

Ref: RGUKT-B/Proc/SolarPower/T13/2018, dt.20.11.2018

(e-Procurement Tender Notice)

**Tender for Design, Supply, Installation, Testing  
and Commissioning of 200KWp Roof top Model  
Solar Photo Voltaic Power Plant aggregated  
capacity under Net-metering Scheme with Five  
Years of Comprehensive Maintenance Contract**



**RAJIV GANDHI UNIVERSITY OF KNOWLEDGE  
TECHNOLOGIES**

**BASAR,**

**Nirmal District, Telangana- 504107**

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**News paper advertisement**  
**Tender Notice**



**RAJIV GANDHI UNIVERSITY OF KNOWLEDGE  
TECHNOLOGIES, BASAR,  
NIRMAL DISTRICT, TELANGANA-504107**

Online tenders are hereby invited from interested and eligible bidders for “Design, Supply, Installation, Testing and Commissioning of 200KWp Roof top Model Solar Photo Voltaic Power Plant aggregated capacity with Five Years of Comprehensive Maintenance Contract under net-metering scheme”.

Interested bidders can download and submit the bids online from 27.11.2018 to 11.12.2018 till 05:00PM through [www.eprocurement.gov.in](http://www.eprocurement.gov.in). For further details please visit our website: [www.rgukt.ac.in](http://www.rgukt.ac.in)

**Date: 20.11.2018**

**Sd/-**  
Vice-Chancellor

## **TENDER SCHEDULE**

Rajiv Gandhi University of Knowledge Technologies (RGUKT), Basar, is a fully residential University having 6000 students on rolls. RGUKT invites sealed tenders comprising Pre-qualification, technical bid and price bid from the eligible bidders for Design, Supply, Installation, Testing and Commissioning of 200KWp Roof top Model Solar Photo Voltaic Power Plant aggregated capacity under Net-metering Scheme with Five Years of Comprehensive Maintenance Contract to its premises located in the Nirmal District of Telangana State.

### **SECTION - A**

#### **Time schedule of various tender related events**

Bid calling date	20.11.2018
Bid Document fee (Non refundable)	Rs. 5,000/- (By way of DD from any Scheduled Bank in favour of Director, RGUKT, Basar, payable at Basar)
Bid Documents Downloading Start date	27.11.2018
Pre-bid Meeting	26.11.2018@03:00PM
Bid Document Downloading End Date	11.12.2018 till 05.00 PM
Last date for uploading of online documents	11.12.2018at 05:30 PM
Last date for submission of Hard copies of documents uploaded online	13.12.2018 at 05:00 PM
Pre-qualification & Technical Bid opening date/time	15.12.2018at 03:00 PM.
Price Bid opening date/time	17.12.2018at 04:00 PM
Contact person	Vice-Chancellor, RGUKT, Basar.
Reference No	RGUKT-B/ Proc/SolarPower/T13/2018

Vice-Chancellor  
RGUKT-Basar

#### CLARIFICATIONS:

- i. Queries if any, can be made through e-mail only on [procurement@rgukt.ac.in](mailto:procurement@rgukt.ac.in) on or before 26.11.2018. Queries received via any mode other than e-mail id mentioned above will not be entertained. The queries should only be sent in following format on the official letter head of the company.

S.No.	Page No. (Tender Ref.)	Clause (Tender Ref.)	Description (Tender Ref.)	Query

- ii. The addendum/corrigendum if any shall be published on RUGKT's website i.e. [www.rgukt.ac.in](http://www.rgukt.ac.in) as well as on e-procurement platform [www.eprocurement.gov.in](http://www.eprocurement.gov.in).
- iii. The Bidders are requested to submit the bids after issue of clarifications duly considering the changes made if any. Bidders are totally responsible for incorporating/complying the changes/ amendments issued if any in their bid.

Vice-Chancellor,  
RGUKT-Basar.

**SECTION-B**  
**STATEMENT OF IMPORTANT LIMITS/VALUES RELATED TO BID**

<b>Item</b>	<b>Description</b>
Bid Document fee (Non refundable)	Rs. 5,000/- (By way of DD from any Scheduled Bank in favour of Director, RGUKT, Basar, payable at Basar)
EMD	Rs.3,00,000/- <b>(by way of Demand Draft or Irrevocable Bank Guarantee from any Nationalized/Scheduled Bank )</b>
Bid Validity Period	90 days from the date of opening of commercial bid
EMD Validity Period	90 days
Period for furnishing performance Security	Within 10 days from date of receipt of Purchase Order
Performance security value	10% of the contract value.
Performance security validity period	5% shall be released at the time of order and 5% shall be released after 2.5 years
Period for signing the order Acceptance	Within 7 days from date of receipt of notification of award
<b>Payment terms</b>	
Payment of bill	90% of the payment shall be made upon delivery of the material to site. The remaining 10 % of the payment shall be made after installation, commissioning and successful running of the plant for two months.
Transaction Fee	Transaction fee: All the participating bidders who submit the bids have to pay an amount @ 0.04% of their final bid value online with a cap of Rs. 10,000/- for quoted value of purchase up to Rs.50 crores and Rs.25000/- if the purchase value is above Rs.50 crores & service tax applicable @ 14% as levied by Govt. of India on transaction fee through online in favour of MD, TPTS. The amount payable to TPTS is non refundable.

## SECTION - C ( PROJECT DETAILS)

### 1. INTRODUCTION

RGUKT proposes to generate solar power by installing a 200 KWp capacity Roof top Model Solar PV power plant, under net-metering scheme.

**Intent** of this specification is to specify the requirement of RGUKT herein after referred to as the Employer, so as to enable the prospective Bidder/Bidding Consortium to submit their best techno-commercial bid for design, engineering, supply, execution of a 200 kWp solar PV Power plant in the premises of the client including Civil works. The power plant has to be commissioned on the ground within the location of RGUKT on specified roof tops.

### 2. INTENT OF SPECIFICATION

Intent of the specification is to describe the requirement of the employer for procurement and installation of equipments, civil works and other auxiliary and support facilities and to provide inputs to Bidder/Bidding Consortium to enable them to prepare and submit their techno-commercial proposal to meet this requirement. The specification intends to cover the design, engineering, manufacture, supply, transportation, un-loading, storage, in-plant transportation to site from stores, erection, testing & commissioning and performance guarantee and enabling work as encountered during execution of work

Relevant details necessary for preparation and submission of best offers are included in the subsequent sections of these specifications. However the Bidder/Bidding Consortium are free to suggest any superior technology/ practices where ever required, with full details, as an alternative

The specification shall be read in totality and the bid shall be prepared accordingly.

### 3. GENERAL PROJECT INFORMATION

1.	Employer	Rajiv Gandhi University of Knowledge Technologies (RGUKT) Basara, Telangana, India.
2.	Project Title	Installation of 200 KWp Roof top model Solar PV Power Plant at RGUKT, Basara

3.	Project Location	RGUKT Basara, Nirmal district Telangana, India.
4.	Ref. Temperature .For Electrical Design	Maximum-- 46 ° C Minimum-- 15 ° C
5.	Atmospheric Pressure	726 mm (mercury)
6.	Relative Humidity	68 %
7.	Latitude	(18.880175)
8.	Longitude	(77.953876)

#### 4. SCOPE OF WORKS AND SERVICES

Scope of Supply & Work includes Design, Engineering, Manufacture, Procurement & Supply of equipment and materials; testing at manufacturers works, inspection, packing and forwarding, unloading at site, associated civil works, services, permits, installation and incidentals, erection, testing and commissioning of 200KWp Grid tied Solar PV Power Plant with associated equipments and materials under Net-metering Scheme, on turnkey basis in RGUKT. The equipment and materials for 200KWp Grid tied Solar PV Power Plant with associated system shall include but not be limited to the Design, Supply, Erection, and Testing & Commissioning of the following equipments and sub-systems:

- a. Solar PV modules including mounting frames, Mounting structures, foundation bolts and nuts for holding structures and module inter connection, Array Junction boxes / String combiner Box with surge protection and monitoring system.
- b. Power Control Unit/s including MPPT ( Maximum Power Point Tracking) charge controller and synchronizing facility at 415V,50Hz
- c. AC Distribution Board/s
- d. Auxiliary AC & DC power system for control and protection system for the total plant complex including Battery and Battery charger for inverter and other such accessories that require a power backup.
- e. Plant Monitoring Desk
- f. Monitoring system for all electrical parameters of the solar PV plant
- g. Solar Observatory/Weather Monitoring system to check Solar Irradiation, Wind Speed & Ambient Temperature
- h. Protection and Metering system for the complete installation including Meters,



Relays and other associated devices

- i. Earthing and Lightning Protection system for the complete installation
- j. AC/DC Power and Control Cables and accessories
- k. Communication system with existing plant installations and control rooms
- l. Nomenclature, Danger Plates, Name Plate, Instructions etc.
- m. Civil works including, foundations, structures for safety of the plant and inverters as may be required.
- n. Contractor should obtain necessary permissions and approvals from the TSNPCDL and Electrical Inspectorate for implementation of the project and net-metering and submit a copy of the same to RGUKT - Basar.
- o. The contractor has to prepare total project (design) documents related to this work as per MNRE formats and obtain subsidy on behalf of RGUKT. RGUKT will sign on application forms, if any, to enable the contractor to claim subsidy.

### **Scope of Employer:**

- p. Cleaning and clearing the roof top of any unwanted things and making it suitable for erection of the solar roof top power plant.
- q. Drinking water service in the power plant complex and suitable water supply for periodic cleaning of solar PV modules.
- r. Necessary power and line facility up to the plant control room for feeding auxiliary and control power to the entire power plant shall be provided.

### **Scope of the successful Bidder/Bidding Consortium shall also include :**

- s. Site Survey, Measurement of solar isolation and other relevant parameters required for design of the system.
- t. Complete Design, engineering, preparation and submission of drawings Equipment and material specification preparation .
- u. Procurement and expediting of all supplies and Delivery of equipment and material to job site.
- v. Pre-commissioning & Commissioning of all supplied Equipments and Test running of Grid Connect Solar Power Plant.
- w. Any other items not specifically mentioned in the specification but which are required for erection, testing and commissioning and satisfactory operation of the solar power plant are deemed to be included in the scope of the specification unless specifically excluded on turnkey basis.
- x. Provision of Safety items like hand gloves, shock treatment charts, rubber mats, danger/caution boards.

- y. Supply of all commissioning spares and Supply of special tools and tackles
- z. Project management including project administration, project coordination, scheduling , progress reporting to employer and adhering to safety practices during erection , commissioning and subsequent operation and maintenance of the system including fire prevention.

## 5. SYSTEM DESIGN CONSIDERATIONS

- a. The solar power generation system of 200KWp is required to generate a min of 3,00,000 kWh of solar energy in the first year of operation, subject to power outage pattern, site and weather conditions. The Bidder/Bidding Consortium shall design the major components and sub-systems accordingly.
- b. The power generation guarantee has to be done by applying liberal de-rating factors for the array and recognizing the efficiency parameters of Power Conditioning Units, transformers, etc. The output at Inverter (s) will be considered for verification of power generation.
- c. The Bidder/Bidding Consortium shall study the site condition, estimate/measure solar radiation etc. and shall design as well as size the power plant to achieve the specified annual energy generation in the first year and subsequent years as specified under NMGG( Net Minimum Guaranteed Generation) clause. He shall use adequate capacity of SPV module, PCUs, Junction boxes etc to ensure generation of power accordingly. Number and rating of solar panels shall be designed accordingly
- d. The roof top of the RGUKT is to be considered for the project. **The Bidder/Bidding Consortium should visit the site to assess the suitability and sufficiency of the space available for the project.**
- e. Number of solar photovoltaic panels shall be decided based on the system rating. The panels shall be connected in arrays and strings. As per design of Bidder/Bidding Consortium the SPV array/ string may consist of number of SPV modules that directly produces DC electricity power on receipt of solar irradiation. This DC power shall be converted to AC power by requisite designed capacity of inverters.
- f. The Bidder/Bidding Consortium shall design the solar power system in such a way that System controller/MPPT of Inverters have ability to harvest the maximum possible Solar power generation to be exported to the Grid

- g. The Bidder/Bidding Consortium has to choose solar generation technology using Mono/Poly-Crystalline Silicon Solar Modules manufactured in India of reputed make.

**NET MINIMUM GUARANTEED GENERATION (NMGG)**

- h. The Bidder/Bidding Consortium SHALL DESIGN , supply and install the complete system so as to ensure the Net Minimum Guaranteed Generation (NMGG) for initial 5 years period, year wise, as given below:

<b>Year</b>	<b>Year Wise Net Minimum Guarantee Generation (NMGG) in kWh</b>
1 <sup>st</sup>	3,00,000
2 <sup>nd</sup>	2,85,000
3 <sup>rd</sup>	2,68,000
4 <sup>th</sup>	2,52,000
5 <sup>th</sup>	2,34,000

- i. Date of Commissioning shall be considered as the starting date of calculation for NMGG.
- j. Bidder/Bidding Consortium are expected to make their own study of solar profile and other related parameters for designing the system to achieve the above Net Minimum guaranteed generation. The site information provided in this bid document is only for information purpose. No claim or compensation shall be entertained on account of this information. It shall be the responsibility of the Bidder/Bidding Consortium to access the corresponding solar insulation values and related factors of solar plant along with expected grid availability shall be considered for NMGG.
- k. The Bidder/Bidding Consortium should access all the related factors and provide genuine analysis report in case of deviations in NMGG clause.
- l. The Bidder/Bidding Consortium shall also submit, if the work under the tender is allotted to them, a detailed list of various factors which shall negatively impact power production.
- m. Bidder/Bidding Consortium shall agree to pay Rs.10/- for each such unit of electricity not produced by the solar power plant falling short of the promised quantum of units to be generated under the NMGG clause.
- n. In case of inclement weather conditions negatively affecting the production,

the Bidder/Bidding Consortium shall clearly specify and prove the conditions with concrete data in order to justify a decrease in production below the NMGG for such an year to claim non invocation of the clause due to proven circumstances beyond the control of the Bidder/Bidding Consortium.

## 6. SOLAR PV MODULES

### SPV CRYSTALLINE MODULES

- SPV Poly-crystalline modules (**Manufactured in India**) to be supplied should have minimum declared output of 250Wp or more. Number of modules to be supplied shall be worked out accordingly. The power tolerance of each module shall be  $\pm 5\%$ .

**Supply of modules of 350 kWp and above Multi Crystalline / Mono Crystalline PV Solar modules of 72 cells., modules should comply IEC 61215 Wp.**

**Dimension : 1970mm x 990mm x 35mm (approximately)**

**Module weight : 18.5 kgs approximate  $\pm 1\%$  allowance is allowed. (approx)**

**Solar Photovoltaic module efficiency greater than 19% (certificate from relevant authority to be submitted)**

- Module shall have a conversion efficiency of greater than 19% at Standard test conditions (STC).
- Cells used in offered module should be of reputed make. Photo conversion efficiency of SPV Cell should be greater than 19% at STC( Standard Test Conditions)
- No. of cells per module shall be 72.
- The module frame shall be made of aluminium or corrosion resistant material, which shall be electrically compatible with the structural material used for mounting the modules.
- Solar modules offered shall be certified as per IEC 61215 and qualify IEC 61730 and IEC61701 amended up to date or equivalent Standard
- SPV module shall contain mono/poly-crystalline high power silicon solar cells. The solar cell shall have surface anti-reflective coating to help to absorb more light in all weather conditions.
- Solar PV module array shall consist of high efficiency Solar Modules

- utilizing Mono/Poly Crystalline Silicon Solar PV cells.
- Solar module shall be laminated using lamination technology using established polymer (EVA).
  - The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement/material. The encapsulation arrangement shall ensure complete moisture proofing during life of the solar modules.
  - The Module shall be made of high transmittance glass front surface giving high encapsulation gain
  - Module rating is considered under standard test conditions, however Solar Modules shall be designed to operate and perform under site condition including high temperature & dust.
  - All materials used shall be having a proven history of reliable, light weight and stable operation in external outdoor applications and shall have service life of 25 years.
  - Solar PV Module design shall conform to following requirement :
    - Weather proof DC rated MC connector and a lead cable coming out as a part of the module, making connections easier and secure, not allowing for any loose connections.
    - Resistant of water, abrasion, hail impact, humidity & other environment factor for the worst situation at site.
    - The PV junction box shall be IP67 and shall have atleast 3 bypass diodes to avoid shadowing effects.
  - The offered Solar module should give 90% output of rated capacity for first 10 years, 80% output of rated capacity for next 15 years.
  - The fill factor of module shall not be less than 0.70 (typical).
  - The I-V curve of each PV module with Sl. Nos. should be submitted along with Modules meeting the required specifications.
  - Identification and Traceability: Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RFID used on each module. This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.
    - Name of the manufacturer of PV module
    - Name of the manufacturer of Solar cells
    - Month and year of the manufacturer (Separately for Solar cell and module)

- Country of origin (Separately for Solar cell and module)
- I-V curve for the module
- Wattage,  $I_m$ ,  $V_m$  and FF for the module
- Unique Serial No and Model No of the module
- Date and year of obtaining IEC PV module qualification certificate
- Name of the test lab issuing IEC certificate
- Other relevant information on traceability of Solar cell and module as per ISO 9001 series

Bidder/Bidding Consortium shall provide data sheet for Solar PV Module (Under Standard Testing Condition) along with their offer.

## **7. MODULE MOUNTING STRUCTURE**

- a. The module alignment and tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation.
- b. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement.
- c. The structures shall be fixed to the foundation in such a manner that, in future, if required they can be easily relocated to a different foundation.
- d. The mounting structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the base properly.
- e. The mounting steel structure shall be as per latest BIS 2062 (amended up to date) and galvanization of mounting structure shall be in compliance of BIS 4759 (amended up to date).
- f. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.
- g. Nut & bolts, supporting structures including Module Mounting Structures shall have to be adequately protected from atmosphere and weather prevailing in the area.
- h. All fasteners shall be of stainless steel of grade SS 304.
- i. The Mounting structure shall be grounded properly using GI strips and maintenance free earthing kit.

- j. The support structure & foundation shall be so designed to withstand speed for wind zone of the location as given in relevant Indian wind load codes/ standards.
- k. IS 800-2007 shall be followed for structural design.
- l. SPV module mounting structure shall be fixed type with provision of manual correction in tilt angle which shall be made after every 3 months to get maximum output. Azimuth shall be 0 degree True south
- m. Hot dipped Galvanized Steel Structural with minimum 80 microns of galvanization must be considered for all type of structural steel proposed for the power plant
- n. Design drawings with material selected shall be submitted for prior approval of the employer.
- o. The Bidder/Bidding Consortium/Bidding Consortium shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings.

## **8. STRING COMBINER BOX OR ARRAY JUNCTION BOXES**

- a. The junction Boxes shall have suitable arrangement for the followings :-
  - Combine groups of modules into independent charging sub-arrays that will be wired into the controller.
  - Provide arrangement for disconnection for each of the groups.
  - Provide a test point for each sub-group for quick fault location
  - To provide group array isolation
- b. The string combiner box/ junction box shall be dust proof, vermin proof, and waterproof and made of Polycarbonate Plastic
- c. The terminal will be connected to copper bus-bar arrangement of proper size to be provided. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables
- d. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.
- e. The string combiner box/ junction box shall be with protection class IP 65 for mounting outside in Open weather condition.
- f. Each string combiner box/ junction box will have suitable Reverse Blocking Diodes of maximum DC blocking voltage of 600V / 1000V, whichever causes less power loss, with suitable arrangement for its connecting

- g. The string combiner box/ Array junction Box will also have suitable surge protection device.
- h. The current carrying ratings of the string combiner box/ junction box shall be suitable with adequate safety factor, to inter connect the Solar PV system corresponding to the project capacity, as designed by the Bidder/Bidding Consortium
- i. Necessary sensors and transducers shall be provided in the string combiner boxes to facilitate monitoring of all string parameters in the data acquisition system.
- j. String level remote monitoring facility shall be incorporated to monitor generation and faults at string level.

## **9. INVERTERS / POWER CONDITIONING UNIT (PCU)**

- a. Inverter/PCU shall be non-transformer string inverters, grid tied in nature, shall consist of MPPT controller. Inverters shall be decided based on array design/suitable rating in case of string design, associated control and protection devices etc all integrated into PCU. It shall provide necessary protections for Grid Synchronization. The Inverters should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of Grid.
- b. The DC energy produced has to be utilized to maximum and supplied to the bus for inverting to AC voltage to extract maximum energy from solar array and provides 3-ph, 400V AC/ (+10% to - 10%), 50+/-1.5 Hz with total harmonic voltage distortion less than 3% to synchronize with local grid .
- c. The Inverters shall be of very high quality having efficiency not less than 97% and shall be capable of running in integrated mode.
- d. Degree of protection of the indoor Inverters shall be at least IP-42 and that of outdoor at least IP-65.
- e. Built in with data logging to remotely monitor plant performance through external PC shall be provided (PC shall be provided along with SPV Plant).
- f. The Inverters should be designed to be completely compatible with the SPV array voltage and Grid supply voltage.
- g. The dimension, weight, foundation details etc. of the PCU shall be clearly indicated in the detailed technical specification.
- h. The PCU shall be capable of complete automatic operation, including wake-up, synchronization & shut down independently& automatically.



- i. Both AC & DC lines shall have suitable fuses & surge arrestors and Bidder/Bidding Consortium/Bidding Consortium/ss to allow safe start up and shut down of the system. Fuses used in the DC circuit should be DC rated.
- j. Inverters/PCU shall operate in sleeping mode when there will no power connected.
- k. Protections :
  - Over voltage both at input & output
  - Over current both at input & output
  - Over/under grid frequency
  - Heat sink over temperature
  - Short circuit
  - Protection against lightning
  - Surge arrestors to protect against Surge voltage induced at output due to external source
  - Anti- Islanding Protection
  - And other required protections

It should have user friendly LED/LCD or touch display for programming and view on line parameters such as:

  - Inverter per phase Voltage, current, kW, kVA and frequency,
  - Grid Voltage and frequency,
  - Inverter (Grid) on Line status,
  - PV panel voltage,
  - Solar charge current
  - Individual power stage heat sink and cabinet temperature,
  - Inverter Import export kWh summation
  - Solar kWh summation
  - Inverter on
  - Grid on
  - Inverter under voltage/over voltage
  - Inverter over load
  - Inverter over temperature
- l. PCU shall be capable to synchronize independently & automatically with grid power line frequency to attain synchronization and export power generated by solar plant to grid.
- m. The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line fault currents and line to ground fault currents.
- n. The PCU shall be able to withstand an unbalanced load conforming to IEC standard (+/-5% voltage) and relevant Indian electricity condition. The PCU shall include appropriate self- protective and self-diagnostic features to protect

itself and the PV array from damage in the event of PCU component failure or from parameters – beyond the PCU’s safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation feature, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.

- o. The Inverter shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay.
  - When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to standby/shutdown mode.
  - The PCU control shall prevent excessive cycling of shut down during insufficient solar radiance.
- p. Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are
  - Over current
  - Earth fault
  - And reverse power
  - In each of the above cases, tripping time should be less than a few seconds.
- q. Detailed technical description of the complete unit of offered Inverter should be furnished with bid document Following Technical documents of Inverter shall be supplied for approval after placement of order
  - Detailed technical description of the complete unit
  - Instructions for installation and operation
  - Electrical diagrams of all internal cabling necessary for installation, maintenance and fault finding.
  - Description of electrical and mechanical characteristics of units
  - Maintenance and fault finding procedures.
  - Safety precautions
  - Software for data monitoring with detailed description.
  - Details of data acquisition
  - Factory test reports in details on various parameters.
  - Trouble shooting procedures
  - All maintenance requirements and their schedules, including detailed instructions on how to perform each task.
  - Detailed schematics of all power instrumentation and control equipment and subsystems along with their interconnection diagrams. Schematics shall

- indicate wiring diagrams, their numbers and quantities, type and ratings of all components and subsystems.
- A detailed bill of materials which shall list components model numbers, quantities and manufacturer of each supplied item.
- All documents and write ups shall be in English. They shall be clean and legible, and must be checked, signed, approved and dated by a competent representative of the Bidder/Bidding Consortium.
- r. The Bidder/Bidding Consortium/Bidding Consortium should note that Inverters/PCU is going to be installed in an area which is prone to hot air of 48 to 50 degree centigrade. Thus the room shelters and air blower/ fan (auto operated as per requirement), if required, for Inverter will be in scope of supply. Integrated solutions into prefabricated structures or in standard metallic container may be accepted. The Bidder/Bidding Consortium/Bidding Consortium shall provide data sheet for Inverter/ Power Conditioning Unit along with their offer.

## **10.ENERGY METERING**

Digital Communicable Energy Meters shall be provided for measuring power consumption by grid side loads on continuous basis and register the cumulative energy on 30-minute interval basis (Programmable/adjustable), daily, monthly and annually the energy generated. The Energy Meter shall have default display of Cumulative kWh. The following parameters to be displayed on-demand:

- a. The Energy Meter shall have 4-quadrant measurement method and shall be suitable for 3-wire as well as 4-wire connection.
- b. The meter shall also record Maximum Demand at set interval. TOD (Time of Day) measurement shall also be possible.
- c. The energy meter shall communicate with the Data Acquisition System / other plant network over MODBUS protocol.
- d. Separate Meters shall be provided for Solar Power Generation and Auxiliary load consumption.
- e. In case more than one inverter circuits are used for synchronizing with the grid then similar meters shall be provided for each inverter output circuit.
- f. Additionally one digital summator shall also be provided for calculation and display of total concurrent energy/ demand of all the feeders.

- g. Meters shall comply with the requirements of CEA Regulations on Installation & Operation of Meters.
- h. The functional Specification of the energy meters shall be as follows:
  - Applicable IS : IS 13779 or IS 14679 depending upon accuracy of meters.
  - Accuracy Class Index: 0.2S
  - Power factor range: Zero lag-unity-zero lead
  - Display parameters : LCD test, KWH import, KWH export, MD in KW export, MD in KW import, Date & Time, AC(phase wise and line wise) current and voltages and power factor and frequency (Cumulative KWH will be indicated continuously by default & other parameters through push-button) .
  - Power Consumption: Less than 4VA in Voltage circuit and 2 VA for Current circuit.
  - Frequency: 50 Hz with + / -5% variation
  - Test Output Device: Flashing LED visible from the front
  - Billing data: Meter serial number, Date and time, KWH import, KWH export, MD in KW (both export and import), History of KWH import and export, & MD (both export & import).
  - All these data shall be accessible for reading, recording and spot billing by downloading through optical port/RS485 on MRI or Laptop computers at site.

## **11. DATA ACQUISITION AND LOGGING**

- a. A data acquisition system shall be part of the scope for the Solar PV system. The data logger may be a PC based system or any other intelligent device that communicates to the Central computer over LAN/ WAN. The data logger shall be part of the Power Control Unit or shall suitably communicate with the PCU to fetch all relevant data available in the PCU on real time basis. The Data logger/ Acquisition system shall also communicate with the digital energy meters and receive energy data from the meter through MODBUS Protocol. In addition a suitable instrumentation system shall be provided so that the following data is available to the data logger on a real time basis.
- b. An integrating Pyranometer (Class II or better) should be provided with the sensor mounted in the plane of the array for measurement of Solar Irradiance. Readout should be integrated with data logging system. It shall be possible to record and retrieve irradiation and irradiance data hourly, daily, weekly, daily, monthly and yearly.
- c. Integrated temperature sensors for measuring the module surface temperature., inverter inside enclosure temperature, and ambient temperature to be provided complete with readouts integrated with the data logging system.

- d. The Data acquisition system shall transfer the data to the Central Computer which shall have the facility of storage, archiving analysis and display of the data related to the Solar PV system. Supply of the suitable computer along with necessary hardware and software shall be part of the scope of supply. The software shall be compatible with any Windows based OS.
- e. Data logger/PC based monitoring system must record all these parameters for study of effect of various environmental & grid parameters on energy generated by the solar system and various analysis would be required to be provided through bar charts, curves, tables, which shall be finalized during approval of drawings.
- f. The data acquisition system shall also communicate with the string combiner boxes for monitoring of each string of SPV arrays.
- g. Overall it should be possible to record, archive and display all electrical and environmental parameters in the system for complete monitoring and control of the solar power generation system.

## **12. POWER & CONTROL CABLES:**

- a. Power Cables of adequate rating and specification shall be supplied and installed for interconnection of :
  - Modules/panels within array
  - Array & Power Control Unit
  - Power Control Unit and the battery
  - Power control Unit to AC distribution board
  - AC distribution board PCU
  - Evacuation and transmission if required
- b. The power cables shall be 1.1/11 kv grade, heavy duty, stranded copper / Aluminum conductor, PVC insulated, galvanized steel wire/strip armored, 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.
- c. Control Cables shall be 1.1 kv 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.
- d. In addition suitable specification instrumentation and communication cables shall be supplied and installed as per design requirement.
- e. 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 in such that the voltage drop introduced by it shall be within 2% of the system voltage at peak power.

- f. The permissible voltage drop at AC cables shall not be more than 2 % of peak PCU O/P voltage
- g. Relevant codes and operating standards shall be followed for selection and installation of all cables.
- h. Cables shall be laid on air or underground as per the site condition and requirement with proper installation procedures

### **13. AC DISTRIBUTION BOARD/LT INTERFACING PANEL**

- a. AC Distribution Panel Board (DPB) shall control the AC power from PCU, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar to be carried out and complete equipment along with metering for auxiliary consumption to be installed in the ACDB. Requirement/specifications of ACDB may be changed as per site conditions.
- b. ACDB shall have provision to distribute power to auxiliary loads.
- c. ACDB shall have required LED indications and front panel display.
- d. ACDB shall be protected with IP42 protection class in case of indoor and IP65 protection class in case of outdoor.
- e. All switches at the, circuit breakers, connectors should confirm to IEC 60947, part I, II and III.

### **14. EARTHING AND LIGHTNING PROTECTION SYSTEM**

- a. Necessary system and equipment shall be provided for suitable earthing of the complete system
- b. Earth bus of SPV Array (if provided) bonded together to prevent the development of potential difference between ant two earths.
- c. Earth resistance shall not be more than 5 ohms with maintenance free earth pits
- d. The earthing conductor shall be rated for the maximum short circuit current. The area of cross-section shall not be less than 25 X 3 mm in any case.
- e. The array structure and PV modules shall be separately grounded properly using adequate numbers of earthing pits. All metal casing/ shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.
- f. Lightning protection of the solar arrays, transformer and all other outdoor equipment shall be provided as per relevant standards.

## **15. SOLAR AND WEATHER MONITORING SYSTEM**

- a. One Solar Observatory including testing facilities shall be supplied. The Solar Observatory with associate system shall include but not be limited to the following:
  - Pyranometer (Class II or better)
  - Wind sensor
  - Temperature sensor
- b. The Bidder/Bidding Consortium is required to measure the Solar Radiation and other climatic conditions. The major categories of site-specific assessment required are:
  - Global Solar Radiation ("GSR")
  - Temperature (Ambient, surface)
  - Wind Speed

## **16. CIVIL WORKS**

This section of the specification covers entire civil engineering work for technological structures, new equipment and facilities for all production, auxiliary and ancillary units, foundation for all structures and main equipment described elsewhere in this specification on a Turnkey basis for installation of the Solar PV power plant.

The scope shall cover complete civil engineering work for the proposed plant within its battery limit, on turnkey basis including design, supply of all materials and execution.

## **17. PROJECT SCHEDULE & PROGRESS MONITORING**

Bidder/Bidding Consortium shall submit Overall schedule along with the offer. The overall schedule should be planned in weeks. The heads to be covered in the schedules shall broadly be as follows :

- i. Basic engineering and approval
- ii. Preparation and issue of ordering / technical specifications for sub vendors
- iii. Placement of orders on sub-vendors
- iv. Detailed design and engineering

- v. Submission and approval of drawings for civil & structural works
- vi. Manufacture and supply of all equipment/ piping/ cables, etc
- vii. Fabrication and supply of building and technological structures
- viii. Submission and approval of erection drawings and manuals
- ix. Erection of building and technological structures
- x. Erection of equipment, piping, cables, etc.
- xi. Testing and commissioning

The major milestones for the project are to be highlighted in the schedule. The Bidder/Bidding Consortium shall submit an overall erection plan for the plant and equipment under his scope of supply along with the tender.

The successful Bidder/Bidding Consortium shall have to submit the Level-II network schedule both in hard and editable soft copy (in MS Project/Primavera) covering further details of construction, fabrication and erection activities, area-wise, for approval and finalization of the Employer / Consultant. The format of progress report to be discussed and agreed.

**The Bidder/Bidding Consortium/Bidding Consortium has to clearly specify to complete the work in 4 months from effective date of contract**

## **18. DRAWINGS, DATA AND DOCUMENTS**

The Bidder/Bidding Consortium shall furnish following documents/ information along with the offer.

- General description of equipment offered specifying the important features, make, technical parameters, materials of construction, etc. to enable the owner to have proper understanding of the equipment offered and its operation.
- Technical literature, catalogue and publications
- Layout of Complete Power Plant Installation showing location of all major sub-systems
- Single line diagrams of all systems and sub systems of the entire power plant including that of the MMS structures.
- Typical general arrangement and foundation details
- General lighting scheme
- Type tests certificates of all major equipments like switchgear, Inverters, Solar Modules etc.



- Single line schematic diagram of electrical system for grid interfacing and grid interconnection from Solar plant
- General arrangement drawings and circuit diagrams of Module, Inverters, Transformers, and overall solar plant arrangement
- The Bidder/Bidding Consortium shall submit a list of all drawings and documents proposed to be submitted. The list will be approved by employer/consultant and may be modified if necessary
- Each drawing/ documents in the list shall be identified with a serial number, description and scheduled date of submission.

### **For Approval :**

- Equipment layout plan
- Single line diagram with rating of all equipment, cable sizes and details of protection and metering
- Front view, general arrangement of equipment with plan and sectional views; clearly showing the position of various components, and clearance between components. The make and type of components, together with vital technical parameters shall also be furnished along with GA drawings
- Control, alarm, indications, interlocking and other schematics
- Lighting layout drawings with illumination levels, type and make of fittings.
- Wiring terminal plan drawings with cable connections
- Earthing scheme and layout of earthing network with design calculations, for outdoor switch yard and other areas/premises, if applicable.
- Cable layout drawings, cable channels details
- Installation drawings of all equipment with layout of equipment, cables, lighting systems, (if applicable) and earthing network.
- Calculation for design of LT busduct, sizing of busbars, busbar supports considering the temperature rise and fault current.
- Calculations for design of supporting structures for outdoor switchyard w.r.t. wind pressure, short circuit forces etc. (if applicable).

### **Instruction Manuals for Operation & Maintenance**

- Complete and comprehensive instruction manuals for operation and maintenance of the equipment with drawings. This shall include the following:

- Preventive maintenance schedule for each equipment
- Procedure for shut down and start-up of the entire power plant
- Safety procedures for safe operation of equipment and complete system
- Specification of equipments installed.
- Test procedure for site tests

Upon installation and commissioning supplier shall incorporate revisions/modifications if any in the reproducible and submit 'as built' drawings for employer's record as per general condition of contract.

## **19. DELIVERY**

The completion period of the project is limited to 4 months. No further extension shall be provided except under Force Majeure.

## **20. INSPECTION**

Manufacturing progress review, inspection & testing of equipment covered under the technical specification shall be carried out by the Employer at the manufacturers' works/premises prior to dispatch, to ensure that their quality & workmanship are in conformity with the contract specifications and approved drawings.

The Bidder/Bidding Consortium shall furnish the quality assurance plan for equipment separately with suggestive stages and hold points for undertaking inspection and testing by the Employer. Total list of plant & equipment of the order shall be submitted to the Employer prior to submission of QAP

The Employer reserves the right to visit at any stage of manufacture of plant and equipment and ask for additional inspection & tests beyond approved QAP, if it is found necessary after completion of detailed design & engineering and approval of drawings

## **21. TESTS AND INSPECTION**

Following tests shall be conducted on equipment after erection and before energizing from point of view of completeness in the presence of employer:

- Visual inspection of total system
- Checking of continuity of power and control cables.
- Checking of insulation resistance for inter-connected links or cables.
- Calibration of meters by secondary injection or by primary injection
- Checking of protective schemes

- Setting of relays, and the checking of their operation with one lower and one higher setting.
- Checking of control scheme of breakers, etc. as per approved drawings and as per actual requirement
- Checking of alarm scheme by simulation of faults.
- Checking of name plate data of complete system.
- Verification of earthing resistance.
- Checking of cable terminations and laying, dressing etc.
- Checking for safe accessibility of components.

## **22. INSTALLATION GUIDELINES**

- All the electrical installations shall conform to the Indian Electricity Act, Indian Electricity Rules, and regulations.
- The mechanical and Civil installation shall conform to the applicable Acts and Rules of corresponding Inspectorate and other relevant authorities, if any.
- Provision of cable glands, ferrules, cable lugs, tags, sealing kits shall be arranged.
- Supply and installation of first aid boxes, shock treatment charts, rubber mats, and key board etc.
- Erection, testing and commissioning of various equipment shall be done strictly as per manufacturer's instructions.
- Cables shall be laid in conduits as per the electrical installation procedures
- The minimum bending radius of cables shall be 12D and 15D for LT and HT cable respectively.
- Interplant cable shall be laid to trenches, tunnel or overhead structure as per site condition. Digging and refilling of cable trenches, required erection accessories shall be in the scope of work of the Bidder/Bidding Consortium.
- Cable shall be fixed to cable racks or cable trays or run on cleats or in conduits, which shall be fixed to concrete brick work or steel structure as required for proper support of the cables, easy accessibility and neatness of appearance.
- Perforated trays shall be provided for control cables.
- Approved type of danger boards, boards inscribing 'ISOLATED', 'DO NOT CLOSE, MEN AT WORK' in English, Telugu, Hindi and Local languages shall be provided in sufficient numbers.
- Special care shall be taken to make the enclosed equipment protected against entry of rats, lizard, and creeping reptiles which may create electrical short circuits.

- Approved cable markers of reinforced concrete shall be provided and fixed to mark each and every diversion of all buried cable routes. A marker shall also be placed every 50 meters along straight portions of each route. A concrete cable marker shall also be provided and fixed to mark the position of every buried joints.
- Distinguishing labels of non-corrodible material marked in accordance with the cable numbers of the cabling diagram shall be permanently attached to each end of every cable. The phase or polarity of each power cable core at the cable ends shall be identified.
- Mounting of Inverters, Electrical panels, Dc and Ac junction boxes, Monitoring systems shall be done with proper mounting procedures with neat look.

## **23. ERECTION, TESTING, COMMISSIONING**

The scope of work of the Bidder/Bidding Consortium shall be complete erection of the equipment, cables, auxiliary systems and sub systems under the scope of work. The Bidder/Bidding Consortium shall make all arrangements to deliver the equipment at site by wagons/ trucks/ trailers, build his own stores (covered, uncovered, air-conditioned, if necessary) for the proper storage of equipment, maintain the stores and all related documents and records, transport the equipment to site for erection purpose. The Bidder/Bidding Consortium also shall make all security arrangements.

- The Bidder/Bidding Consortium shall be responsible for proper, quick retrievable and neat storage and also undertake the conservation of all consignments including damaged boxes. During storage of equipment, the Bidder/Bidding Consortium shall take into account deterioration and carry out the re-conservation of the complete equipment/parts/supplies as may be necessary as per the storage instructions of the Manufacturer of equipment/ components. The Bidder/Bidding Consortium shall also supply the consumables required for such re-conservation work and repair/ replace parts required thereof for the proper functioning of the equipment after erection and commissioning.
- The Bidder/Bidding Consortium shall retrieve the equipment/ materials from stores and transport the same to erection site.
- The Bidder/Bidding Consortium shall unpack and do visual checking against physical damages to the equipment/cases, clean equipment before start of

erection. Damage/ shortage, if any, shall be reported to the Employer/ Consultant and shall be rectified/replaced expeditiously, so as not to upset the erection and commissioning schedule.

- The Bidder/Bidding Consortium shall provide all necessary erection equipment and tools & tackles including material handling equipment, cranes, compressors and other equipment and instruments and consumables, all commissioning equipment and instruments, welding equipment, winches, alignment tools, precision levels, etc., which may be required for carrying out the erection and commissioning work efficiently.
- All instruments shall be properly calibrated before use. Unless otherwise specified, the above erection equipment/ materials shall be the property of the Bidder/Bidding Consortium. However, Employer's prior permission shall be required for removal of these erection equipment/ materials from the site. The Bidder/Bidding Consortium shall ensure that proper procedure and documentation is maintained at entry gate of Employer's premises for such items as might be carried back by the Bidder/Bidding Consortium after completion of work.
- The Bidder/Bidding Consortium shall provide erection consumables like oxygen and acetylene gas, welding rods, solder lugs, oil, grease, kerosene, cotton waste, etc. required for erection of equipment and steel structures.
- The Bidder/Bidding Consortium shall construct and maintain his own site offices and stores as required for the work and arrange for maintaining in the area placed at the Bidder/Bidding Consortium's disposal in a neat manner.
- The Bidder/Bidding Consortium shall provide his scheme for mobilization with Bar Chart indicating clearly the resources, manpower and machinery proposed to be deployed to ensure timely completion of work and quality of workmanship
- On request, the Employer may help the Bidder/Bidding Consortium by providing any special handling/construction equipment needed in the interest of work subject to availability and on payment of hire charges and other conditions of Employer. The charges shall be recovered from any bill of the Bidder/Bidding Consortium due immediately thereafter.
  - All safety, health and pollution control measures as required to be adopted as per the Statutory Regulations and the Safety conditions for Bidder/Bidding Consortia issued along with the tender or otherwise required or implied by statutory regulations or practices shall be strictly followed by the Bidder/Bidding Consortium during the execution of the Contract. The Bidder/Bidding Consortium shall set up a suitable safety organization of his own at site in this regard.

- Labor facilities such as shelter, food shall be arranged by the Bidder/Bidding Consortium. On request drinking water shall be provided by the employer.
- The Employer shall deploy/supply Supervising/operating & maintenance personnel and all raw materials, utilities & services required for commissioning.
- Auxiliary power supply facility for system testing & commissioning, Inverter auxiliary, luminaries, control room, Inverter room, site office and other power consuming areas shall be provided by the Employer
- The results of pre commissioning Test, start-up tests and commissioning report shall be recorded jointly by the Bidder/Bidding Consortium and the Employer. And a cumulative report shall be duly submitted by the Bidder/Bidding Consortium to
- The Bidder/Bidding Consortium shall rectify the defects observed during the Commissioning period promptly.
- successfully commissioning as be accepted if the complete system remains synchronized with the grid for a period of 48 hours without any disturbance or interruption. During this period the system shall generate power during sunshine hours and export power to the grid and during dark hours shall remain synchronized with the grid. If there is an outage isolation from the grid during this period due to defects in the system, then commissioning period shall start afresh after rectification of the said defect. However if the ambient or the grid parameter are beyond the specified limits if any shall not be considered as stoppage.
- The Commissioning and project completion certificate shall be issued by the Employer subject to relevant conditions.

## **27. Technical Specifications :**

- 1) The Solar panels to be used in this project should be from Indian manufacturers certified by the Ministry of New & Renewable Energy (MNRE). The cells used in the modules shall preferably be Indian.

## **28. Other Conditions :**

- 1) The final rates quoted should be after deducting all subsidies to be given by Govt., of India. ( RGUKT/client ) will not provide any assistance in providing subsidies. It is the complete responsibility of the Bidder/Bidding Consortium to get the subsidy.

- 2) Regarding subsidies etc., the changes as applicable from time to time as per the G.Os issued from time to time shall apply.
- 3) Bidder/Bidding Consortium should be both Manufacturer and Implementer - **proof to be submitted.**
- 4) There should be a remote monitoring system for the project
- 5) Inverter efficiency should be > 97% (**certificate given by third party is to be enclosed**).

## **SECTION - D**

### **TENDER SCHEDULE**

**1. PREAMBLE:**

The Director, Rajiv Gandhi University of Knowledge Technologies (RGUKT), Basar, invites tenders for Design, Supply, Installation, Testing and Commissioning of 200KW Roof top Model Solar Photo Voltaic Power Plant aggregated capacity under Net-metering Scheme with Five Years of Comprehensive Maintenance Contract, at RGUKT Basar located in Nirmal District through e-procurement platform (i.e. [www.eprocurement.gov.in](http://www.eprocurement.gov.in)).

**2. INCOME TAX:**

During the course of the contract period, deduction of income tax and surcharge as in force at source shall be made at the prevailing rate of income tax department issued from time to time of the gross amount of each bill.

**3. RATES , TAXES AND DUTIES:**

All the rates in the tender shall be inclusive of all statutory compliances like PF, ESI, Service Tax, GST, etc. However, any changes made to the tax structure by the government shall be duly considered and appropriate changes made.

**4. PLACE OF WORK AND VISIT TO SITE:**

Intending tenders shall visit the RGUKT to acquaint with local site conditions, nature and requirement of work, present conditions of premises/fittings/fixtures, etc., before quoting for the tender.

**5. ELIGIBILITY CRITERIA:**

- a. Registration of the Name of the firms/company with the Registrar of firms/Companies of State Government/Government of India.
- b. Bidder/Bidding Consortium should have average annual turnover of Rs.10.00 Cr. During the last three financial years i.e. 2015-16, 2016-17 and 2017-18 (Certificate from CA is to be furnished).



- c. Net worth of company bidding or part of the consortium as the manufacturer of the PV modules should be Min of Rs.20 Cr and above [SHARE CAPITAL + RESERVES ] - **proof to be submitted.**
- d. Bidder/Bidding Consortium should be in the business of Module manufacturing in India and should be operating for at least a period of 12 yrs. with respect to date of tender which corresponds to half the life period of the proposed solar power plant- proof to be submitted.
- e. Bidder/Bidding Consortium should be Original Manufacturer of PV Modules with IEC 61215, 61730 & 61701 certifications in India. Consortium is applicable. - proof to be submitted
- f. Solar PV Module efficiency has to be greater than 19% @ STC. - proof to be submitted. A Certificate to this effect issued by relevant authority has to be submitted.
- g. The Company Should be an ISO 9001 -2008 & 14001 2004 Certified - proof to be submitted. (desirable)
- h. The Bidder/Bidding Consortium should have set up at least one solar power plant of minimum 100 kWp or above capacity in the premises of any Government building / Quasi government institution or PSU. - proof to be submitted.
- i. The Bidder/Bidding Consortium should have set up at least one roof top solar power plant of 200 kWp or above on a government or private building in India.
- j. Successful Bidder/Bidding Consortium should establish authorized service station in Nirmal/Nizamabad Districts, if not having one already. Accordingly under taking is to be given. If already having service station, proof to be submitted.
- k. Certificate to the effect that the Solar Pv Modules supplied are indigenously manufactured [India]. - Proof to be submitted.

1. Bidder/Bidding Consortium Certification/Registration with Govt. of India – MNRE should be valid while tendering and for at least upto the completion of the present work.
- m. The drawings submitted by the bidder shall conform to the actual site conditions and a site visit report attested by Deputy Engineer (Electrical) of RGUKT should be annexed.

**6. BID PRICE:**

- a. The price should be quoted in Indian Rupees with delivery at RGUKT-Basar, failing which the bid would be rejected. The price shall be written both in figures & words in the prescribed offer form.
- b. The rates quoted by the bidder shall be fixed for the duration of the contract period and shall not be subject to adjustment on any account except on account of any statutory changes made to the tax structure by the government
- c. If there is a discrepancy between amount in words and figures, the amount in the words will prevail.
- d. Incomplete and/or conditional bids shall be liable to rejection. Prices should be quoted as per the format of price bid.

**7. EARNEST MONEY DEPOSIT / SECURITY DEPOSIT:**

- a. The tender should accompany with Earnest Money Deposit (EMD) for **Rs.3,00,000/-** by way of crossed Demand Draft drawn from any Nationalized Bank in favour of the Director , Rajiv Gandhi University of Knowledge Technologies (RGUKT), payable at Basar.
- b. The EMD will be returned to unsuccessful tender, whereas in the case of successful tenderers, it will be retained.
- c. The successful bidder will have to deposit a security deposit at the time of concluding agreement.
- d. The Security Deposit /Bank Guarantee of successful tenderer will be retained for the period of contract in force and will be returned after expiry of the contract period, after deducting the outstanding liabilities if any. The Security Deposit/Bank Guarantee shall not carry any interest.

## **8. INSTRUCTIONS TO BIDDERS:**

- a. Tenders with over writings, alterations etc., will not be admitted unless they are attested by the bidder. Where there is a discrepancy between the rupees in figures and words, the price, which is least of the two, will govern.
- b. BID should be strictly in conformity with the Terms and Conditions mentioned in the tender schedule.
- c. Bidders are expected to examine all the terms and instructions mentioned in the tender schedule and prepare their proposals accordingly. Failure to provide all requisite information will be at the bidders' own risk and may result in the rejection of the tender.
- d. All assertions made in connection with the tender are to be supported / substantiated by relevant documents. The Director, RGUKT, Basar , reserves the right to verify the credentials of the bidder as per the eligibility criteria.
- e. The Director, RGUKT, Basar, will notify the bidder whose tender has been accepted.
- f. The successful bidder shall execute an agreement with RGUKT-Basar on Non-judicial stamp paper worth Rs.100.00 agreeing to all the conditions of the contract within one week upon intimation of acceptance of Tender. Failure on enter into an agreement within the stipulated time will result in forfeiture of the EMD.
- g. The Director, RGUKT, Basar, reserves the right to issue instructions / modifications at any point of time before award of contract.

## **9. METHOD OF SUBMISSION:**

Bids shall be submitted online on [www.eprocurement.gov.in](http://www.eprocurement.gov.in) Platform. The participating bidders in the tender should register themselves free of cost on e-procurement platform in the website [www.eprocurement.gov.in](http://www.eprocurement.gov.in)

- a. Bidders can log-in to e-procurement platform in Secure mode only by signing with the Digital certificates.
- b. The bidders, who are desirous of participating in e- procurement shall submit their technical bids, price bids as per the standard formats available at the e-market place.

- c. The bidders shall sign on all the statements, documents certificates uploaded by them, owning responsibility for their correctness/authenticity.
- d. The bidders should scan and upload the respective documents in Technical Documentation as per the check list.
- e. After uploading the documents, the copies of the uploaded technical bid documents and original Demand Drafts in respect of Bid Security and Bid document fee are to be submitted by the bidder to the "The Director, RGUKT, Basar, Nirmal District, Telangna-504107", by **05:00PM on 06.12.2018**.
- f. Failure to furnish any of the uploaded documents, certificates, will entitle in rejection of the bid. The RGUKT shall not hold any risk on account of postal delay. Similarly, if any of the certificates, documents, etc., furnished by the Bidder are found to be false / fabricated / bogus, the bidder will be disqualified, blacklisted, action will be initiated as deemed fit and the Bid Security will be forfeited.
- g. RGUKT will not hold any risk and responsibility regulating non-visibility of the scanned and uploaded documents.
- h. The Documents that are uploaded online on e-market place will only be considered for Bid Evaluation.
- i. In case of consortium either the prime bidder or the consortium partner can purchase the bid document. The bid can be filed either with user ID of prime bidder or consortium partner.**
- j. The rates should be quoted online only.

## **10. EVALUATION PROCEDURE:**

For short listing of agency the following criteria shall be applied. For this purpose agency shall submit proof documents along with the tender and the agency not confirming to any of these parameters will not qualify for short listing.

- a. The Tenders will be opened as per the schedule by the Director, RGUKT, Basar or his authorized representative in the presence of the bidders or their authorized representative who may be present at that time.
- b. The Technical Bids consisting of the documents related to Eligibility criteria will be opened first. The tenders will be evaluated so as to ascertain the

capability of the bidders to provide the services for the period mentioned above and also to assess whether the bidder satisfies the eligibility criteria.

- c. The Financial/Price Bids of only those bidders, who have fulfilled the eligibility criteria above, will be opened online and the Price Bid of the bidders who do not fulfill the eligibility criteria will not be opened and their Tender shall stand rejected.
- d. Any claims or disputes raised by the unsuccessful bidders in respect of selection process and non-allotment of award will have no legal validity and will not be enforceable against the RGUKT. No further correspondence will be entertained regarding the disqualification.
- e. The Director, RGUKT, Basar, reserves the right to accept or reject any / or all the tenders without assigning any reasons whatsoever. The Director, RGUKT also reserves the right to cancel the selection process for award of the contract at any time. The decision of the Director, RGUKT is final and binding.

#### **11. PAYMENT TERMS:**

- a. 90% of the payment shall be made upon delivery of the material to site. The remaining 10% of the payment shall be made after installation, commissioning and successful running of the plant for two months.
- b. The Contractor shall raise an invoice in an acceptable proforma and in accordance with the rates quoted in Price Bid.
- c. Income tax will be deducted by the RGUKT from all payment made to the Contractor. This will be as per the Rules and Regulations in force and in accordance with the Income Tax Act prevailing from time to time.
- d. At the time of signing of the Agreement, the Contractor shall submit to the RGUKT, a photocopy of his PAN identity for record.

#### **12. FORCE MAJEURE**

- a. No liability shall be attached to the Contractor for non operation or execution of his obligation under this contract as a result of Force Majeure or any other actor beyond the control of the Contractor.

- b. No liability shall be attached to the Contractor for any damage due to natural calamities such as earthquake, war, civil commotion and willful damage.

### **13. TERMINATION:**

The contract can be terminated

- a. by either without cause, after giving to the other party at least two calendar months' written notice thereof
- b. by the Employer, if the Tenderer/Service Provider fails to fulfill their tasks to the satisfaction of the Employer. Such failures constitute a breach of the Tenderer / Service Provider's obligations under contract, which are not remedied within 30 days from the date of giving of written notice requiring such breach to be remedied.

### **14. DISPUTES:**

All disputes and differences of any kind whatsoever arising out or in connection with contract, whether during or after completion of contract will be settled amicably in a spirit of co - operation and the Employer's decision shall be final on all such matters and shall be binding on the bidder/bidding consortium.

### **15. DISCLAIMER:**

- a. Even though adequate care has been taken in the preparation of this Tender Schedule the Bidder should satisfy himself that the Schedule is complete in all respects.
- b. Neither RGUKT nor their employees make any representation or warranty as to the accuracy, reliability or completeness of the information in this Tender Schedule and it is not possible for the RGUKT to consider the investment objective, financial situation and particular needs of each party who reads or uses the Tender Schedule. Certain prospective Bidders may have a better knowledge of the scope of work than others. Each prospective Bidder should conduct his own investigations and analysis and check the accuracy, reliability and completeness of the information in the Tender schedule and obtain independence advice from appropriate sources.
- c. Director, RGUKT-Basar, reserves the right to reject any or all the Bids submitted in response to this request for Proposal at any stage without assigning any reasons whatsoever.

- d. Director, RGUKT-Basar, reserves the right to change any or all of the provisions of this Request for Proposal. Such changes would be intimated to all parties procuring this Request for Proposal.

#### **16. REJECTION OF TENDERS:**

- a. The Director, RGUKT-Basar, reserves the right to cancel the tender process and reject all tenders at any time prior to the award of contract without thereby incurring any liability to the affected bidder or any obligations to inform the affected bidder of the grounds of acceptance or rejection.
- b. No bidder is entitled to withdraw his offer after submission. In case of such withdrawal, the EMD deposited along with the tender schedule will stand forfeited.
- c. For breach of any of the conditions prescribed in the tender as specified by the organization from time to time, the Security Deposit is liable to be forfeited. Decision of the Director, RGUKT, Basar in this regard is final and binding on the Contractor.

**(on the official Letterhead of the firm)**

**FINANCIAL BID**

**Design, Supply, Installation, Testing and Commissioning of 200KWp Roof top Model Solar Photo Voltaic Power Plant aggregated capacity with Five Years of Comprehensive Maintenance Contract, under Net-metering scheme**

The Bidder shall fill all the required columns of Financial Bid:

S.No.	Description	Total Project Cost without subsidy	Subsidy by the Govt. of India/State Govt.	Total Cost After Subsidy
		A	B	(A-B)
1	Tender for Design, Supply, Installation, Testing and Commissioning of 200KWp Roof top Model Solar Photo Voltaic Power Plant aggregated capacity under Net-metering Scheme with Five Years of Comprehensive Maintenance Contract			
Total Project Cost (Rs.)				

In words Rupees: \_\_\_\_\_

**Note:-**

1. In case of discrepancies between words and figures, the bid which is least of the two versions will be confirmed.

Signature of the bidder  
along with seal



**RGUKT Ref. No: RGUKT-B/Proc/SolarPower/T13/2018, dt.20.11.2018**

**PERFORMANCE SECURITY FORM**

(To be issued by a scheduled bank, payable at a branch in Basar)

To  
The Director,  
Rajiv Gandhi University of Knowledge Technologies,  
Basar, Nirmal Dist,  
Telangana -504107.

WHEREAS..... (Name of Vendor) hereinafter called "the Vendor" has undertaken, in pursuance of

Contract No.....Dated,.....(Date), to supply.....called "the Contract"  
AND WHEREAS it has been stipulated by you in the said Contract, that the Vendor shall furnish you with a Bank guarantee by a recognized bank for the sum specified therein as security for compliance with the supplier's performance Obligations in accordance with the Contract.

WHEREAS we have agreed to give the Vendor a Guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Vendor, up to a total of Rs.....and we undertake to pay you, upon your first written demand declaring the Vendor to be in default under Rs..... (Amount of Guarantee) as aforesaid without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the .....day of ..... (Date)

Place:

Signature of Guarantors

Date:

and Seal.

**Bid Security(EMD) form**

( To be issued by any Nationalized/Scheduled Bank in India and having at least one branch in Basar)

Whereas.....(here in after called “ the Bidder”) has submitted its bid Dated.....(Date). For the execution of .....(here in after called “the Bid”)

KNOW ALL MEN By these present that WE.....of .....having our

Registered office at .....(hereinafter called the “Bank”) are bound unto the Rajiv Gandhi University of Knowledge Technologies,. (hereinafter called “The RGUKT”) in the sum of .....for which payment well and truly to be made to the said RGUKT itself, its successors and assignees by these presents.

The conditions of these obligations are:

1. If the bidder withdraws its bid during the period of bid validity or
2. If the bidder, having been notified of the acceptance of its bid by the RGUKT during the period of bid validity
  - 1) Fails or refuses to execute the contract form if required; or
  - 2) Fails or refuses to furnish the performance security, in accordance with the bid requirement;

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

This guarantee will remain in force up to and including 90 days after the period of the bid validity, and any demand in respect thereof should reach the Bank not later than the above date.

Place:

Signature of the Bank

Date:

and seal.

**(on Rs.100/- Non-Judicial Stamped paper)**

### **Supply Agreement form**

THIS AGREEMENT made the ..... day of..... (Year). Between the Rajiv Gandhi University of Knowledge Technologies, Basar (hereinafter "the RGUKT, Basar") of one part and..... (Name of Vendor) of..... (City and Country of Vendor) (Hereinafter "the Vendor") of the other part:

WHEREAS the RGUKT is desirous that certain items as described in the bid document and briefly outlined below, should be provided by the Vendor.

**Tender Ref:** RGUKT-B/Proc/SolarPower/T13/2018, dt. 20.11.2018

**Brief outline of the work:** Design, Supply, Installation, Testing and Commissioning of 200KW Roof top Model Solar Photo Voltaic Power Plant aggregated capacity with Five Years of Comprehensive Maintenance Contract under net-metering scheme

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

In this agreement words and expression shall have the same meanings as are respectively assigned to them in the bid document referred to.

The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.

1. bid documents
2. pre - bid conference minutes if any,
3. clarification on bid document issued if any,
4. RGUKT notification of award.

In consideration of the payments to be made by the RGUKT to the Vendor as hereinafter mentioned, the Vendor hereby covenants with the RGUKT to provide the manpower on outsourcing basis, in all respects, with the provisions of the contract.

The RGUKT hereby covenants to pay the Vendor in consideration of the provision of the services , the contract price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

Brief particulars of the items which shall be provided by the Vendor are as under:

S.No.	Description	Total Project Cost without subsidy	Subsidy by the Govt. of India/State	Total Cost After Subsidy

			<b>Govt.</b>	
		<b>A</b>	<b>B</b>	<b>(A-B)</b>
1	Tender for Design, Supply, Installation, Testing and Commissioning of 200KW Roof top Model Solar Photo Voltaic Power Plant aggregated capacity under Net-metering scheme with Five Years of Comprehensive Maintenance Contract			
Total Project Cost (Rs.)				

The Bidder further notes and accepts that:-

<b>Payment terms</b>	
After Commencement of work	90% of the payment shall be made upon delivery of the material to site. The remaining 10 % of the payment shall be made after installation, commissioning and successful running of the plant for two months.

- In addition if the contract is cancelled, the performance security will be encashed and forfeited.

- All disputes and differences of any kind whatsoever arising out or in connection with contract, whether during or after completion of contract will be settled amicably in a spirit of co - operation and the RGUKT decision shall be final on all such matters and shall be binding on the bidder.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year above written.

Signed, and delivered by

for the Vendor.

Vendor's common seal:

Place

Date:

Signed, and delivered by

For. Rajiv Gandhi University of Knowledge Technologies, Basar.

RGUKT common seal:

Place:

Date:

In the presence of:.....

## Bid letter form

From:

(Registered name and address of the bidder)

To

Rajiv Gandhi University of Knowledge Technologies,  
Basar, Nirmal District, Telangana-504107

Sir,

Having examined the bidding documents and amendments there on, we the undersigned, offer to **Design, Supply, Installation, Testing and Commissioning of 200KW Roof top Model Solar Photo Voltaic Power Plant aggregated capacity under Net-metering scheme with Five Years of Comprehensive Maintenance Contract**, in conformity with the terms and conditions of the bidding document and amendments thereon in response to your tender call dated.....

We undertake to provide above services, as assigned to us in conformity with the said bidding documents, for an estimated sum of Rs ..... (Total bid amount in words and figures) which may vary in accordance with the schedule of prices attached herewith and coverage options made by RGUKT or its user organization.

If our bid is accepted, we undertake to:

- a. Provide services /execute the work according to the time schedule specified in the bid document,
- b. Obtain the performance guarantee from a scheduled bank in accordance with bid requirements for the due performance of the contract, and
- c. Agree to abide by the bid conditions, which remain binding upon us during the entire bid validity period and bid, may be accepted any time before the expiration of that period.
- d. We understand that you are not bound to accept the lowest or any bid you may receive, nor to give any reason for the rejection of any bid, and that you will not defray any expenses incurred by us in bidding.

Place:

Bidder's Signature

Date:

Seal.

## Bidder Information

( in technical bid)

1	Name of the organization	
2	Year of establishment	
3	Complete postal address	
4	Name & Designation of Authorized person	
5	Phone No.'s	
6	Fax No.	
7	Email	
8	Nature of the firm (Proprietary/partnership/etc...)	
9	<b>Bank Details of the Agency:</b>	
	Bank Name	
	Bank Address	
	Bank Account Number	
	IFSC Code	
10	PAN No.	
11	TIN No.	
12	Service Tax Registration No.	
13	Total No. of branch offices in Telangana	
14	Bid Document Fee (Non refundable)	Amount Rs. : DD No. : DD Date : Issuing Bank & Branch :
15	EMD	Amount Rs. : DD/BG No. : DD/BG Date : Issuing Bank & Branch :
16	Details of certificates enclosed.	

**Forms**

Turn over details of item/product – 2017-18

<b>S.No</b>	<b>Solution</b>	<b>Amount (Rs in Lakhs)</b>

List of Major Customers – 2017-18

<b>S. No</b>	<b>Customer Full Address</b>	<b>Details of Supplies made</b>	<b>Turn Over (Rs. In Lakhs)</b>

## CHECK LIST

### IMPORTANT:

The Bidder must ensure that the following details in the check list are furnished along with the bid document. The bidder must also carefully go through all the contents of the BID Document and any additional information/documents, required more than the items listed in the check list below, also shall have to be furnished. Non-furnishing of any required information/document as per the Tender Document will lead to rejection of the bid. **(in the following order only).**

S.No	Particulars	Yes / No	Pg. No.	Name of the File uploaded
1	Tender Document Fee of <b>Rs.5000/-</b> in the form of DD.			
2	EMD of <b>Rs.3,00,000/-</b> (DD/BG) drawn from a Scheduled Bank			
3	Bidder Information Sheet			
4	Tender document, duly signed and stamped in token of accepted all the terms and conditions of the tender schedule.			
5	Registration Certificate (firm registration)			
6	Copy of PAN card			
7	Original Manufacturer Certificate			
8	Registration with MNRE			
9	Certificate of the bidders turnover for the financial years 2015-16, 2016-17 and 2017-18 in rupees must be enclosed and be duly certified by firm of Chartered Accountant.			
10	Solar PV Module Efficiency has to be greater than 15% @STC. (proof to be submitted)			
11	ISO Certificate			
12	Bidder should have set up at least one solar power plant of minimum 100 KWp or above capacity in the premises of any Government Building/quasi Government institution or PSU – Proof to be submitted			
13	The bidder should have set up at least one roof top solar power plant of 200 Kw or above in a Government or private building in India			
14	List of present clients with contact address & telephone numbers.			
15	Certificate to the effect the solar PV modules are indigenously manufactured in India			
16	Site visit certification			
17	Power of Attorney, wherever applicable			
18	Any other information/documents that are required in the bid document			



19	Detailed drawings as specified in the tender schedule			
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**NOTE: All pages of the bid documents must be serially numbered and signed.**