

BID DOCUMENT

For

**Design, Supply, Installation, Testing & Commissioning, and
Maintenance for 1 year of 100 kWp Solar Photovoltaic Power Plants**



NIT NO:REC/A/Tender/ Solar Plant/College/2015

DUE ON: 26/11/2015

At

RAJKIYA ENGINEERING COLLEGE AMBEDKARNAGAR

UTTAR PRADESH 224122

INDIA

Website:-mkrecit.ac.in

RAJKIYA ENGINEERING COLLEGE AMBEDKARNAGAR

UTTAR PRADESH 224122 INDIA

TENDER NOTICE

Subject: Design, Supply, Installation, Testing & Commissioning, and Maintenance for 1year of Solar Photovoltaic Power Plants at Rajkiya Engineering College Ambedkarnagar.

On behalf of Director Rajkiya Engineering College Ambedkarnagar sealed tenders are invited in two parts (Technical and Commercial separately) from original manufacturers of Solar Cells & PV Modules, for design, supply, installation and commissioning of the 100kWp Solar photovoltaic (SPV) Power Plant at Rajkiya Engineering College Ambedkarnagar Uttar Pradesh, India. The Power Plant consist of the following PV technologies modules, of the capacities as given below:

1. 100kWp Battery Back-up SPP with Panasonic HIT© module
OR
2. 100kWp Battery Back-up SPV Power plant with Mono/Multi-crystalline modules

Bid Details

Sl.No.	Description	Details
1	Notice Inviting Bid (NIT) No	REC/A/Tender/ Solar Plant/College/2015
2	Scope of work	Design, Procurement, Supply, Installation & Commissioning, testing, warranty and free Maintenance for 1 year of Ground/ROOF Mounted 100kWp SPV Power Plants consisting of PV technology Modules at REC Ambedkarnagar
3	SPV Power Plants(SPP)	1. 100kWp Battery Back-up SPV Power plant with Mono/Multi-crystalline modules OR 2. 100kWp Battery Back-up SPV Power plant with Panasonic HIT© modules
4	Place of issue & submission of bid document and address for communication	Administrative Building of RAJKIYA Engineering College Ambedkarnagar Uttar Pradesh India 224122
5	Period of availability of bid Document	Date: 04/11/2014 to 26/11/2015

6	Last date & time of submission of bid	<u>26/11/2015 by 12.00PM</u>
7	Date & time of opening of Part – I (Technical Bids)	<u>26/11/2015 by 03.00PM</u>
8	Date & time of opening of Part – II (Price-Bid)	<u>26/11/2015 by 04.00PM</u>
9	Cost of bid document (Non-refundable)	Rs. 500/
10	Earnest Money (Refundable)	Rs. 1,00,000/-
11	Total Estimated cost of 100kWp, including cost of control room, Installation and commissioning etc.	Rs. 1,50,00,000/-
12	Time of completion	6 Months from LOI
13	Validity of offer	The offer should remain valid for 4 months from the date of tender publication date
14	Validity of earnest money	The earnest money shall be submitted by the bidder in the form of Demand Draft (DD)/ bank Guarantee (BG) from any bank operations in India, in favor of Director Rajkiya Engineering College Ambedkarnagar. This shall remain valid for 5 months from the date of submission of bids.

DETAILED TENDER NOTICE

Name of Work: Design, Procurement, Supply, Installation & Commissioning, testing, Operation and maintenance of a 100kWp Solar Photovoltaic Power Plant based on PV technology module at REC Ambedkarnagar. Separately an offer for five years Operation & Maintenance may be included with the offer.

1. ELIGIBILITY CRITERIA

- 1.1 Only Indian manufacturers of Solar Cells and PV Modules can participate in the bidding.
- 1.2 PV modules of the bidder should have valid qualification test certificate as per **IEC 61215 and IEC 61730**. The bidder should also offer his own certified modules (Mono/Multi Crystalline) for 100 kWp.
- 1.3 The bidder should have long experience and expertise in field of SPV, and must have designed, manufactured, supplied, installed & commissioned at least five plants of capacity minimum 100kWp system for last five years cumulating to 2MWp. The firm should also have experience in installing solar PV power plant with different technologies modules. (Please attach copies of PO's and completion / satisfactory report in support of the same)
- 1.4 The bidder should meet all above criteria, and is mandatory for the eligibility.

2. SCOPE OF THE WORK

The broad scope of the work would include Design, Procurement, Supply, Installation and Commissioning, Testing and Warranty for one year, of 100kWp Solar Photovoltaic Power Plant based on PV technology module at REC Ambedkarnagar. This includes:

- 2.1 Preparation of the project site for the power plant, constructions of control room at the site for housing inverters and battery banks and monitoring equipment. It is also useful to visit the project site before offering bid.

2.2 Scope of the project include supply of all the PV modules, Inverters, Battery banks, array structures, DC Junction boxes, DC and AC distribution boxes, and monitoring system (SCADA), grounding systems, as per the applicable standards given in the subsequent sections.

2.3 Erection and commissioning of the supplied systems at the specified sites is a part included in the scope.

2.4 Construction of a control room/ port cabin for placing PCU's (all systems) and two battery banks near the location of solar power plant is also included in the scope of the project. The room containing the PCU/ Inverters should be isolated form the battery bank room and the control room should be provided with an appropriate capacity of A/c s for proper operation of the inverters and SCADA system.

2.5 Solar PV modules of different technologies including mounting frames, mounting structures, bolts and nuts for holding structures and module inter connection.

2.6 Distribution Boxes (as required) with current and voltage protection devices using the latest technology.

2.7 DC cables (Copper) for interconnection between equipments including end terminations and other required accessories for DC portion of plant.

2.8 PCU's of suitable rating and the type along with Data acquisition system with remote monitoring facilities.

2.9 AC cable (Copper) for interconnection between equipments including end terminations and other required accessories for AC portion of plant.

2.10 Weather Monitoring system to check Solar Irradiation sensor from very reputed manufacturer (Kipp & Zonnen, Epplay or EKO only) on module plane (pyranometer), ambient and Module Temperature sensors.

2.11 Low Tension (LT) AC distribution Board with Digital Voltage, Ammeter and Energy meters at generation side for monitoring parameters.

2.12 Civil work which includes ramming methodology only for grouting the module mounting structure and ensure wind withstand ability of 150km/hr.

2.14 Regarding cabling work (external & internal) & construction of control room, the bidder is required to visit the site and as per actual site conditions quote (including drawing & design) accordingly.

2.15 Proper earthing and lightning arrestors to be provided.

2.16 PVC pipes and accessories/trenches.

2.17 Supply of manual for Operation and Maintenance of all the system in English.

2.18 Training to the user for operation and maintenance of the system after Installation and commissioning.

2.19 Transportation of equipments from Works to Site.

2.20 Unloading, Loading of all supplied Equipments to REC site.

2.21 The scope of supply shall also include comprehensive insurance, storage & in-transit transportation.

2.22 Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The terms of minor nature, which are not mentioned, shall be incorporated by the bidder.

3. SPV Modules

3.1 For Mono/Multi C-Si Technology Modules

- Individual Solar PV Module should be of capacity 240Wp or higher conforming to IEC: 61215Ed 2 or latest – Edition II, IEC: 61730 – I: 2007, IEC: 61730 – II: 2007, manufactured in India in a plant certified under ISO 9001: 2008 & ISO 14001 and also type tested by any of the accredited test laboratories in India or abroad. These PV modules should be manufactured by the supplier from his own industry only. The Solar PV Module should be made of mono/ multi crystalline Silicon Solar Cell connected in series/parallel.

- The supplied modules should be PID resistance; a certificate should be submitted with the bid document.

- SPV modules of similar output with +/- 2% tolerance in single string shall be employed to avoid array mismatch losses.
- SPV module shall contain crystalline silicon high efficiency ($\geq 16\%$) solar cells.
- Fill factor of the module shall not be less than 73%.
- Module terminal box (weather resistant) and UV, IR protected shall be designed for long life outdoor operation in harsh environment.
- SPV module shall be highly reliable and shall have a service life of more than 25 years. There shall be a warranty against supplied SPV modules for 10 years against limited power loss of not more than 10% of nominal output and for 20 years against limited power loss of not more than 15% of nominal output, from the date of supply.
- The PV modules shall be equipped with bypass diode(s) to minimize power drop caused by shade.
- The PV modules shall be resistant to abrasion, hail impact, rain, water and environmental pollution. The PV modules shall be of latest technology, and shall incorporate all features anti-reflection coating, etc., to increase conversion efficiency.
- It shall withstand relative humidity up to 85% and module temperatures up to 85°C of the site location.
- Each module shall carry the following clear and indelible markings, logo, model no. sl.no. year of make, etc. The following details of the module should also be displayed:

- Name, monogram or symbol of manufacturer;
- Type or model number;
- Serial number;
- Polarity of terminals or leads (color coding is permissible);
- Open – circuit voltage
- Operating voltage.
- Maximum system voltage for which the module is suitable;
- Operating current
- Short circuit current
- Date & place of manufacture
- Weight of the module
- All details of certifications of the modules

3.2 For CIGS Technology Module

- Advanced proprietary CIGS thin-film technology should be used.
- Plus sorting should be with-in range of less than ± 5 Wp.
- Low temperature coefficient
- Frameless modules designed for easy use with industry standard mounting structures
- Etched, unchangeable serial numbers for full traceability of each module
- Modules should be rated for wind loads up to 2,400 Pa
- Modules should be free of Potential Induced Degradation (PID) effects
- Module certificate should comply with Certified for harsh environments: Blowing sand/ resistant (DIN EN 60068-2-68)
- Product warranty for 25 years for material and workmanship
- Power output warranty of 90% for 10 years and 80% at 25 years of minimum rated power output

Further following Electrical Characteristics of The CIGS under Standard Test Conditions (STC)

CIGS MODULES		
Maximum	Pmax	Higher Wattage Modules $\geq 130Wp$
Open-circuit voltage	Voc	>75V
Short-circuit current	Isc	>2A
Maximum power voltage	Vmpp	>58V
Maximum power current	Impp	$\geq 2A$
Module efficiency	Eff%	$\geq 13\%$
Maximum system voltage	1000 Vdc (IEC & UL)	
Operating temperature	-40°C to 85°C	
Factory Binning (W)	+/-2.5	

Parameters measured at STC: 1000 W/m², module temperature 25°C, AM 1.5G after factory light soaking/ Initial Conditioning.

Thermal Characteristics

Temperature Coefficient of Pmax	-0.26% / °C
Temperature Coefficient of Voc	-0.24% / °C
Temperature Coefficient of Isc	0.004% / °C

Mechanical Characteristics

Wind load (IEC)	2,400 Pa
Dimensions in mm	As per Manufacturer
Weight in kg	As per Manufacturer
Frame	Frameless
Front cover	Anti-reflective coated, textured white tempered glass
Junction box, connector	IP 67, MC-4 compatible
Cell type	CIGS cells
Safety class	Class II (IEC 61140)
Fire rating	Class C
Standards	IEC 61646 & IEC 61730
Module warrantee	25 years (Both for Power and Performance)

4 Mounting Structure

Module Mounting Structure (fixed, except for SunPower Modules)

- Modules are proposed to be installed on ground over a structure at suitable height.
- The array structure for technology module should be designed for a fixed tilt of 21°Deg or as per site condition. The fixed tilt angle is chosen such that the PV array will occupy minimum space without sacrificing the output from SPV panels.
- The design and detailed layout of the module mounting structures should be submitted with the technical bid.
- The array structure shall be made of hot dipped galvanized iron, the thickness of galvanization should be minimum 2mm thickness and the thickness of angle iron should not be less than 6mm.
- The support structure and the foundation shall be designed to withstand wind speed up to 200kmph.
- The clearance of the lowest part of the module structure & the developed ground level shall be 1

meter.

- 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 and vendor shall clearly indicate the details in the Technical bid.
- All fasteners (nuts and bolts) should be made of stainless steel on

5. POWER CONDITIONING UNIT(PCU)

The power conditioning unit should convert DC power produced by SPV modules, into AC power and adjust the voltage and frequency levels to suit the local grid conditions. There are two types of PCU used in the power plant. Three units of 100KVA are only Grid Interactive and Two PCUs are connected to battery banks which are of Solar Mains Diesel (SMD) Hybrid type inverters. It should be possible to operate each of these PCUs in master and slave configuration.

SPP Capacity	Nominal PCU Output Rating	Nominal Battery Voltage	AC Output With 50 Hz frequency	Integrated MPPT Solar Regulator
Hybrid PCU for Battery Back-up Systems				
PV array size 100kWp	100kVA	240V	400/415V, 3 phase	100kWp (Range 150V to 800V)
Output Regulation	Frequency \pm 5%			
Surge Rating	150% for a period of 30 seconds 200% for a period of 2 seconds			
Minimum Efficiency above 30% of load, Type of Loads	85%, should support all types of loads, resistive, inductive, complex and non-linear			
Cooling	Fan Forced			
Protections	Output peak overload, short circuit, phase imbalance, over voltage, under voltage of the grid, Battery: Low voltage, Over voltage, reverse polarity of battery, PV array reverse polarity etc. Surge protections(input and output SPD)			

Control Type	Voltage source, microprocessor assisted output regulation			
Nominal Capacity	100kVA			
Acceptable Operating Range	AC voltage (- 17% to + 13%), Frequency \pm 5%			
LCD Keypad Display	<ul style="list-style-type: none"> · Battery voltage, current, temperature · Solar charge current · Solar radiation · Inverter kWh summation · Inverter kW, kVA, Volts, Amps · Grid kW, kVA, Volts, Amps 			
Certifications Required	· IEC 600068-2(1,2,14 and 30) or equivalent –Environment IEC 62548 safety or equivalent IEC 61683 –Efficiency (requirements as Specified above) Certification as per equivalent Standards for above Standards are also acceptable			
Communication Interface	RS232 / RS485 / TCP/IP			
Operating Temperature Range	0-50° Celsius			
Humidity	0-95% non-condensing			
<i>Example Makes Include</i>	<i>EMERSON, OPS, Power one Micro Systems OR equivalent</i>			
SPP Capacity	Nominal PCU Output Rating	MPPT Voltage Range	AC Output With 50 Hz frequency	Integrated MPPT Solar Regulator
For Grid Tied Systems				
For 100kWp	100kVA	150V to 800V	415V Phase to Phase 3 phase	100kVA
Minimum Efficiency above 30% input power	>90%,			
Accuracy of AC voltage control	+/- 1 %			
Accuracy of frequency control	+/- 0.5%			
Grid Synchronization range	+/- 3 Hz			
Maximum Input DC Voltage	Based on Inverter make, should follow standard			
Ambient temperature considered	40 degree C			
Humidity	95 % Non-condensing			
Protection of Enclosure	IP-20(Minimum) for indoor			

	IP 65 (Minimum) for outdoor
Grid Frequency Tolerance range	+/- 3%
Grid Voltage tolerance	- 20% & + 15 %
No-load losses	Less than 1% of rated power
THD	< 3%
Certifications Required	IEC 60068-1,2,14 and 30 or equivalent –Environment IEC 61000-3-15 EMC IEC61683 -Efficiency requirements as Specified above IEC62116-Islanding Prevention of Utility interconnected PCUs IEEE 1547 -Interconnecting Distributed Sources IEC 61727 UL1741 –Safety of Inverters in Distributed Energy sources Certification as per equivalent Standards for above Standards are also acceptable
<ul style="list-style-type: none"> • PCU/inverter shall be capable of complete automatic operation including wake-up, to monitor plant performance • The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard IEC codes • The PCU/ inverters should be tested from the MNRE approved test centers / NABL /BIS accredited testing- calibration laboratories. • In case of imported power conditioning units, these should be approved by international test houses. <p>Module Technologies where +ve or –ve grounding is required needs to be identified by bidder and accordingly selection of PCU needs to be done by bidder</p>	

Example Makes Include: SMA, DELTA, REFUSOL, STURDER, Optimal Power, or Equivalent

6. Battery Banks:

There will be battery banks connected to 100kWp PV modules arrays in the power plants. The battery banks will consists of Lead acid type batteries. The capacity of each of the battery banks will be 240V, 2000AH (@ C/10 or C/20 rates). 100kWp multi/mono crystalline silicon modules array will be connected to SMF type batteries and the 100kWp Panasonic HIT module array will be connected to flooded lead acid low maintenance high capacity Plantain type battery bank. These batteries should be certified as per IEC 61427 or IEEE1013 or IEC 1361 equivalent standard. Each battery bank should consists of required numbers of batteries connected in series

7. DISTRIBUTION BOARDS:

7.1 DC DISTRIBUTION BOARD (for Battery Back-up systems/ GI Systems)

The array junction boxes and DC distribution boards shall be dust, vermin & waterproof & made of FRP/ABS plastic/UV/IR protected. Latest Surge protection shall be used at the terminals of array junction boxes for external over voltage protection and also for lightning protections. The junction boxes shall have suitable cable entry points fitted with cable glands of outdoor/weather proof appropriate sizes for both incoming & outgoing cables. Should be IP54 qualified and certified as

per IEC 60529 Standard. Suitable markings are provided on the bus bar for easy identification & cable ferrules shall be fitted at the cable termination points for identification.

7.2 AC DISTRIBUTION BOARD

AC Distribution Board (ACDB) shall control the AC power from PCU, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode be carried out and complete equipment, sensors along with metering to be installed in the ACDB and switch room at each locations where power is required to be fed. All switches and the circuit breakers, connectors should confirm to IEC 60947, part I, II and III or EN 50521 standards. The change over switches, cabling work should be undertaken by the bidder as part of the project.

8. DATA Monitoring:

The plant parameters shall be measured by using SCADA or Equivalent system to monitor, maintain, and control the plant, and also to study the plant performance. The system should meet IEC 61724 standard for this provision. The plant monitoring parameters shall include:

- PV array energy production: Digital Energy Meters to log the actual value of AC/ DC Voltage, Current & Energy generated by the PV system shall have to be provided.
- Solar Irradiance: An integrating Pyranometer (Class II or better) shall be provided, with the sensor mounted in the plane of the array. Readout shall be integrated with data logging, system.
- Temperature: Temperature probes for recording the Solar panel temperature and ambient temperature shall be provided.

9. Cables for carrying Power and Control

- The power cable shall be 1.1kV grade, heavy duty, stranded copper/ aluminium conductor, UV resistant (for outdoors) PVC type. An insulated, galvanized steel wire/strip armoured, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 Part-I & other relevant standards.
- Control Cables: The cable shall be 1.1kV grades, heavy duty, stranded copper conductor, PVC type A insulated, galvanized steel wire/strip armoured, flame retardant low smoke (FRLS) extruded PVC type ST-1 outer sheathed. The cables shall, in general conform to IS-1554 Part-I & other relevant standards.
- The permissible voltage drop from the SPV Generator to the PCU shall not be more than 2% of peak power voltage of the SPV power source (generating system). In the light of this fact the cross-sectional area of the cable chosen is such that the voltage drop introduced by it shall be within 2% of the system voltage at peak power.
- All connections should be properly terminated from outdoor and indoor elements. Relevant codes and operating manuals must be followed. Extensive wiring and terminations (connection points) for all PV components is needed along with electrical connection to lighting loads.

10. Earthing Material

- The system should be provided with adequate earthing points. This includes earthing for lightning, system grounding, separately for DC and AC active points. The frame of the PV module array should be earthed at multiple points.

- To prevent the damage due to lightning, one terminal of the lightning protection arrangement by way of proper earthing is to be provided. The provision for lightning & surge protection of the SPV power source is separately earthed.
- In case the SPV Array installed in the field separate earth has to be provided for SPV array and System at closer points of the array and the equipment respectively. It shall be ensured that all the earthing are bonded together to prevent the development of potential difference between any two earthing.
- Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing are bonded together to make them at the same potential.
- The earthing conductor shall be rated for the maximum short circuit current. & shall be 1.56 times the short circuit current. The area of cross-section shall not be less than 1.6 sq mm in any case.
- The array structure of the PV modules shall be grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the personal and power plant.
- Automatic ground fault protection circuits to be installed to monitor any unwanted current flow to the ground and should active to prevent any damage.
- The SPV Power Plant should be provided with lightening and over voltage protection. The principal aim in this protection is to reduce the over voltage to a tolerable value before it reaches the PV or other sub-systems components. The source of over voltage can be lightening or any other atmospheric disturbance. The Lighting Arrestor (LA) is to be made of 1¼" diameter (minimum) and 12 feet long GI spike on the basis of the necessary meteorological data of the location of the projects. Necessary foundation for holding the LA is to be arranged keeping in view the wind speed of the site and flexibility in maintenance in future. Latest grounding equipment should be used for this purpose. Each LA shall have to be earthed through suitable size earth bus with earth pits. The earthing pit shall have to be made as per IS 3043.

11. Formation of Local Smart Grid:

As it is clear from the above sections that the 100kWp PV arrays are connected to battery banks to provide backup, These systems should operate in a master and slave architecture, through a PC controlled operation. This way it should be possible to maximize the use of the generated power among different blocks of the REC College buildings, it is proposed to connect all the the blockof college building to Solar power plants to form a *local smart grid*. The main aim is to optimize and distribute the generated power such that minimum energy is drawn from themain electric supply grid or from diesel generators in the REC campus. The configuration should be such that PV power can be transferred to any of the loads in the building blocks of REC, through automatic changeover or manual, such that the PV power can reach any of the REC electrical loads, based on its demand. This configuration can be discussed with REC to provide a clear understanding.

12. **Installation, Testing, Commissioning and Safety:** The installation of the PV arrays, Inverters and other components should be as per the IEC 61173, IEC 62548, IEC 61140 and IEC 62109-1 & 2 standard. After completion of installation work, the 100kWp SPP shall be on trial runs for a

10 clear sunny days to test smooth functioning of power plant in every aspect. Only after satisfactory inspection by a committee, SPP shall be assumed as commissioned.

13. Documentation :

The complete documentation should be as per IEC 62446 and submitted to REC AMBEDKARNAGAR.

- One set of operation manuals complete with drawing, parts list (with part codes) circuit diagrams with list ratings of components and list of do's and don'ts for the main equipment as well as the sub-systems should be submitted to REC Ambedkarnagar.
- One set of maintenance manuals with full information on drawings, circuit diagrams, list and suppliers addresses for bought out parts, troubleshooting charts, programs of built in controllers etc. for the main equipments as well as for the sub-system.
- These manuals should be in the form of hard (printed) copy in English Language as well as in electronic storage form (disc pen drive etc.).
- A certificate for the adequacy of the manuals should be obtained and provided with the manuals. Such certificate must be signed by the QA engineer of the manufacturer.

14 . General:

- The installation, commissioning & trials to demonstrate proper functioning of the all the systems will be the responsibility of the supplier.
- The bidder have to supply the calibration reports for all sensors from the authorized calibration laboratory.

15. EARNEST MONEY DEPOSIT (EMD):

A sum of Rs.1,00,000/- should be submitted as Earnest Money Deposit (EMD) **along with the technical bid** in the form of **bank demand draft/Bank Guarantee** drawn in favor of "DIRECTOR RAJKIYA ENGINEERING COLLEGE AMBEDKARNAGAR". The EMD of the accepted tender will be retained as Security Deposit and the EMD of other unsuccessful bidders would be refunded.

16. RATES:

The rates should be quoted specifically on the following lines:

- a. Firm and final cost of the 100kWp Ground Mounted SPV Power Plants as per the above specifications and features along with costs of the bought out items/installation and commissioning charges/cost of civil works, few additional modules for replacement and at least two modules of each technology for reference purposes, monitor cells, spares and consumables for five years as per the above specifications and features, should be provided separately
- b. Taxes and freight etc. if any applicable should be indicated separately and clearly.
- c. Cost involved towards options, accessories, spares and consumables for operating the system at least for five years from the date of expiry of guarantee/warranty. A list of spares should be attached along with its cost/prices.

17. Payment Terms:

Following Payment terms are Acceptable from REC Ambedkarnagar:

- a. 50% of the cost of the project will be paid after delivery of the major components such as PV modules, PCUs/ Inverters, Batteries and Structures. An advance payment may be considered to the supplier against Bank Guarantee, for the advance amount till the completion of the project

- b. 30% of the cost of the project will be paid after installation, commissioning and trial testing and Inspection by REC AMBEDKARNAGAR
- c. 10% of the cost of the project three months of successful operation and data collection by the supplier.
- d. The balance 10% after completion of the warranty of 12 months from the date of successful inspection of the project.

18. DELIVERY PERIOD: The Ground Mounted Solar Power Plants with above specifications and features along with options, accessories, reference modules, monitor cell, spares and consumables for five years should be delivered at the site/consignee within 6 months from the date of issue of confirmed supply order

19. INSPECTION: The supplier should satisfy himself/herself that the Ground Mounted Solar Power Plants as per the above specifications and features along with options, accessories, reference module, monitor cell, spares and consumables for five years fully conform to the specifications by carrying out complete pre-inspection of each component before dispatch. However, the final inspection at site will be conducted by REC or its authorized representatives after final installation, commissioning and trial testing and formal information by the supplier.

20. CONSIGNEE: Director RAJKIYA ENGINEERING COLLEGE AMBEDKARNAGAR UTTAR PRADESH 224122, INDIA

21. GUARANTEE/WARRANTY: System/Spares supplied should be covered by standard terms of warranty for a period of 12 months from the date of inspection of the system or 18 months from the date of delivery, whichever is *later* for manufacturing defects/performance.

22. PENALTY:

- i. The supplier shall supply the stores in accordance with the particulars as expressly specified at the time/times and at the place/places only.
- ii. The time for and the date of the stores stipulated shall be deemed to be the essence of the supply/work order.
- iii. If for any reasons the contractor is unable to adhere to the contract delivery dates, he may seek extension in delivery/completion dates well in time by sending a request in writing in this regard to the office issuing the contract/supply order. The purchaser reserves the right to allow the extension of delivery period subject to such conditions as he may think fit. However, the decision of the purchaser shall be final and binding.

23. DISPUTES: In case of any dispute the decision of the Director of Rajkiya Engineering College Ambedkarnagar will be final and binding on both parties.

24. VALIDITY: The Tenders should be valid for 180 days from the date of opening.

25. REJECTION: Incomplete, conditional, fax, late tenders and tenders without EMD will be rejected summarily. Director General, National Institute of Solar Energy reserves the right to reject any or all the tenders at his discretion without assigning any reason whatsoever.

23. 26. SUBMISSION OF TENDERS : Sealed tenders are to be submitted in two parts i.e. **Part-I containing Technical competence/literature along with Demand Draft for EMD, and Part-II containing only commercial invoice in a separate sealed envelope, super scribed as commercial bid.** Both the technical and commercial envelopes should be kept in large size sealed envelope super-scribed **“100kWp Ground Mounted SPV Power Plants”** due for opening on 21st NOVEMBER, 2015 and addressed to: RAJKIYA ENGINEERING COLLEGE AMBEDKARNAGAR UTTAR PRADESH 224122, INDIA. It is advised not to send offers through post/ or courier.

Director
REC
Ambedkarnagar

ANNEXURE - "1"

TECHNICAL BID FORMAT

1	Name of the firm/company/proprietary concern registered	
2	Address of registered office	
3	Telephone Nos./Fax/E-mail	
4	Specify your firm/company is a manufacturer/ authorised dealer/ distributor/ Agency	
5	Earnest Deposits money (EMD) Yes/No	
6	EMD Details DD/Bank Guarantee No. Dated Drawn on Bank Amount- (Rupees.....)	
7	Banker of Company/ Firm/agency with full address (Attach certified copy of statement of A/c for the last three years) Telephone Number of Banker	
8	PAN / GIR No. (Attach attested copy)	
9	Sales Tax/VAT Registration No. (Attach attested copy)	
10	Have you previously supplied these items to any government / private organization? If yes, attach the relevant poof. <i>(Also provide an affidavit that you have not quoted the price higher then previously supplied any</i>	

	<i>government institute)</i>	
11	Proof of financial status in form of audited balance sheet for the last three financial years. Average annual turnover must be at least Rs. 50 Lakhs	
12	Enclose an affidavit duly certified by (enclosed/Not enclosed) the notary at the location of the Agencies/Head quarters Ambedkarnagar that the bidder has never been black listed or punished by any court for any criminal offence/breach of contract and that no police/vigilance enquiry/criminal case is pending	
13	Acceptance of terms & conditions attached (Yes/No). Please sign each page of terms and conditions as token of acceptance and submit as part of tender document.	
14	Have you/your expert physically inspected/ surveyed the Institute premises before submitting the tender. (Yes/No)	

(Signature of Authorised Person)
(Name)
(Designation)
Name of Firm/Company/Agency

Contact Details

ANNEXURE “2”

PRICE BID FORM

To,
The Director
Rajkiya Engineering College
Ambedkarnagar.

Dear Sir,

1. I/Wesubmitted the bid for Tender No. REC/A/Tender/Solar Panal/College/2015 dated _____.____._____ for “supply and installation of solar panal ” of REC Ambedkarnagar as per requirement.

2. I/We thoroughly examined and understood instructions to tenders, scope of work, terms & conditions of contract given in the tender document and those contained appendix of Terms & Conditions of contract and agree to abide by them.

3. I/We hereby offer to supply at the following rates. I/We undertake that I/We are not entitled to claim any enhancement of rates on any account during the tenure of the contract.

Sl. No.	ITEMS WITH SPECIFICATION	QUANTITY	Rate (INR) (Inclusive all Taxes)	Total Amount (INR) (Inclusive all Taxes)

(Signature of Authorised Person)

(Name)

(Designation)

Name of Firm/Company/Agency

ANNEXURE “3”

**NAME OF THE OFFICER AND DESIGNATION
ADDRESS
Email and Tel. No.**

TO WHOM IT MAY CONCERN

This is to certify that M/s _____ has provided the services of _____ (Number) _____ (designation), _____ (Number) _____ (designation) and _____ (Number) _____ (designation) _____ in Ministry/Department/Office of _____ (Building Name) during the period _____ to _____
The monthly rates for each category were as follows :

- (a)
- (b)
- (c)

The performance of the company was found to be satisfactory and it was able to render the services as per contractual obligations.

(Name of Officer)

Designation

Signature of authorized person

Date:

Place:

Seal

ANNEXURE “4”

Format of Experience certificate

Project Name	Name of the Employer*	Description of work	Contract No.	Value of Contract (Rs. In Lakhs)	Date of issue of work order	Stipulated period of completion	Actual date of completion	Remarks explaining reasons for delay & work completed

* Attach certificate(s) of payments.

* Immediately preceding the financial year in which bids are received.

ANNEXURE "5"

DECLARATION

From:-

M/s.....

.....

.....

To,

The Director

Rajliya Engineering College

Ambedkarnagar Uttar Pradesh 224122

1. I, _____ Son / Daughter / Wife of Shri _____ Proprietor/Director authorized signatory of the agency/Firm, mentioned above, is competent to sign this declaration and execute this tender document;

2. I have carefully read and understood all the terms and conditions of the tender and undertake to abide by them.

3. The information / documents furnished along with the above application are true and authentic to the best of my knowledge and belief. I / we, am / are well aware of the fact that furnishing of any false information / fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.

4. I/We further undertake that none of the Proprietor/Partners/Directors of the Agency/agency was or is Proprietor or Partner or Director of any Agency with whom the Government have banned /suspended business dealings. I/We further undertake to report to the Director REC Ambedkarnagar immediately after we are informed but in any case not later 15 days, if any Agency in which Proprietor/Partners/Directors are Proprietor or Partner or Director of such a Agency which is banned/suspended in future during the currency of the Contract with you.

Yours faithfully,

(Signature of the Bidder)

Date:

Name:

Place:

ANNEXURE – “6”

BANK GUARANTEE FORM FOR EMD

Whereas _____ (hereinafter called the “Bidder”) has submitted its quotation dated _____ for the supply of _____ (hereinafter called the “tender”) against the purchaser’s tender enquiry No. _____ Know all persons by these presents that we _____ of _____ (Hereinafter called the “Bank”) having our registered office at _____ are bound unto _____ (hereinafter called the “Purchaser) in the sum of _____ for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this _____ day of _____ 20____. The conditions of this obligation are:

- (1) If the Bidder withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- (2) If the Bidder having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-
 - a) fails or refuses to furnish the performance security for the due performance of the contract,
 - or,
 - b) fails or refuses to accept/execute the contract,
 - or
 - c) if it comes to notice that the information/documents furnished in its tender is incorrect, false, misleading or forged.

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition(s).

This guarantee will remain in force for a period of 45 days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date.

Bank) _____ (Signature of the authorised officer of the

Name and designation of the officer
Seal, name & address of the Bank and address of the

