

**OFFICE OF THE REGISTRAR :: DIBRUGARH UNIVERSITY  
DIBRUGARH :: ASSAM  
PIN: 786 004**



**BID DOCUMENT**

**FOR**

**NAME OF THE WORK: Supply, Installation and Commissioning of Solar Plant  
at Department of Petroleum Technology, Dibrugarh  
University, Dibrugarh under AICTE Solar Project.**

**TENDER No: DU/NIT-2021/File-I/77 dated 05/11/2021**

# CUT-OUT SLIP

**NAME OF THE WORK:**            **Supply, Installation and Commissioning of Solar Plant at  
Department of Petroleum Technology, Dibrugarh  
University, Dibrugarh under AICTE Solar Project.**

**TENDER NO. : DU/NIT-2021/File-I/77, Date: 05/11/2021**

**SUBMISSION DUE DATE & TIME            : 22/11/2021 up-to 11.00 A.M.**

**FROM:**

NAME:  
ADDRESS

**TO:**

THE REGISTRAR  
DIBRUGARH UNIVERSITY  
DIBRUGARH, ASSAM

(To be pasted on the outer envelope containing “Technical”& “Commercial” bids



**OFFICE OF THE REGISTRAR :: DIBRUGARH UNIVERSITY :: DIBRUGARH**

**No. DU/ NIT-2021/File-I/77**

**Date: 05/11/2021**

**Tender Notice**

Sealed Tenders are invited from reputed manufactures /suppliers/ contractors for Supply, Installation and Commissioning of Solar Plant at Department of Petroleum Technology, Dibrugarh University, Dibrugarh under AICTE Solar Project. Detailed specification of the work, terms & conditions etc are given below. Last date of submission of Tender as per annexure with all relevant papers is **22/11/2021 up-to 11:00 A.M.** to be submitted at the Tender Box placed at Registrar's Office, Dibrugarh University, Dibrugarh, Assam.

|                               |                             |
|-------------------------------|-----------------------------|
| Availability of Bid papers    | From 05/11/2021             |
| Last date for receipt of Bid  | 22/11/2021 upto 11:00 A.M.  |
| Time & Date of opening of Bid | 22/11/2021 at 02:30 P.M.    |
| Place of opening of Bid       | Office of the Registrar, DU |
| Cost of Tender Document       | 1000/- Non refundable       |
| EMD                           | 2 % of the Tender value     |

The tender should be submitted in two separate sealed envelopes *i.e.* **Part - I** TECHNICAL BID and **Part – II** FINANCIAL BID. The technical bid shall be opened on above mentioned date and time and the financial bid of only those bidders who qualify in technical bid shall be opened on the same date or at a later date which shall be intimated to the tenderer whose technical bid are found to be valid. Dibrugarh University reserves all the rights to reject any or all the tenders without assigning any reason thereof.

Sd/-  
**Registrar**  
Dibrugarh University

**Copy to:**

1. The Deputy Registrar (F&A) i/c, D.U. for information.
2. Dibrugarh University Website
3. Notice Board
4. Office File

Sd/-  
**Registrar**  
Dibrugarh University

## **PART A - TERMS AND CONDITIONS**

### **GENERAL INFORMATION**

The tender bids duly complete in all respects, along with the necessary documents should be submitted to the Registrar, Dibrugarh University, Assam. The Technical Bids so received, shall be opened on **22/11/2021 at 02:30 P.M.** in the Office of the Registrar, Dibrugarh University in the presence of the representatives of the bidders. The Financial Bids of the Bidders shall be opened on the same date or at a later date to be intimated to the Bidders whose Technical Bids are found to be valid. Right to reject any or all Tenders, without assigning any reason thereof is reserved by Dibrugarh University.

### **Terms and Conditions of Supply:**

1. The tender must be submitted in sealed cover mentioning Name of the work and full address of the bidder.
2. The tender must be accompanied with copy of PAN card, GST registration, Earnest money, without which the tender will be straight way rejected. Registered Contractors of Government of Assam must submit their upto date registration certificate.
3. Earnest Money at the rate of 2% of the estimated value (1% in case of SC/ST/OBC bidder) in the form of Fixed Deposit duly pledged to the undersigned otherwise the tender will be rejected. Caste certificate must be accompanied with the tender in case of SC/ST/OBC.
4. No Tools & Plants and Machineries for the work will be supplied or arranged by the University.
5. Rate must be quoted legibly both in figures and in words and every page of tender paper must be signed by the bidder. Any correction in rates must be properly initialed.
6. Rates shall cover all the known and unseen expenditure including all statutory Taxes as per current Govt. rule in the state and other charges as applicable. No extra payment will be made beyond the quoted rate under any circumstances.
7. The intended bidders are asked to verify the site prior to the quoting their rate.
8. No rebate or discount will be accepted after opening of the tender.
9. No labour under 18 (Eighteen) years of age can be employed by the bidder on the work and all the labour employed shall be paid not less as fixed by the Govt.
10. Any materials found defective or not as per quality/specification will have to be replaced by the Contractors/firms as per instruction of the University.
11. All materials will have to be procured and carried by the contractor/firm to the site by themselves and stored in his custody till completion of work to ensure better quality and performance.
12. All work should be completed within the stipulated time as mentioned.
13. The Department reserves all right to accept or reject any or all tender(s) without assigning any reason(s) thereof.
14. Department Supervising Officer should have easy access to inspect/supervise the works during the execution.
15. It will be obligatory on the part of contractor/firm to accept any modification or alteration suggested by the University during execution of the work to ensure better quality and performance as per site condition.
16. The work should be carried out by the contractor/firm in consultation with the University Authority.
17. The bidders having past experience in this field of work should submit the relevant documents including list of machineries in their possession along with the tender paper.
18. The Tendering firm/ contractors must have permanent establishment at North East India.
19. The EMD or EMD exemption certificate or Udyog Adhaar certificate or MSME certificate must be attached with the technical bid.
20. The Bidder/Contractor should have valid labour license.
21. The Bidder/Contractor should have valid electrical license.
22. The Bidder/Contractor should have minimum turnover of 20 lakh in Last financial year.
23. The Bidder/Contractor should have an experience of 1 year doing solar related work.

**Note:**

(a) Bidders are advised to read carefully the Terms and Conditions of supply before recording the rates in this Schedule.

(b) No erasures or overwriting shall be allowed, unless they are authenticated under the full signature and the seal of the bidder.

(c) The University reserves the right to:

- (i) Accept/reject any/all tenders without assigning any reason thereof.
- (ii) Revise the quantities at the time of placing the order without change in the rate quoted by the bidder.
- (iii) Add/modify/relax or waive any of the conditions stipulated in the tender document whenever deemed necessary
- (iv) Award the contract to one or more bidders for the items covered by the tender.

| ITEM No | DESCRIPTION OF GOODS WITH<br>DETAILS OF SPECIFICATIONS | Unit Price | Taxes | Qty. | Total Amount |
|---------|--------------------------------------------------------|------------|-------|------|--------------|
| 1       |                                                        |            |       |      |              |
| 2       |                                                        |            |       |      |              |
| 3       |                                                        |            |       |      |              |

**Signature of the Tenderer**  
**Seal of the Firm**

**Technical Specifications****DETAILS OF TECHNICAL SPECIFICATION FOR INSTALLATION OF SOLAR PLANT AT  
DEPARTMENT OF PETROLEUM TECHNOLOGY, DIBRUGARH UNIVERSITY, DIBRUGARH**

| Sl.No. | Description of items                                                                                                                                                                                            | UOM  | Qty                                                                                        |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------------------------------------------------------------------------|
| 1      | Module mounting structure (MMS) as per IS2062:1992 Standard and should be designed to withstand the wind speed 150 kmph. Hot dip galvanized MS mounting structures used for mounting the modules/ panels/arrays | KW   | As required<br><br><b>* Refer to Sl.No. 7 of the Terms and Conditions mentioned above.</b> |
| 2      | MC4 connector with male and female                                                                                                                                                                              | Nos  |                                                                                            |
| 3      | 15 KWp Polycrystalline Solar PV module of 250/260/320/325/330 Wp                                                                                                                                                | Nos  |                                                                                            |
| 4      | Bus bar input                                                                                                                                                                                                   | Nos  |                                                                                            |
| 5      | 3 phase 15 KW 240 VDC Solar PCU with MPPT Technology Remote Monitoring system and export feature, Make                                                                                                          | Nos  |                                                                                            |
| 6      | ACDB with AC connector of IP65 protection and powder coated                                                                                                                                                     | Nos  |                                                                                            |
| 7      | DCB box with IP65 protection                                                                                                                                                                                    | Nos  |                                                                                            |
| 8      | Array Junction box with IP65 protection                                                                                                                                                                         | Nos  |                                                                                            |
| 9      | Earthing kit as per MNRE Norms for DC, LA & AC with 1.2mtr copper rod                                                                                                                                           | Nos  |                                                                                            |
| 10     | GI strip 25*3 mm                                                                                                                                                                                                | Kg   |                                                                                            |
| 11     | Earthing chemicals                                                                                                                                                                                              | Bags |                                                                                            |
| 12     | 2.5 sq. mm 1 core DC copper cable red                                                                                                                                                                           | Mtr  |                                                                                            |
| 13     | 2.5 sq. mm 1 core DC copper cable blue                                                                                                                                                                          | Mtr  |                                                                                            |
| 14     | 6 sq. mm 1 core AC copper cable green                                                                                                                                                                           | Mtr  |                                                                                            |
| 15     | 6 sq. mm 4 core AC copper cable                                                                                                                                                                                 | Mtr  |                                                                                            |
| 16     | 4-6 sq. mm E5 & E6 copper Lugs                                                                                                                                                                                  | Nos  |                                                                                            |
| 17     | 2.5 sq. mm Copper Lugs                                                                                                                                                                                          | Nos  |                                                                                            |
| 18     | 1" PVC Conduit pipe of 3 mtr length                                                                                                                                                                             | Nos  |                                                                                            |
| 19     | 1" PVC Bend                                                                                                                                                                                                     | Nos  |                                                                                            |
| 20     | 1" PVC Color                                                                                                                                                                                                    | Nos  |                                                                                            |
| 21     | 1" PVC Elbow                                                                                                                                                                                                    | Nos  |                                                                                            |
| 22     | Wooden Gutka                                                                                                                                                                                                    | Nos  |                                                                                            |
| 23     | 1" Saddle                                                                                                                                                                                                       | Nos  |                                                                                            |
| 24     | Battery Bank: 240VDC Battery bank consisting of 2V, 400Ah Gel Battery in rack system with 5 years warranty                                                                                                      | Nos  |                                                                                            |
| 25     | RCC foundation for construction of Pillar to create Shade/Parking Space for mounting Solar PV Module.                                                                                                           | Nos  |                                                                                            |

**1 PV MODULES:**

1.1. The PV modules must conform to the latest edition of any of the following IEC /BIS /IS Standards for PV module design qualification and type approval:

Crystalline Silicon Terrestrial PV Modules IEC 61215 / IS14286 or equivalent.

1.2. In addition, the modules must conform to IEC 61730 Part 1 or equivalent - requirements for construction & Part 2 - requirements for testing, for safety qualification or Equivalent IS (Under Dev.)

1.3. PV Modules to be used in a highly corrosive atmosphere must qualify Salt Mist corrosion Testing as per IEC 61701/ IS 61701 or equivalent.

1.4. IV Curve both soft copy & hard copy must be provided (Image / PDF)

## 2. BALANCE OF SYSTEM (BOS) ITEMS/COMPONENTS:

The BOS items / components of the SPV power plants/ systems must conform to the latest edition of IEC / Equivalent BIS Standards / MNRE specifications as specified below:

| Component name                                   | Applicable BIS /Equivalent IEC Standard or MNRE Specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inverter                                         | <b>IEC 61683,</b><br><b>IEC60068,</b><br><b>IEC62116</b><br><b>IEC 62040-III</b><br><b>Or equivalent which follows international standards</b>                                                                                                                                                                                                                                                                                                                                                                       |
| Battery                                          | <b>IEC 61427-1 or equivalent:</b> (Secondary cells and batteries for renewable energy storage - General requirements and methods of test - Part 1: Photovoltaic off-grid/Hybrid application).<br><b>IS 1651 or equivalent:</b> Stationary Cells and Batteries, Lead- acid type [with Tubular positive plates].<br><b>IS 13369 or equivalent:</b> Stationary lead-acid batteries [with tubular positive plates] in monobloc containers.                                                                               |
| Cables                                           | General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation).<br><b>BS EN 50618 or equivalent:</b> Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC cables.                                                                                                                                                                                                                   |
| Connectors                                       | Certified for applications with modules according to <b>IEC 61730 or equivalent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Array box                                        | Protection: <b>IP 65 or equivalent</b> enclosures with transparent covers with Surge Protection Device (SPD) class-I/II, DC Fuse with holder and string disconnecter.                                                                                                                                                                                                                                                                                                                                                |
| Supervisory control and data acquisition (SCADA) | Protocol defined for substation automation: <b>IEC 61850 or equivalent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Cable glands                                     | <b>IEC 62444:2010 or equivalent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Cable Lugs                                       | <b>IEC 1238 part 1 or equivalent:</b> Applies to electrical and mechanical properties of cable lugs                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Cable ties, ferrules                             | <b>IEC 62275, IEC 61300 or equivalent</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Cable Trays                                      | <b>IEC 1084-2 or equivalent:</b> Specifies requirements for cable trunking and ducting systems intended for mounting on walls or ceilings.                                                                                                                                                                                                                                                                                                                                                                           |
| Lightning arrestor                               | <b>IEC 62561 Series or equivalent (Chemical earthing):</b><br><b>IEC 62561-1 or equivalent:</b> Lightning protection system components (LPSC) –<br><b>Part 1:</b> Requirements for connection components<br><b>IEC 62561-2 or equivalent:</b> Lightning protection system components (LPSC) –<br><b>Part 2:</b> Requirements for conductors and earth electrodes<br><b>IEC 62561-7 or equivalent</b> Lightning protection system components (LPSC) –<br><b>Part 7:</b> Requirements for earthing enhancing compound. |
| Fuses                                            | <b>IS/ IEC 60947 (Part 1, 2 &amp; 3), EN 50521 or equivalent:</b> General safety requirements for connectors, switches, circuit breakers (AC/ DC).<br><b>IEC 60269-6 or equivalent:</b> Low-voltage fuses.                                                                                                                                                                                                                                                                                                           |

\* The Solar Panels have to be installed at a foundation of 10 feet above the ground level.

\* In Case if the charge controller is inbuilt in the inverter, no separate IEC 62093 test is required and must additionally conform to the relevant National/ International Electrical Safety Standards wherever applicable.

\* Various components of solar Power plants must additionally conform to the relevant National/International Electrical safety standards wherever applicable.

\* The minimum capacity of Hybrid Inverters (in KVA) should be kept at least equal to the total wattage of solar modules of the system (in kWp).

### **3. MODULE MOUNTING STRUCTURE**

Modules shall be mounted on non-corrosive support structures towards due south and at a suitable inclination to maximize annual energy output. Support structure design and foundation or fixation mounting arrangements should withstand horizontal wind speed up to 150 km/ hr. In snowbound areas the structure should be capable of withstanding loads of snow. Support structures shall be manufactured with steel angles & channels; spray galvanized to IS 1477 Part -1 or equivalent with thickness of 80 microns as per IS 5905. All fasteners shall be of Stainless steel - SS 304. The mounting structure shall be designed in such a way that it will occupy minimum space without sacrificing the output from SPV modules. Specially designed Aluminum structures may also be offered for better protection against the corrosion over the life of the plant. While making Civil & Mechanical design, due consideration will be given to all the dead loads, live loads, effects of wind load, Seismic factors for the site and suitable Design margins as per prevalent Indian standard and Industry practices.

### **4. DC DISTRIBUTION BOARD (DCDB)**

A DCDB shall be provided in between PCU and Solar Array. It shall have MCCB of Suitable rating for connection and disconnection of array section. It shall have meters for measuring Array voltage and Array current.

### **5. DOCUMENTATION**

The contractor shall provide various documents as per following:

A. Documents to Tendering Authority

i. Site specific documents to be submitted :

Photograph of all the equipment of Power Plant (hard copy & soft copy).

Summary details of the plant.

Certificate for Handing over the system to beneficiary.

Letter towards Warranty of the system.

Performance ratio test for satisfactory functioning of the system.

Contact details of various service centres.

User manual for solar power plant including details for operation and maintenance.

ii. Documents to be submitted for one time for every make of component

### **7. WARRANTY**

PV modules used in Solar PV Power Plant must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. The mechanical structures, electrical works including Power conditioners/ inverters/ charge controllers/ maximum power point tracker units/ distribution boards/ digital meters/ switchgear/ storage batteries, etc. and overall workmanship of the Solar SPV Power Plant/system must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 Years. The Warranty/ Guarantee Card to be supplied with the Solar PV Power Plant must contain the details of the system supplied. The bidder can provide additional information about the system.

### **8. OPERATION MANUAL**

An Operation, Instruction and Maintenance Manual, in English, should be provided with the Solar PV Power Plant and detail of Wiring and Connection Diagrams will also be provided with the manual.

### **9. OTHER FEATURES**

Only indigenously manufactured Solar PV Modules which fully conform to the MNRE specifications shall be procured. All the technical & other requirements as per provisions under JNNSM of MNRE must be fulfilled. Use of imported Solar PV Modules is not permitted.

### **10. CAUTION SIGNS**

The standard caution and danger boards or labels as per Indian Electricity Rules, the AC distribution box near the solar inverter and the building distribution board to which the AC output of the solar PV system is connected shall be provided with a noncorrosive caution label.



Solar PV Modules are designed to last 25 years or more. It is therefore essential that any system components and parts, including the mounting structures, cables, junction boxes, distribution boxes and other parts also have a life cycle of at least 25 years. Therefore, all works shall be undertaken with the highest level of quality and workmanship. During inspection Tendering Authority and its representatives will pay special attention to neatness of work execution and conformity with quality and safety norms. Non-compliant works will have to be redone at the cost of the Installer.

| Sl | Details regarding                                                                                        | Proposed by tenderer                                                                                       |
|----|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1  | Name of the manufacturer & Make of Solar Module                                                          |                                                                                                            |
| 4  | Specification of solar Module                                                                            | Wp                      Voc                      Isc<br>Vm                      Im                      FF |
| 5  | Type of Frame Structure (MS/SS)                                                                          |                                                                                                            |
| 6  | Enclosed supporting documents if any                                                                     | From Page No..... to.....                                                                                  |
| 7  | Details in case of any deviation from them technical specifications as specified in the tender document. |                                                                                                            |

| Sl. | Details regarding                                                                                       | Required Specification      | Proposed by tenderer |
|-----|---------------------------------------------------------------------------------------------------------|-----------------------------|----------------------|
| 1   | Name of the manufacturer & Make of Battery                                                              | EXIDE/ AMARON or equivalent |                      |
| 2   | Model Type                                                                                              | Solar Battery               |                      |
| 3   | Battery Specifications                                                                                  | 12v/2V Battery              |                      |
| 5   | Enclosed supporting documents if any                                                                    | From Page No..... to.....   |                      |
| 6   | Details in case of any deviation from the technical specifications as specified in the tender document. |                             |                      |

### 3. Solar Hybrid Inverter

| Technical Specification Required                                                           | Compliance<br>(Yes/No) | Remarks |
|--------------------------------------------------------------------------------------------|------------------------|---------|
| <b>15KW 3Phase</b>                                                                         |                        |         |
| <b>Make: Consul Neowatt Fuji Electric/Schneider/ Vertiv or Emerson/Delta or equivalent</b> |                        |         |
| Charger Type: PWM with MPPT (Inbuilt Charge Controller)                                    |                        |         |
| Inbuilt Isolation Transformer                                                              |                        |         |
| Switching Element: IGBT, 32BIT DSP Controller                                              |                        |         |
| Bi-Directional Inverter                                                                    |                        |         |
| Output Wave Form: Sine wave                                                                |                        |         |
| Audible Noise Voltage: 68 dBA                                                              |                        |         |
| Operating Temperature: 0-45 degree c                                                       |                        |         |
| Testing Standard Compliance: IEC 61683, 60068, 62116 or equivalent                         |                        |         |

Signature: .....

Name :.....

Address :.....

.....

.....

Mobile No.....

Date.....