



**NTPC Limited**  
 ( A Government of India Enterprise )  
**SSC - ER-I(Barh) Project**  
**P.O. BARH**  
**BARH PATNA**  
**Bihar- 803213, India**  
**Telephone No. : 06132-240011/12/13 Fax No. : 06132-240014**

**LST No : 10020385084**  
**CST No : 10020385181**  
**TIN No : 10020385084**

<b>NIT Number</b>	<b>:</b>	<b>9900210752/046/1028</b>
<b>NIT Date</b>	<b>:</b>	<b>20.10.2020</b>
<b>Technical Bid Opening Date</b>	<b>:</b>	<b>As per GepNIC site</b>
<b>Technical Bid Opening Time</b>	<b>:</b>	<b>16:00:00</b>
<b>EMD Amount in INR</b>	<b>:</b>	<b>Not Applicable</b>
<b>EMD Amount in US\$</b>	<b>:</b>	<b>Not Applicable</b>
<b>Bid Opening Date</b>	<b>:</b>	<b>As per GepNIC site</b>
<b>Bid Opening Time</b>	<b>:</b>	<b>16:00:00 Hrs</b>

**Subject: Supply, Erection and commissioning of Rooftop grid connected Solar PV (1x8KW) in NTPC Farakka Udita Ladies club building at FHC Township**

Dear Sir,

Online tender is invited on behalf of NTPC Limited for the subject work. Please find attached herewith tender documents and BOQ. You are requested to go through the tender documents & submit the bid online accordingly through website <https://eprocurementpc.nic.in>.

Tender shall be submitted online through <https://eprocurementpc.nic.in> website.

Thanking You,

For & behalf of NTPC Limited

Ratnakar Behera  
 DGM(CnM)

**NTPC Limited**

( A Government of India Enterprise )

NIT No.: 9900210752/046/1028

(Contracts Services)

(Bid Proposal Sheet)

**Name of Work:** Supply, erect and commission of Rooftop grid connected Solar PV (1x8KW) in NTPC Farakka Udita Ladies club building at FHC Township

<b>Delivery Address:</b> Farakka Super Thermal PowerStation PO NABARUN MURSHIDABAD West Bengal 742236 India 06132-240011/12/13 06132-240014							
SI No.	Code	Description	Unit	Quantity	Rate	Amount	Long Text
10		SUPPLY: SOLAR PV, ACCESSORIES, 8KW		#####	#####	#####	
10.10	FESPL00RM00 2	SOLAR PLNT (<->) DESIGN/SUPP/ERN	NO	1			Yes
10.10	<b>Rate In Words :</b>						
UOM Legends:- AU - Activity unit NO - Number							

(Signature of Buyer's Representative)

( Signature of Supplier/Contractor)

**NTPC Limited**

( A Government of India Enterprise )

**NIT No.: 9900210752/046/1028**

SI No.	Code	Description	Unit	Quantity	Rate	Amount	Long Text
20		ERECT AND COMMISSION IN ROOF TOP BLDGS		#####	#####	#####	
20.10	HRSAP00GN116	SOLAR APPLIANCE (<->) COMMNG	SET	1			Yes
20.10	<b>Rate In Words :</b>						
UOM Legends:- AU - Activity unit SET - SET							
GRAND TOTAL in Figure:							
GRAND TOTAL in Words:							

(Signature of Buyer's Representative)

( Signature of Supplier/Contractor)

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**NIT No.: 9900210752/046/1028****SCOPE OF WORK****00010: SUPPLY: SOLAR PV, ACCESSORIES, 8KW****SCOPE OF WORK:**

INTENT: Supply, Installation and commissioning of 8 kWp grid connected Solar PV Project on Rooftop of buildings of NTPC-Farakka township. Transportation charges also included.

Location # FHC township Udit ladies club building..

(A) FESPL00RM002: Supply of 01 nos. of 8KWp Solar PV system with accessories, cables etc :

8KW Solar PV system UNIT shall consist of the following equipments/components

- I. Solar PV crystalline modules # 1 lot
- II. Module Mounting Structures (MMS) and Civil Structures # 1 lot
- III. PCU, String Inverters and String Monitoring Units # 2 nos for 8KW ( each 8 KWp must be subdivided into 2 nos 4Kwp inverters)
- IV. Danger Boards at roof and Inverter Panels # 1 lot
- V. Data Loggers # 1 lot
- VI. Cables # 1 lot
- VII. Suitable metering arrangement 0.5 class # 1 lot
- VIII. Earthing Kits, GI strips, lightning protections etc # 1 lot
- IX. Conduits, pipes, lugs and accessories # 1 lot
- X. Suitable MCCB or LBS and ACDB's, Main switch with fuses (ABB, Hensel or any other reputed make) # 1 lot

Any other item required for successful execution and completion of the project is included in the scope of supply by the bidder.

THERE ARE 1 SUCH 8KW PV SYSTEMS WHICH ARE TO BE SUPPLIED BY THE BIDDER.

**Technical Specifications:****Solar Photovoltaic Module**

The Solar PV modules must conform to the latest edition of IEC 61215 / IS14286 for Crystalline Silicon Terrestrial PV Modules design qualification and type approval.

The capacity of each of the solar module shall not be less than 240 Wp and each inverter shall have identical Wp rated module. No negative tolerance from quoted power rating on solar module shall be allowed in any strings of the inverter.

Module should have visual distinct identification mark based on the measured output in a band of maximum 5 Wp and all string should be connected to identical Wp capacity module.

In addition, the modules must conform to IEC 61730 Part-1 - requirements for construction & Part 2 - requirements for testing for safety qualification and IEC-61701 for salt mist testing.

Provenness requirement: The offered Solar PV module design series as per type certificate must have been in successful operation for at least one six months as finalization of module supplier.

Each PV module used must have a Radio Frequency Identification Tag (RFID) capable of withstanding harsh environmental conditions carrying technical details of the Module

**MODULE MOUNTING STRUCTURE (MMS)**

Solar PV Module shall be suitably inclined to receive maximum insolation at the site. However, the overall layout of solar PV modules shall provide for minimum 1000 mm wide clear pathway all around for facilitating easy access and movement of maintenance personnel with equipments

Module Mounting Structures must be suitable to mount the Solar PV Modules on the roof top at the tilt angle.

The Module Mounting Structure support and fixation arrangement shall be designed in such a way that it does not damage or deteriorate the strength, durability and performance of the roof including water proofing carried out on the roof.

The bidder can also shall provide module mounting arrangement with self-standing holding-down blocks/skids. Type of mounting arrangement shall be selected depending on the load bearing capacity of roof and applicable wind load at the roof level.

In case offered support structure is of MS type then, the frames and the complete leg assemblies of the array structures shall be Hot Dip Galvanized. In case offered support structure is of Aluminum Alloy necessary protection shall be provided anodization. All fasteners including Nut & Bolts shall be of Stainless steel. Other hardware will have to be adequately protected against all climatic condition

Cables and Connectors

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The cables used in the system should be ISI marked PVC or XLPE insulated FRLS Copper / aluminum conductor. Cables of various sizes as per load requirement for connecting all the modules / arrays to Junction Boxes and from Junction Boxes to DC distribution box and from DC distribution box to inverter.

Cables used for connecting with the modules shall meet the requirements of EN-50618 or equivalent standard.

Suitable rigid conduits shall be provided for cables connecting Solar PV array with Inverter. All cable entry to and from Inverter must be able to prevent access of rodents, termites and other insects into the Inverter

The permissible voltage drop from the Solar PV Module to the Inverter shall not be more than 2.0 % of peak MPPT voltage of source

All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Relevant codes and operating manuals must be followed.

Extensive wiring and terminations (connection points) for all Solar PV components is needed along with electrical connection to grid injection point

String Inverter

String Inverter of minimum 2 nos should be provided to convert DC power produced by Solar PV modules to AC power. The String Inverter should be grid interactive and the output should be compatible with the grid frequency and voltage. Typical technical features of the PCU / String Inverter shall be as follows:

String Inverter shall be transformerless design and three phase having minimum euro efficiency of 96%. However in case the string inverter output doesnot matches the grid voltage, external transformer of equivalent rating has to be installed.

String Inverter may be selected in a way to keep string voltage within MPPT range under all temperature conditions from 10 deg to 50 deg ambient.

The String Inverter shall be suitable for parallel operation with Total Harmonics Distortion of current less than 4% at 50% load.

String shall be capable of operation at design ambient temperature of atleast 50 deg C without anyderation.

String Inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

Built-in meter at String Inverter and data logger to monitor plant performance to be provided. Customized solar monitoring solutions available with Inverter manufacturer shall be preferred

The PCU / String Inverters should comply with IEC-61727 or IEC-62116 or equivalent standard for grid connectivity.

The protection class of electronics components of string inverter should be IP 65 (for outdoor) and balance of system of string inverter shall be IP 54 (indoor). String Inverters should be tested from NABL/BIS accredited testing-calibration laboratories or MNRE approved test centre or international testing laboratories such as TUV, Intertek, UL etc.

Protection and metering

The system should be provided with all necessary protections like Earthing, Lightening & Surge and Grid Islanding in accordance with the latest codes & standards and best industry practices.

Each inverter to be isolated through MCB or SFU.

Metallic frame of all electrical equipment, solar modules shall be earthed by two separate and distinct connections to earthing system, each of 100% capacity.

Contractor has ensured that the module arrays are protected from direct lightning strokes. If required they have to install at least one Nos of Early streamer emission (ESE) or Franklin Rod based system for area more than .

All the feeder from the string inverters shall terminate to MCCB at the evacuation point. Protection shall comply as per CEA's "Technical standard for connectivity of the distributed generation resources", Regulation 2013.

Static energy meter of class 0.5 accuracy suitable for net metering to be provided at the point of coupling.

#### (20) HRSAP00GN116:ERECT AND COMMISSION OF ROOFTOP BUILDINGS:

Complete erection and commissioning, data aggregation, display/logging and integration of Solar PV with grid is in the scope of the bidder.

All materials, manpower, scaffolding materials, machinery tools and tackles, transportation & loading/unloading, packaging and unpackaging, safe storage etc. shall be provided by Contractor.

Scope shall cover all type of transportation of materials inside the working site and man power etc. required to execute and complete the work.

Suitable arrangement for metering of output from solar PV feeder.

Termination of the solar PV feeder at owners' LT switchgear panels.

Integration with the grid is in the scope of the bidder

In case of grid failure or low/ high voltage, Solar PV system shall be disconnected from the grid. Once the grid is energized / normalized, the Solar PV system shall again be automatically re-synchronized and load requirement would be met to the extent of availability of power.

The power evacuation voltage shall be at 415 V, 3-phase 4-wire system at all locations.

NTPC shall provide spare solar feeder of 3 phase 415 V at the nearest available plant MCC and the termination at the solar feeder lies in the scope of the bidder. The location of the solar feeder shall be decided during the detailed engineering.

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The system should be provided with all necessary protections like Earthing, Lightning & Surge and Grid Islanding in accordance with the latest codes & standards and best industry practices.  
Metallic frame of all electrical equipment shall be earthed by two separate and distinct connections to earthing system, each of 100% capacity

**Special terms and conditions**

- 1) The work under this contract has to be carried out in the townships of Farakka Super Thermal Power Station.
- 2) All the materials required for this job will be supplied by Agency.
- 3) All safety rules to be strictly adhered to; any violation of safety rule will call for severe penalty.
- 4) All safety precautions are to be taken by the contractor for his workforce.
- 5) The contractor has to apply for gate pass well in advance with all necessary documents like police verification ,certificates, copy of labor license, ESI, PF code etc., and collect the gate pass before commencement of scheduled jobs. ESI act shall be complied by contractor.
- 6) The contractor has to compile all statutory requirements like ESI,PF for the workers engaged etc.
- 7) Group insurance coverage as per workmen's compensation act with accident benefit is to be taken for the personnel engaged by the Agency.

**Payment terms:**

1. Supply portion: 80% payment within 30 days after receipt and acceptance of material at site. 10% after successful erection and commissioning. 10% after defect liability period which is 01 year after handing over to NTPC.
2. Erection and Commissioning: 90% of Retrofitting, installation & Commissioning charge will be released within 30 days after successful retrofitting ,installation, commissioning based on certification of EIC. 10% after defect liability period which is 01 year after handing over to NTPC. There is 1 Unit in all and after completion and handing over to NTPC and certification of EIC payment may be released accordingly.

Duration of contract: Total duration of contract is 3 months.

Defect liability period: 01 year after successful erection and commissioning and handing over to NTPC.

Warranty/Guarantee: The vendor should submit warranty/Guarantee certificate for a period of 12 months from the date of commissioning and handing over to NTPC.

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**SERVICE SPECIFICATION**  
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S.No.	Service Code	Service Text
Service Long Text		
10.10	FESPL00RM002	SOLAR PLNT (<->) DESIGN/SUPP/ERN
As Per SOW		

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**SERVICE SPECIFICATION**  
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S.No.	Service Code	Service Text
<b>Service Long Text</b>		
20.10	HRSAP00GN116	SOLAR APPLIANCE (<->) COMMNG
As Per SOW		