 Junction boxes:**

“The array junction boxes shall be dust, vermin & waterproof & made of FRP/ABS plastic. Each solar shall be provided with fuses of adequate rating to protect the solar arrays from accidental short circuit.

“Metal oxide varistors (MOVs) shall be used at the terminals of array junction boxes for external overvoltage protection.

“The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming & outgoing cables.

“Suitable markings are provided on the bus bar for easy identification & cable ferrules shall be fitted at the cable termination points for identification.

“The array junction box should be preferably having maximum 08 inputs and 01 output with MOV and terminal block.

“Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make and should be as per IP 65 (for outdoor), IP 21 (for indoor) & as per IEC 62208.

The junction boxes shall have suitable arrangement for the Following:

1. Combine groups of modules into independent charging sub-arrays that shall be wired to the controller.
2. Provide arrangement for disconnection for each of the groups.
3. Provide a test point for each sub-group for quick fault location.
4. To provide group array isolation.
5. The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.

### 3.5 Power Conditioning Unit:

The power conditioner unit/ string inverter / central inverter should be provided to convert DC power produced by SPV modules, in to AC power. The power conditioning unit/inverter should be grid interactive and also DG set interactive if necessary. Inverter output should be compatible with the grid frequency.

Each solar plant shall have minimum two inverters.

### 3.6 Grid Tied System:

The offered system shall be connected to and floating in parallel with the refinery grid which is 415V 3 phase + Neutral. Offering required precautions and systems for safe operation shall be in the scope of vendor. Typical technical features of the inverter shall be as follows:

#### Parameters

Sr.No	Specification	Parameters
1	Nominal AC output voltage and frequency	415V,3 phase + neutral, 50
2	Accuracy of AC voltage control	1.00%
3	Output frequency	50 Hz
4	Accuracy of frequency control	0.10%
5	Grid Frequency Synchronization range	+3 Hz
6	Ambient temperature considered	40 Deg C
7	Humidity	95 % Non-condensing
8	Protection of Enclosure	IP-41(Min) for indoor IP-65(Min) for outdoor.
9	Grid Frequency Tolerance range	47.5-52.5 Hz
10	Grid Voltage tolerance	-0.20.15
11	No-load losses	Less than 1% of rated power
12	Inverter efficiency(min)	>95%
13	MPPT	Shall be incorporated

14	Ingress protection	IP 65 min
15	Communication interface	RS 485 / RS 232 / RJ45
16	Relative humidity	0- 100%

### **3.7 Protection:**

#### **Earthing Protection:**

“The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

“The new Earthing pit & system for array and distribution system & Power plant equipment shall be made as per provisions of IS: 3043. Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.

“Each array structure of the SPV yard shall be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.

" In compliance to Rule 33 and 61 of Indian Electricity Rules, 1956 (as amended up to date), all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth grid/electrode.

#### **Lightning Protection:**

The SPV Power Plant shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc.

Metal oxide varistors (MOV) shall be provided inside the Array Junction Boxes. In addition suitable MOV's also shall be provided in the Inverter to protect the inverter from over voltage.

### **3.8 Cables and accessories:**

All the cables shall be supplied conforming to IEC 60189 / IS 694 / IS 1554 or IS /IEC 69947 shall be of 650 V/1.1 kV grade and FRLS type, as per requirement. Only PVC/XLPE copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction box to PCU, PCU to ACDB etc. shall be so selected to keep the voltage drop and losses to the minimum.

The bidder shall supply installation accessories, which are required to install and successfully commission the power plant.

### **3.9 Cables & Wiring:**

All cables to be supplied should be as per IEC 60189 / IS 694 / IS 1554 or IS / IEC 69947 and should have proper current carrying capacity. The cable shall be PVC insulated PVC sheathed copper conductor.

1. All the wiring shall be carried out with minimum 2.5 sq. mm. PVC insulated copper conductor in surface/recessed steel conduct in control room / solar hut. All wiring shall be done with an appropriate size Cu conductor as earth wire as and when required flexible pipe may be used.
2. All cables and wires used shall be of copper conductors of suitable cross-section with cross linked polythene or polyvinyl insulated with polyvinyl sheath. Stranded and flexible cable shall be used. Non-stranded cable shall not be acceptable expect otherwise mentioned and permitted. Buried underground cables shall be armored. Unarmored buried underground cable shall be enclosed with suitable conduits. Unless, otherwise, specified, all other interconnecting cables shall be armored.
3. Conductor size of cables and wires shall be selected based on efficient design criteria such that the overall electrical energy loss in any section of cable or wire is shall be less than 2% under the designed operating conditions. Conductor size of less than 2.5 sq. mm shall not be accepted.
4. Cable/wire connections shall be soldered, crimp-on type or split bolt type.
5. All cables shall be adequately supported. Outside of the terminals/panels / enclosures shall be protected by conduits. Cables shall be provided with double compression brass glands wherever they enter junction boxes/panels/enclosures.
6. All cables shall be suited marked or coded for easy identification. Cables and wires shall conform to the relevant standards suppliers to specify the specification. The wiring must be carried out in casing capping only.

### **3.10 Distribution System:**

1. Single line diagram of the complete solar power system up to grid connection shall be provided along with general point wiring diagram with the technical details.
2. Details of cable used for the distribution and transmission purpose along with their current carrying capacity and make shall be enclosed.
3. System shall be supplied with an Energy meter from reputed company, duly tested and calibrated .Testing certificate shall be submitted.
4. All interconnecting cables shall be in the scope of the vendor expect cable from ACDB to BPCL switch house/substation.

### **4.0 Scope of work:**

Scope of work includes Design, engineering, supply, delivery, installation and commissioning of the system and evacuating power up to substation/switch house.

### **5.0 Training:**

Vender shall provide free of cost comprehensive training to BPCL personnel on various operational and maintenance aspects of the solar power system supplied by him.

#### **6.0 Warranty:**

The complete system shall be guaranteed by the manufacturer for quality of material supplied, workmanship and its trouble free operation including the components for **12 months** from the date of commissioning of entire system.

Following jobs are required to be covered under quarterly visit during the warranty period -

- Visual inspection of Modules and mounting clamps for any broken glass/ discoloration, Mis aligned modules
- Visual inspection of mounting structures, inspection & tightening of screws and fasteners as needed, Check for rust on structure.
- Checking and tightening of solar inter connections, Visual inspection of junction boxes and wiring Tightening of any interconnections as needed.
- Inverters-General Cleaning, Check LCD displays & working of inverters checking & ensuring Remote Monitoring and Log of daily production data.

#### **7.0 General conditions of the tender:**

a) The offered equipment shall be brand new with state of art technology and proven field track record. No prototype equipment shall be offered.

b) Vendor shall ensure availability of spare parts and maintenance support services for the offered equipment for at least 10 years from the date of supply.

c) Vendor shall give a notice of at least one year of equipment before phasing out the product/spares to enable for placement of order for spares and services.

d) Vendor shall submit Comprehensive Maintenance Contract offer for next 5 years after warranty period for solar plant and its control system (with each year wise bifurcation) which will be evaluated during price bid. Separate purchase order shall be awarded for CMC.

e) Warranty: The equipment shall be warranted for at least one 12 months from the date of commissioning or 18 months from the date of supply of system. Vendor shall visit quarterly during the warranty period for preventive maintenance of the Solar Power System. Vendor shall attend breakdown calls within 48 hrs. of reporting the problem. The faulty/damaged parts/equipment has to be replaced at no extra cost to BPCL.

f) Inverter shall have minimum 5 years warranty and modules shall have minimum 10 years warranty.

## **8.0 Vendor PI Note:**

1. The Solar Power Generation System shall be designed for ambient temperature of 45°C. Vendor shall visit site before quoting for the job.
2. Solar PV Panels can be installed on the roof tops after making suitable structure for the same. Output power from the system shall be fed to substation electrical panel.
3. All the equipment shall be designed for continuous duty as per nameplate rating under the specified ambient conditions. All commissioning spares shall be in the scope of vendor.
4. Vendor shall visit the sites quarterly for preventive maintenance and carry out all the necessary checks/tests for smooth and satisfactory performance of the system during the warranty period.
5. Transportation/accommodation of service engineer for carrying out maintenance should be the responsibility of the vendor.
6. Subsidy from Government: Vendor shall be responsible to obtain sanction for the subsidy component of the total solar project value as per JNNSM (Jawaharlal Nehru National Solar Mission) or as applicable under any central or state government rules. BPCL will provide all necessary documents and supports as may be required to the vendor to get the subsidy approval and disbursement of the same directly to BPCL. Any application fee, etc. will be paid by BPCL against receipt & submission of proof of documents. Vendor shall be responsible till the release of subsidy from MNRE to BPCL.
7. Factory Acceptance Test:

Vendor shall inform BPCL whenever Solar Power Generation System, with charge controller, and all other equipment's/ accessories, are ready for Factory Acceptance Test. FAT shall be witnessed by BPCL representative and vendor shall submit all the test certificates / calibration certificates for meters, etc. / test reports for all equipment's after FAT. Depending on the success of FAT vendor can dispatch the system to the sites. Module shall be tested as per IEC 61215 & IEC 61730.
8. Site Acceptance test: The complete system performance shall be demonstrated at site to BPCL engineer in charge. Site acceptance test should be done to verify the PR at site for each plant.
9. Two separate PO shall be placed one for complete supply item & another for erection, testing & commissioning of the complete system.
10. The total job shall be treated and evaluated as one on turnkey basis.
11. Vendor to visit site and see the conditions before quoting for the same.



## **9.0 Comprehensive Annual Maintenance Contract (AMC):**

Vendor to submit offer for comprehensive annual maintenance contract for next five years after guarantee period of one year is over for the complete system supplied under this contract in two parts.

Prices shall be firm for the offered period. Vendor shall make preventive maintenance visit to locations mentioned at least once in three months (quarter) and record the site observations and actions taken. During AMC if the problem/breakdown is reported to vendor, service engineer has to report to site within 48 hours. The supply and replacement of any faulty/defective parts of the entire system shall be done by vendor free of cost as a part of comprehensive AMC. PO for the AMC will be placed later on after completion of warranty period of one year. BPCL reserves the right to renew / cancel the AMC without assigning any reason to the vendor. Comprehensive AMC offer shall be considered for commercial evaluation on over all basis to arrive at successful bidder.

## **10. Safety Conditions:**

1. Contractor shall arrange for required accessories/machineries like ladder/vehicle/crane etc. to carry out jobs at height. Healthiness of the ladder/vehicle/crane etc., should be certified by BPCL in charge before use. Especially for street light pole works and should follow all the safety measures as per BPCL standard.
2. All manpower deputed shall undergo all the safety and security requisites of BPCL. They shall be provided with required PPEs, like Helmet, safety shoes, boiler suit, gloves, safety goggles, insulated hand gloves etc. as necessary. All necessary tools, tackles, etc. shall be provided to them. All testing equipment shall have necessary test certificates.

## **11. Special Conditions:**

- 1) Contractor shall ensure strict adherence to SOPs in place while carrying out any electrical activity/job. Contractor shall follow COVID-19 guidelines as informed by BPCL.
- 2) Shifting of the solar power panel, ACDB, DCDB & all accessories from ware house to site is in vendor's scope
- 3) Entire installation including civil foundation, mounting of structures, fixing of panels is in vendor's scope.
- 3) All cables connection from solar power panel to DCDB, ACDB, inverter etc. is in vendor's scope
- 4) Cable laying from ACDB to switch house panel is in BPCL scope.
- 5) Performance ratio for the solar power plant shall be minimum 76%.
- 6) Physical verification of RS485 communication cables between equipment and server
- 7) Ensure communication between weather station (Temp sensor, Wind speed, solar radiation), Inverter output, String monitoring if supplied, Internet connectivity, configuration (Remote connectivity HW).

- 8) Breakdown maintenance visits in case of problem in the solar plant. The engineer has to visit and attend the solar plant within 48 hrs. After he is informed about the breakdown. The information may be given through telephone, email or any other means of communication.

**12. Terms of delivery:**

**Supply:**

12 weeks for Supply of items from the date of LOA/ PO whichever is earlier.

**Installation /Site Work:**

Total 6 weeks for Installation, testing & commissioning after receipt of material at site for complete system and from the date of instruction from BPCL site In-Charge.

**13. Payment terms:**

The payment for procurement will be made after supply and acceptance of material at BPCL warehouse. The payment for installation, testing and commissioning will be made after successful completion of work at site and full satisfaction by engineer in charge.

**14. Contract Validity:**

The contract shall be valid for a period of 12 months from the date of award of PO. During the contract period, all the rates quoted by contractor shall remain unchanged, irrespective of any variation of market rates; no escalation on any account will be payable by BPCL and the jobs shall be executed as per the given terms & conditions.

LD Clause: As per GCC

Defect Liability Period: As per GCC