

**TENDER DOCUMENT  
FOR  
SUPPLY, INSTALLATION & COMMISSIONING  
OF  
15 kWp ONGRID HYBRID  
ROOF-TOP MOUNTED SOLAR PV POWER PLANT  
AND  
6 NOS. OF SOLAR STREET LIGHT**

TENDER NOTICE NO.: NP(E)-1/Purchase/2017/09/351.....Dated.  
Nalbari, the 22<sup>nd</sup> June, 2021

NAME OF TENDERER: NALBARI POLYTECHNIC



**NALBARI POLYTECHNIC,  
VILLAGE – CHANDKUCHI, BAHJANI MOUZA,  
NALBARI, ASSAM. PIN - 781334**

# **PART-I**

# **GENERAL DETAILS**



**GOVT. OF ASSAM**  
**OFFICE OF THE PRINCIPAL::NALBARI POLYTECHNIC**  
**CHANDKUCHI, BAHAJANI MOUZA,NALBARI :: ASSAM: PIN-781334**  
[EMAIL-nalbaripolytechnic@gmail.com](mailto:EMAIL-nalbaripolytechnic@gmail.com)

NIQ No. NP(E)-1/Purchase/2017/09/350.....Dated. Nalbari, the 22.06. 2021

Tenders are invited from all eligible manufacturers/ Supplier/ experienced contractors for Supply, Installation, Commissioning and AMC of On-Grid Hybrid Roof-Top Mounted Solar Power Plant (15 Kw) at Nalbari Polytechnic, Chandkuchi, Nalbari, and Supply, Installation and AMC of Solar Street Light with complete Pole Structure and all other relevant necessary equipment.

The detailed notice, eligibility criteria and tender document can be taken from the institute between 10:00 a.m. to 012:00 noon. till 12<sup>th</sup> July, 2021.

Corrigendum/Addendum if any to this would be loaded in our institute website.

For details log on to our website [www.nalbaripolytechnic.in](http://www.nalbaripolytechnic.in)

The undersigned reserves all the rights to reject any or all the tenders without assigning any reason.

Principal  
Nalbari Polytechnic  
Nalbari

## SUBMISSION OF TENDER

FROM :-

.....

To,

The Principal,  
Nalbari Polytechnic  
Nalbari

**Subject: Offer in response to Tender Notice No. NP(E)-1/Purchase/2017/09/351.....**

Dated. Nalbari, the 22.06. 2021

Sir,

we hereby submit our offer in full compliance with terms & conditions of the attached tender in Part-I (Technical Bid) & Part-II (Financial Bid).

(Signature of Tenderer)

(Seal)

### NOTICE INVITING TENDER

The Principal, Nalbari Polytechnic, Nalbari invites sealed tenders affixing non refundable court fee stamp of Rs. 8.25 (Rupees eight and paise twenty five) from reputed and resourceful Contractors having EPF/Sales tax/DVAT/PAN etc. for the under mentioned works in 3 (three) envelop system:

1	Tender Notice No.	NP(E)-1/Purchase/2017/09/350.....Dated. Nalbari, the 22.06. 2021
2	Particulars of the work	Supply, Installation & Commissioning of 15 kWp On-grid Hybrid Roof-top mounted Solar PV Power Plant and Supply, Installation and AMC of Solar Street Light with complete Pole Structure and all other relevant necessary equipment at NALBARI POLYTECHNIC
3	Estimated project cost	Rs. 20,00,000.00
4	Period of contract	Till the completion of all proposed works.
5	Cost of tender document	Rs.700.00 (inclusive tax)
6	Date and Time of Pre-Bid Meeting	Date: 07 <sup>th</sup> July, 2021, Time: 11.00 hrs.
7	Last date/ time of submission	14 <sup>th</sup> July, 2021 up to 12:00 noon
8	Amount of Earnest money 2% (1% only for the tenderer belonging to ST, SC, OBC & UGE) of the project value.	Rs. 40,000.00
9	Validity of offer for acceptance	3(three) Months from the date of opening of the Technical bid
10	Date and Time of opening of tender	14 <sup>th</sup> July, 2021at 01:15 p.m.
11	Place of opening of tender	Board Room of Nalbari Polytechnic

- Separate envelope(s) should be superscribed as “EMD”, “Technical Bid” and “Price Bid”.
- Tender document may be obtained from the office of the undersigned between 10.00 AM to 12.00 noon from 23<sup>rd</sup> June, 2021 to 12<sup>th</sup> July, 2021.
- The tender document can also be downloaded from our website [www.nalbaripolytechnic.in](http://www.nalbaripolytechnic.in) and the requisite fee shall be paid by demand draft in favour of **AICTE Special Scheme Nalbari Polytechnic** payable at SBI, Nalbari along with submission of tender in a separate envelope marked cost of tender form without which the tender submitted will not be entertained.
- Tender without requisite EMD & Tender fee shall be rejected out rightly.
- The date of opening of Price Bid will be intimated to the qualified agencies separately if not opened on the same day.
- The undersigned reserves all the rights to reject any or all the tenders without assigning any reason.
- The tender documents shall also be uploaded in Institute Portal.

Principal  
Nalbari Polytechnic  
Nalbari

## GENERAL PARTICULARS OF TENDERER

SI	Particulars	Details
1	Name of Tenderer/Firm	
2	Postal Address	
3	E-mail	
4	Telephone No.	
5	Name, designation & contact number of the representative of the tenderer to whom all references shall be made.	
6	Nature of the firm (Individual/ Partnership/Consortium/ Pvt. Ltd/Public Ltd. Co. /Public Sector etc.) Attach attested copy of Registration & Partnership deed/ Memorandum of Association.	
7	Amount and particulars of the earnest money deposited.	
8	Annual Turnover for last three years (Attach balance sheets from CA in this regard)	
9	Name and address of the Indian/foreign collaboration if any.	
10	GSTN Registration no.(Copies of Registration Certificates to be enclosed)	
11	Has the tenderer/firm ever been debarred by any institution for undertaking any work?	
12	Any other information attached by the tenderer (Details and Annexure / page no. where its enclosed)	

Tenderers are requested to give their full particulars and legal and financial status.

**(Signature of tenderer with Seal)**

## **DECLARATION BY THE TENDERER**

I/We.....  
(Hereinafter referred to as Tenderer) being desirous of tendering for the work, under this tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document do hereby declare that-

1. The tenderer is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document and accepts all risks, responsibilities and obligations directly or indirectly connected with the performance of the tender.
2. The tenderer is fully aware of all the relevant information for proper execution of the proposed work, with respect to the proposed place of works/ site, its local environment, approach road and connectivity etc. and is well acquainted with actual and other prevailing working conditions, availability of required materials and labour etc. at site.
3. The tenderer is capable of executing and completing the work as required in the tender and is financially solvent and sound to execute the tendered work. The tenderer is sufficiently experienced and competent to perform the contract to the satisfaction of Institution, IIT Guwahati and AICTE. The tenderer gives the assurance to execute the tendered work as per specifications, terms and conditions of the tender on award of work.
4. The tenderer has no collusion with other tenderers, any employee of or with any other person or firm in the preparation of the tender.
5. The tenderer has not been influenced by any statement or promises by The Institution or IIT Guwahati or AICTE or any of its employees but only by the tender document.
6. The tenderer is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
7. The tenderer has never been debarred from similar type of work by any Government undertaking/Department. (An undertaking on Stamp paper in this regard shall be submitted)
8. The tenderer accepts that the earnest money may be absolutely forfeited by The Institution if the tenderer fails to sign the contract or to undertake the work within stipulated time.
9. This offer shall remain valid for acceptance for 6 (Six) months from the proposed date of opening of the Technical Bid.
10. All the information and the statements submitted with the tender are true.

(Signature of Tenderer)

(Seal)

# **PART-2**

## **INSTRUCTIONS TO TENDERERS**



## SECTION 1

### INTRODUCTION

#### 1. ELIGIBLE TENDERERS

The tenderer shall provide sufficient documentary evidences to satisfy the following conditions that the tenderer:

- (a) Is an indigenous manufacturer/supplier of the Solar P.V. Module or Battery or PCU and experienced contractor in the field of Solar P.V. Power plant.
- (b) Has established a quality assurance system and organization designed to achieve high levels of equipment reliability in manufacturing of the Solar Systems.
- (c) Has adequate financial stability and status to meet the financial obligations pursuant to the scope of work. (The firm must have an annual turnover of minimum **25 Lacs** during the last two years.)
- (d) Has experience of Design, manufacturing, supply, installation and maintenance/after sale services preferably in the field of Off-Grid/ **On-Grid Hybrid** Solar PV Plants of cumulative **20 kW** capacities and **Solar Street Light Supply and Installation** in the **last three years**. The details must be submitted in the Performa given in the Technical Bid section of tender document with proof.
- (e) Has adequate field service setup **preferably in Assam and North East Region** to provide good after sale services including necessary repair and maintenance.
- (f) Has valid Test Certificate of the Solar PV Power Plant as specified and required in the Technical- Bid of this tender document.

The above stated requirements are compulsory to be fulfilled by the tenderer and Tendering Authority may also ask for any additional information as may be deemed necessary in public interest.

## SECTION 2

# THE TENDER DOCUMENT

### 2.1 CONTENT OF TENDER DOCUMENT

2.1.1 The tender procedure and contract terms are prescribed in the tender document. In addition to the invitation of tender, the tender document includes the various other documents as given.

2.1.2 The tenderer is expected to examine all instructions, terms and conditions, specifications, forms and formats etc as mentioned/ enclosed in the tender document. Failure to furnish all information required in the tender document or submission of a tender not substantially responsive to the tender document in every respect will be at the tenderer's risk and is likely to result in out-right rejection of the tender.

### 2.2 INFORMATION REQUIRED WITH THE PROPOSAL

2.2.1 The tender must clearly indicate the name of the manufacturer, the types and model & make of each principal item of equipment proposed to be supplied. The tender may also contain details of specifications and other comprehensive descriptive materials in support of technical specifications.

2.2.2 The above information may be provided by the tenderer in the form of separate sheets, specifications, catalogues etc.

2.2.3 Any tender not containing sufficient descriptive material to describe the proposed equipment may be treated as incomplete and hence may be rejected. Such descriptive materials and specifications submitted by the tenderer will be retained by Tendering Authority. Any deviations from these will not be permitted during the execution of the contract, without specific written permission of Tendering Authority.

### 2.3 CLARIFICATION OF TENDER DOCUMENT

2.3.1 Any prospective tenderer requiring any clarification on the tender document regarding various provisions/ requirements/ preparation/ submission of the tender, may contact Tendering Authority in writing by letter / email within one week (7 days) from the date of publication/up-loading of tender at Website. Queries received later shall not be entertained.

2.3.2 Verbal clarifications and information shall not be entertained in any way.

### 2.4 AMENDMENTS IN TENDER DOCUMENT

2.4.1 At any time prior to the due date for submission of the tender or even prior to the opening of the financial bid, Tendering Authority may for any reason, whether at its own initiative or as a result of a request for clarification/ suggestion by a prospective tenderer, amend the tender document by issuing a notice.

2.4.2 The amendments will be notified on the website at least 3 days before the proposed date of submission of the tender. Tendering Authority will bear no responsibility or liability arising out of non-receipt of the information in time or otherwise. If any amendment is required to be notified within 3 days of the proposed date of submission of the tender, the last date of submission shall be extended for a suitable period of time.

## SECTION 3

### PREPARATION OF TENDER

#### 3.1 LANGUAGE OF TENDER AND MEASURE

The tender prepared by the tenderer along with all the related documents shall be in English. Any printed literature furnished by the tenderer may be in another language so long as it is accompanied by an English translation of its pertinent passages. Unit measurements shall be in accordance with the International System (SI). All correspondence between the tenderer and Tendering Authority shall also be in English.

#### 3.2 EARNEST AND SECURITY MONEY

3.2.1 The tenderer shall furnish earnest money as mentioned in the 'Particulars of Tender' in the form of FDR/CDR/DD/ Bank Guarantee from any of the nationalized bank or payment online in an acceptable form, safeguarding the purchaser's interest in all respects pledged in favour of **AICTE Special Scheme Nalbari Polytechnic** as a part of his tender. Tenders without EMD shall be rejected by the Tendering Authority as being non-responsive. The No interest shall be paid by the Tendering Authority on the amount of earnest money deposit. **MSME (Micro, Small & Medium Enterprises)s are exempted for EMD subject to furnish of necessary documents. The bid security is normally to remain valid for a period of forty-five days beyond the final bid validity period.**

3.2.2 The earnest money may be forfeited: -

- a) If a tenderer withdraws his tender during the specified period of validity of offer.
- b) If the successful tenderer fails to sign the contract agreement within stipulated period.

3.2.3 The earnest money of the successful tenderer will be converted to security deposit and will be adjusted against the security money to be deposited. At this time, the tenderer shall have to deposit security money amounting to **10%** of the contract value in the form of FDR/CDR/DD/ Bank Guarantee from any of the nationalized bank or payment online in an acceptable form, safeguarding the purchaser's interest in all respects pledged in favour of **AICTE Special Scheme Nalbari Polytechnic**. No interest shall be paid by the Tendering Authority on the amount of security money deposit.

3.2.4 Tendering Authority may also decide to split the work between other tenderers who choose to execute the work on the lowest rates received in the tender. The earnest money of such selected tenderers shall also be adjusted against the security money to be deposited after signing the agreement and submission of **10%** security money by them. After receiving the consent to work on the lowest rates, the earnest money of such tenderers shall be forfeited if they fail to sign the contract agreement within stipulated period.

3.2.5 The earnest money of all other tenderers who do not accept the lowest rates shall be released after receiving their written intimation regarding not being interested.

#### 3.3 PERIOD OF VALIDITY OF TENDER

3.3.1 Validity of the offer should be **Six (06) months** from the proposed date of opening of the Technical bid. Tenders without this validity will be rejected.

3.3.2 In exceptional circumstances, Tendering Authority may solicit the consent of the tenderers to an extension of the period of validity of offer. The request and the response thereof shall be made in writing.

#### 3.4 FORMATS AND SIGNING OF TENDER

3.4.1 The tender must contain the name and places of business of the firm/person/persons participating in the tender and must be signed and sealed by the tenderer with his usual signature. The name and designation of all persons signing the tender document should be written below each signature. Tenders by a partnership firm must be furnished with the full name of all partners with a copy of partnership deed.

3.4.2 The original copy of the tender should be typed or written in indelible ink and must be signed with the legal name of the corporation/ company by the President/ Managing Director/ Secretary of the firm or a person duly authorized to bid. In case of an authorized person, the letter of authorization by written power-of-attorney should be enclosed with the technical bid of the tender. The person or persons signing the tender shall initial all pages of the tender document.

3.4.3 The tender shall contain no interlink actions, erasers or overwriting except as necessary to correct the errors made by the tenderer in the preparation of tender. The person or persons signing the tender shall also sign at all such corrections.

#### 3.5 PRICE AND CURRENCIES

The tenderer shall submit his rates in Indian Rupees only, on the format for Financial Bid attached to this tender document. The rates should include all applicable taxes, duties & surcharges.

## SECTION 4

### SUBMISSION OF TENDER

#### 4.1 GENERAL INFORMATION

4.1.1 The Tender document shall be submitted in 2 (Two) parts.

PART A: Technical Bid

PART B: Financial Bid

The Tenderer must furnish the Technical Bid along with all required documents in hard or spiral binding only. All the enclosures shall be duly listed giving page numbers. In the event of non-compliance of this instruction, the Tendering Authority reserves the right to cancel such tender.

4.1.2 The tender must be complete in all technical and commercial aspects and should contain requisite certificates, in the tender document.

4.1.3 The complete tender document submitted to the Tendering Authority by the tenderer after furnishing all the required information on relevant pages. Each page of the tender document should be signed & stamped. Tenders with any type of change or modification in any of the terms/ conditions of this document shall be rejected. If necessary, additional papers may be attached by the tenderer to furnish/ submit the required information.

4.1.4 Any term/condition proposed by the tenderer in his technical bid which is not in accordance with the terms and conditions of the tender document or any financial conditions, payment terms, rebates etc. mentioned in the financial bid shall be considered as a conditional tender and will make the tender invalid.

4.1.5 Tender cost, Earnest money & other certificate in original shall be received at least one hour before opening time of bid to the Tendering Authority.

#### 4.2 DEADLINE FOR SUBMISSION OF TENDER

Tenders must be received by the Tendering Authority till the date & time of submission as specified in the tender document.

## SECTION 5

# TENDER OPENING AND EVALUATION

### 5.1 OPENING OF TENDER

The procedure of opening of the tender shall be as under:

5.1.1 Tender shall be opened by Tendering Authority's representatives at the time and date mentioned in the '**Particulars of Tender**', in the presence of tenderers who choose to be present. The financial and technical suitability of offers will be examined by the Tendering Authority in detail. If required, clarifications regarding the suitability of the offers will be obtained.

5.1.2 "Financial bid" of only those tenderers shall be considered whose technical bid is found responsive, suitable and in accordance with the various requirements of the tender.

### 5.2 CLARIFICATIONS REGARDING THE SUBMITTED TENDERS

5.2.1 During the process of evaluation of the tender, the Tendering Authority may at its discretion ask the tenderer for a clarification of his tender. The request for clarification and the response shall be in writing.

5.2.2 Any query regarding any clarification required by Tendering Authority on the information submitted by the tenderer, must be replied by the tenderer within the following time schedule.

a) Email query should be replied by Email within 2 days.

b) Query by hard copy should be replied within 7 days.

## SECTION 6

# AWARD OF CONTRACT

### 6.1 EVALUATION CRITERION

The whole work shall be on Turnkey basis. The tender shall be finalized on the basis of both the Technical Bid and Price Bid offered by the tenderer.

### 6.2 NOTIFICATION OF AWARD

Prior to the expiry of validity period of offer, Tendering Authority will notify the successful tenderer that his tender has been accepted.

### 6.3 AWARD OF WORK CONTRACT

6.3.1 Before placement of supply orders, an agreement shall be signed between Tendering Authority and the successful tenderer. Complete work shall ordinarily be awarded to the lowest tenderer only if Their Technical Bid scores satisfactorily. The denial of the lowest bidder to undertake the whole work shall be treated as breach of contract and the Tendering Authority may forfeit the EMD/ Security amount submitted by him.

### 6.4 RIGHT TO VARY QUANTITIES

Tendering Authority may increase or decrease the quantity mentioned in the tender notice at the time of award of contract and to split the work among various tenderers without any change in price or other terms and conditions & without assigning any reason thereof.

### 6.5 RIGHT TO ACCEPT/REJECT ANY OR ALL TENDERS.

Tendering Authority reserves all the rights to reject any or all the tenders, accept any tender in total or in part.

### 6.6 EXPENSES OF AGREEMENT

The respective suppliers shall pay all the expenses of stamp duties and other requirements for signing the agreement with Tendering Authority.

**PART-3**  
**GENERAL CONDITIONS OF**  
**CONTRACT**



# GENERAL CONDITIONS OF CONTRACT

## 1. DEFINITIONS

In the deed of contract unless the context otherwise requires:-

1.1 **“Tendering Authority”** shall mean “Nalbari Polytechnic” and shall also include its successors in interest and assignees. The **‘Contractor’** shall mean the Firm/ Person (whose tender has been accepted by Tendering Authority) and shall include his legal representatives, successor in interest and assignees.

1.2 The agreement shall be for Supply, erection, testing and commissioning of On Grid Hybrid Roof-top Mounted Solar Power Plants (With battery bank) and Solar Street Light including Warranty & maintenance for 5 years at “NALBARI POLYTECHNIC, VILL.-CHANDKUCHI, BAHAJANI MOUZA, NALBARI, ASSAM, PIN-781334” and shall be valid till the completions of all related works.

1.3 The empanelment shall be for a period of one year from the date of signing of the agreement. However, the validity of rates may further be extended to a specified period of time on the same terms & conditions on the mutual consent of both the parties.

## 2. COMPLETION PERIOD

2.1 Under this agreement, The FDR/CR/TDR/ bank guarantee equivalent to **10%** of the work order value, plugged in favour of **“AICTE Special Scheme Nalbari Polytechnic”** shall have to be submitted by the contractor at the time of placement of work order.

2.2 The total work assigned to the contractor through a work order shall have to be completed within **60 days** from the date of work order. The work shall have to be completed within time and shall be binding on the contractor. In case of any urgency, the contractor may be asked to complete the work even earlier and the contractor will be bound to fulfil the requirements.

2.3 In case the contractor fails to execute the said work or related obligations within stipulated time, Tendering Authority will be at liberty to get the work executed from the open market at the risk and cost of the contractor, without calling any tender and without any notice to the contractor. Any additional cost incurred by Tendering Authority during such execution of the work shall be recovered from the contractor.

2.4 If the cost of executing the work as aforesaid shall exceed the balance payments due to the contractor and the contractor fails to make good the ‘additional cost’, Tendering Authority may recover it from the contractor's pending claims against any work in Tendering Authority or in any other lawful manner. All risks & responsibilities related to the execution of the said work and fulfilment of related obligations directly or indirectly connected with the performance of the contract shall be the sole responsibility of the contractor.

2.5 The calculation of aforesaid ‘additional cost’ will be finalized by the Tendering Authority at its sole discretion. The contractor shall have no right to challenge the mode or amount relating to calculation at any forum. For completion of the work through any other agency, in case some changes are required in terms and conditions of the contract; the contractor shall not have any right to challenge the decision of the Tendering Authority.

### 3. LIQUIDATED DAMAGES

If the contractor fails to perform the work within the time periods specified in the work orders or within the extended time period if any, Tendering Authority shall without prejudice to its other remedies under the contract, deduct from the contract price as liquidated damage, a sum equivalent to 1% of the price of the un-performed work/ services for each week of delay until actual completion of work, up to a maximum deduction of 10%. Once the maximum is reached, the Tendering Authority may consider termination of the contract.

### 4. PERFORMANCE SECURITY

The amount of the earnest money (FDR/CDR/TDR) against 5% performance security amount deposited at the time of placement of work order shall be forfeited in case of breach of any term or condition by the contractor. If required, the other balance payments may also be forfeited, depending on the liabilities on the part of the contractor.

### 5. FORCE MAJEURE

5.1 Notwithstanding the provisions of clauses contained in this deed; the contractor shall not be liable for forfeiture of its performance security, liquidated damages, termination for default, if he is unable to fulfil his obligation under this deed due to force majeure circumstances.

5.2 For the purpose of this clause, "Force majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by the Tendering Authority & his decision shall be final and binding on the contractor and all other concerned.

5.3 If a force majeure situation arises, the contractor shall notify Tendering Authority in writing promptly (at the most within 10 days from the date such situation arises). After examining the cases, the Tendering Authority shall decide and grant suitable addition time for the completion of the work.

5.4 For other justified cases also, not covered under force majeure conditions, the Tendering Authority may consider the request of the contractor and additional time for completion of work may be granted.

### 6. QUALITY, WARRANTY/ GUARANTEE AND ANNUAL MAINTENANCE

6.1 The contractor shall warrant the Solar PV Power Plant as per applicable standards of quality. Anything to be furnished shall be new, free from all defects and faults in material and workmanship. The manufacture shall be in accordance with the specified technical parameters and should be of the highest grade and consistent with established and generally accepted standards for material. It shall be in full conformity with the drawing or samples if any and shall operate properly if operable.

6.2 After erection of the Solar PV Power Plant at site, the contractor shall ensure satisfactory performance of the equipment for a period of time as specified in the scope of work.

6.3 The contractor shall rectify defects developed in the Systems within warranty/ operation/maintenance period promptly. In case the contractor does not rectify the defects

within 7 days of the receipt of complaint, the Tendering Authority may restore the System in working condition on contractor's expenses.

6.4 Frequent and unjustified delays in rectifying defects may lead to cancellation of the contract, recovery of losses and imposing of additional penalty. In such circumstances Tendering Authority shall have the full liberty to recover the losses/penalty from the contractor pending claims, EMD/ performance security deposit or in other law full manner. The amount of losses/penalty shall be decided by the Tendering Authority and will be binding on the contractor.

## 7. STANDARDS

The goods supplied and works executed under this contract shall conform to the standards mentioned in the technical specification and where no applicable standard is mentioned, the latest version of Indian Standard Institution or Bureau of Indian Specification shall be applicable.

## 8. INSPECTION AND TESTS

8.1 Tendering Authority or its duly authorized representatives shall have the right to inspect and /or to test the goods to confirm their quality according to the contract and shall have access to the contractor's works premises and the power to inspect and examine the materials and workmanship of the various components of Solar PV Power Plant at all reasonable times during their manufacture.

8.2 The contractor shall inform the Tendering Authority through a written notice regarding any material being ready for testing at least 7 days in advance. The conditions of contract and/or the technical specifications shall specify what inspections and tests shall be conducted by Tendering Authority. All the arrangements of necessary equipment and expenses for such tests shall be on the contractor's account excluding the expenses of the inspector.

8.3 Tendering Authority's Inspector, unless the witnessing of the tests is virtually waived off, will inspect and attend such test within 10 days from the date on which the equipment is notified as being ready for test /inspection.

8.4 Tendering Authority shall within 7 days, give written notice to the contractor, about any objection regarding the quality of the system. The contractor shall either make the necessary modifications to remove the cause of such objection or shall clarify the objections in writing if modifications are not necessary to comply with the contract.

8.5 After satisfactory testing of the systems during inspection, the Tendering Authority's Inspector shall issue a dispatch clearance for the supply of material at site.

8.6 The inspection by Tendering Authority and issue of dispatch instruction there on shall in no way limit the liabilities and responsibilities of the contractor in respect of the agreed and specified quality. Nothing in clause 8 shall in any way relieve the contractor from any warranty or other obligations under this contract.

8.7 In Case any time the system is not found in accordance with the required technical specifications, the work order(s) Shall be cancelled and all the payments made by Tendering Authority to the contractor shall be recovered. Such contractors shall also be blacklisted from participating in any tender in the Tendering Authority in future. MNRE and other State Nodal Agencies of MNRE shall also be informed for the necessary action against such contractors.

## 9. SPARE PARTS

The contractor shall make arrangements to maintain sufficient stock of essential spares and consumable spare parts to ensure proper maintenance of the system promptly.

## 10. PACKING FORWARDING

10.1 Contractors, wherever applicable shall properly pack and crate all materials in such a manner as to protect them from deterioration and damage during transportation. The contractor shall be responsible for all damage due to improper packing.

10.2 The contractor shall inform the Tendering Authority regarding the probable date of each shipment of materials for his works.

## 11. TRANSPORTATION

The contractor is required to deliver the goods at various locations as defined in the scope of work.

## 12. DEMURRAGE WHARFAGE, ETC

All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be on the account of the contractor.

## 13. INSURANCE

13.1 The goods supplied under the contract shall be fully insured against loss or damage incidental to manufacture or acquisition; transportation and the expenses shall be borne by the contractor.

13.2 The contractor shall arrange security & storage of their materials to avoid any theft or losses during execution of work. Tendering Authority will, in no case, shall be responsible for providing any security/storage for the materials & equipment lying at site during execution of work. Under the contract contractor shall be responsible for any loss or damage until the systems/ supplies are taken over.

## 14. LIABILITY FOR ACCIDENTS AND DAMAGES

During the Warranty, Operation & maintenance period, the contractor shall assume all responsibilities for direct damages covering all types of accident, injury or property damage caused by manufacturing defects or faulty installation on the systems.

## 15. DUTIES AND TAXES

The rates/ prices mentioned in the price-schedule include all applicable taxes, duties & surcharges. No additional payments shall be made by Tendering Authority on this account.

## 16. PATENT RIGHT AND ROYALTIES:

The contractor shall indemnify Tendering Authority against all third-party claims of infringement of patent, royalties, trademark or industrial design rights arising from use of the goods supplied/ installed by the contractor or any part thereof.

## 17. RIGHT TO VARY QUANTITIES

Tendering Authority reserves all the rights to increase or decrease the quantity of goods mentioned in the contract, at the time of placement of orders without any change in price or other terms and conditions.

## 18. LOCAL CONDITIONS

18.1 It will be imperative on contractors to have full information of all local conditions and factors which may have any effect on the execution of the works. The contractor shall be deemed to have collected all the relevant information regarding the proposed place of works/ site, its local environment, approach road and connectivity etc. and be well acquainted with actual working and other prevailing conditions.

18.2 If required, the contractor should pre-visit the site before starting the work. Tendering Authority shall not entertain any request of contractors for clarifications related to such local conditions and shall bear no responsibility in this regard.

## 19. TOOLS & TACKLES

The contractor shall provide all necessary tools & tackles for proper execution of work and operation/ maintenance of systems after installation. Tendering Authority shall in no way, be responsible for supply of any tools & tackles.

## 20. TERMINATION FOR DEFAULT

Tendering Authority without prejudice to any other remedy for breach of contract, by written notice of default sent to the contractor, may terminate the contract in whole or in part:

20.1 If the contractor fails to deliver the Services within the allocated time period(s).

20.2 If the contractor fails to perform any other obligation(s) under the contract. However, in the event of termination of the contract in part, the contractor shall continue performance of the contract to the extent not terminated.

## 21. TERMINATION FOR INSOLVENCY

Tendering Authority may at any time terminate the contract by giving written notice to the contractor without compensation to the contractor if he becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Tendering Authority.

## 22. TERMINATION FOR CONVENIENCE

Tendering Authority may vide a written notice sent to the supplier; terminate the contract, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the purchaser's convenience in the interest of Tendering Authority.

## 23. COMPLETION OF WORK

On completion of the work, the contractor shall submit 5 sets of "As Executed Report" to the Tendering Authority which will include photographs, drawings and as executed reports of various systems containing details of installation from the point of view of future maintenance of the installed systems. This report must also contain all Technical Details, Detailed Circuit Diagram of the Electronic/ Electrical components of all the systems.

## 24. OTHER CONDITIONS

24.1 The contractor shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party without the prior consent of the Tendering Authority in writing.

24.2 Tendering Authority may at any time either stop the work all together or reduce or cut it down by sending notice in writing to the contractor. If the work is stopped all together, the contractor will only be paid for work done and expenses distinctly incurred by him as on preparation or the execution of the work up to the date on which such notice is received by him. The decision of the Tendering Authority regarding assessment of such expenses shall be final and binding on the contractor. If the work is cut down, the contractor will not be paid any compensation whatsoever for the loss of profit which he might have made if he had been allowed to complete all the work awarded to him.

24.3 Fulfilment of various requirements not particularly mentioned in the specifications or drawings but necessary for satisfactory and proper completion of the work shall be the contractor's responsibility within the prices offered by him. But additional works beyond the scope and essence of this contract shall be carried out by the contractor as extra items. For such works the rates shall be decided by Tendering Authority and shall be binding on the contractor.

24.4 Work carried out without Tendering Authority's approval shall not be accepted and Tendering Authority shall have rights to get it removed and to recover the cost so incurred from the contractor.

24.5 The contractor shall not display the photographs of the work and not take advantage through publicity of the work without written permission of the Tendering Authority.

24.6 The contractor shall not make any other use of any of the documents or information of this contract, except for the purposes of performing the contract.

24.7 Tendering Authority will not be bound by any Power of Attorney granted/ issued by the contractor or by any change in the composition of the firm made during or subsequent to the execution of the contract. However, recognition of such Power of Attorney and change (if any) may be given by the Tendering Authority after obtaining proper legal advice, the cost of which will be chargeable to the contractor concerned.

## 25. STATUTORY ACTS

25.1 All legal formalities/clearances are to be obtained by the contractor regarding the execution of the said work.

25.2 In respect of all labour directly or indirectly employed on the work by the contractor, the contractor shall comply with all the provisions of hiring the contract labour and rules of State/ Central Government or any other authority framed from time to time. The rules and other statutory obligations in this regard will be deemed to be the part of this contract.

25.3 The contractor shall comply with all the Acts & rules and regulations, laws and by-laws framed by State/ Central Government/ Organization in whose premises the work has to be done. Tendering Authority shall have no liabilities in this regard.

## 26. APPLICABLE LAW

The contract shall only be interpreted under Indian laws. The Tendering Authority shall have exclusive jurisdiction in all matters arising under this contract.

## 27. RESOLUTION OF DISPUTES / ARBITRATION

27.1 The purchaser and the supplier shall make every effort to resolve any disagreement or dispute arising between them under or in connection with the contract, amicably by direct informal negotiation.

27.2 If after thirty (30) days from the commencement of such informal negotiations, the purchasers and the supplier are unable to resolve a contract dispute amicably; the matter may be referred in writing by either party to the sole arbitration of the Tendering Authority or to a person nominated by the authority.

27.3 Subject to aforesaid, the arbitration and conciliation Act 1996 and rules made thereafter or any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceedings. Under this cause, the 'Award' given by the Arbitrator shall be binding on all the parties. The contractor shall not have the right to challenge the Award.

27.4 Work under the contract shall if reasonably possible, continue during the arbitration proceedings and dues if any, payable by Tendering Authority to the contractor with respect to the work not in dispute shall not ordinarily be withheld on account of such proceedings unless it becomes necessary to withhold the same.

27.5 The proceedings, if any, in relation to the arbitration referred to above, shall be held by the arbitrator aforesaid at **Nalbari Polytechnic, Nalbari** and courts at **Nalbari** shall have jurisdiction to entertain and decide the matter involved.

27.6 No decision given by the officer in charge of the work under this contract, in accordance with the forgoing provisions shall disqualify him as being called as a witness or giving evidence before the arbitrators on any matter whatsoever relevant to the dispute of difference referred to the arbitrator as aforesaid.

27.7 In case during the Arbitration proceedings the appointed Arbitrator becomes unable, due to any reason whatsoever, to continue with the proceedings or making of Award; it will be prerogative of the Tendering Authority to nominate any other person as sole Arbitrator instead thereof. The contractor shall not raise any objection to such an appointment having been made by the Tendering Authority.

27.8 The High court of **Assam** at **Guwahati** or Courts subordinate at **Nalbari** to it as the case may be, shall alone have jurisdictions to the exclusion of all other courts.

## 28. NOTICES

28.1 Any notice to be given by one party to the other, pursuant to the contract shall be sent in writing/email. A notice shall be effective when delivered or from the effective date mentioned in the notice, whichever is later.

28.2 Notices, statements and other communications sent by the Tendering Authority to the contractor at his specified addresses through registered post/ email/ fax shall be deemed to be delivered to the contractor.

## 29. APPLICATION

These general conditions shall apply to the extent that provisions in other parts of the contract do not supersede them.

### 30. PAYMENT TERMS

Payment shall be made as following: -

30.1 70% amount of the work value shall be paid after installation and commissioning of the Solar Power Plant at site and confirming to technical specification as specified

30.2 Submission of various documents as mentioned in clause no 5B i) & ii) of “general technical Specification” shall be mandatory for release of payment specified in clause no. 30.1

30.3 10% amount of work value shall be released after 3 months from the date of installation and commissioning of solar PV Power plant at site subject to successfully passing the performance ratio test. It will be mandatory to submit the following documents along with the submission of bills for 10% payment against clause no. 30.

i) Proof of submission of documents to applicant as per clause 5A, of general Technical Specifications.

ii) Submission of site-specific documents as per clause 5 B, iii) of general Technical Specifications.

30.4 Out of Balance 20% of the contract value, 10% shall be treated as security deposit against satisfactory performance of the Solar Power Plant during the 5 Years Warranty & 10% for AMC period. On satisfactory performance after each AMC service 2% amount may be released on mutual consensus. However, these payment may be released subject to the release of remaining 20% fund from AICTE.

#### **Note**

1. No price escalation due to any reason (including any change in the applicable taxes, duties, surcharge etc.) shall be considered by Tendering Authority during the validity/ extended validity of the contract agreement



# **PART-4**

## **GENERAL TECHNICAL SPECIFICATIONS**

# GENERAL TECHNICAL SPECIFICATIONS

## 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
- Thin film Terrestrial PV Modules IEC 61646
- Concentrator PV Modules & Assemblies IEC 62108

1.2. In addition, the modules must conform to IEC 61730 Part 1- 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.

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

### 1.5. IDENTIFICATION AND TRACEABILITY

Each PV modules must use a RF identification tag (RFID), which must contain the following information:

- i. Name of the manufacturer of PV Module.
- ii. Name of the Manufacturer of solar cells.
- iii. Month and year of the manufacture (separately for solar cells and modules).
- iv. Country of origin (separately for solar cells and modules).
- v. I-V curve for the module.
- vi. Peak Wattage,  $I_m$ ,  $V_m$  and FF for the module.
- vii. Unique Serial No and Model No of the module.
- viii. Date and year of the obtaining IEC PV module qualification certificate.
- ix. Name of the test lab issuing IEC certificate.
- x. Other relevant information on traceability of solar cells and modules as per ISO 9000 series.

Until March 2013, the RFID can be inside or outside the module laminate but must be able to withstand harsh environmental conditions. However, from 1st April 2013 onwards; RFID can be inside the module laminate.

## 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:

<b>Component name</b>	<b>Applicable BIS /Equivalent IEC Standard or MNRE Specifications</b>
Inverter	<p><b>IEC 62109-1,2:</b> Safety of power converters for use in photovoltaic power systems -</p> <p><b>Part 1:</b> General requirements, and Safety of power converters for use in photovoltaic power systems.</p> <p><b>Part 2:</b> Particular requirements for inverters. Safety compliance (Protection degree <b>IP 65</b> for outdoor mounting, <b>IP 54</b> for indoor mounting).</p> <p><b>IEC/IS 61683:</b> Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% &amp; 90-100% Loading Conditions).</p> <p><b>IEC 60068-2 (1, 2, 14, 30 &amp; 64):</b> Environmental Testing of PV System – Power Conditioners and Inverters.</p>
Battery	<p><b>IEC 61427-1:</b> (Secondary cells and batteries for renewable energy storage - General requirements and methods of test - Part 1: Photovoltaic off-grid/Hybrid application).</p> <p><b>IS 1651:</b> Stationary Cells and Batteries, Lead- acid type [with Tubular positive plates].</p> <p><b>IS 13369:</b> Stationary lead-acid batteries [with tubular positive plates] in monobloc containers.</p>
Cables	<p><b>IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1 &amp; 2):</b></p> <p>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).</p> <p><b>BS EN 50618:</b> Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC cables.</p>

Connectors	Certified for applications with modules according to <b>IEC 61730</b>
Array box	Protection: <b>IP 65</b> enclosures with transparent covers with Surge Protection Device (SPD) class-I/II, DC Fuse with holder and string disconnecter.
Weather monitoring system	<b>IS/IEC 61724 (1998):</b> Photovoltaic System Performance Monitoring - Guidelines for Measurement, Data exchange and Analysis
Supervisory control and data acquisition (SCADA)	Protocol defined for substation automation: <b>IEC 61850</b>
Cable glands	<b>IEC 62444:2010</b>
Cable Lugs	<b>IEC 1238 part 1:</b> Applies to electrical and mechanical properties of cable lugs
Cable ties, ferrules	<b>IEC 62275, IEC 61300</b>
Cable Trays	<b>IEC 1084-2:</b> Specifies requirements for cable trunking and ducting systems intended for mounting on walls or ceilings.
Lightning arrester	<p><b>IEC 62561 Series (Chemical earthing):</b></p> <p><b>IEC 62561-1:</b> Lightning protection system components (LPSC) – <b>Part 1:</b> Requirements for connection components</p> <p><b>IEC 62561-2:</b> Lightning protection system components (LPSC) – <b>Part 2:</b> Requirements for conductors and earth electrodes</p> <p><b>IEC 62561-7</b> Lightning protection system components (LPSC) – <b>Part 7:</b> Requirements for earthing enhancing compound.</p>
Fuses	<p><b>IS/ IEC 60947 (Part 1, 2 &amp; 3), EN 50521:</b> General safety requirements for connectors, switches, circuit breakers (AC/ DC).</p> <p><b>IEC 60269-6:</b> Low-voltage fuses.</p>

\* 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 PCU/ 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 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 Aluminium 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 (with bill for payment against clause no. 30.1 of payment terms).

- Photograph of all the equipment of Power Plant (hard copy & soft copy).
- Summary details of the plant (annexure-I) .
- Joint inspection report from district level officer of..... (annexure-II).
- certificate for Handing over the system to beneficiary (annexure-III).
- Letter towards Warranty of the system (annexure-IV).
- performance ratio test for satisfactory functioning of the system (annexure-V).
- contact details of various service centres.
- User manual for solar power plant including details for operation and maintenance.
- Routing diagram of cables and wires.

ii. Documents to be submitted for one time for every make of component (with bill for payment against clause no. 30.1 of payment terms).

- a) Undertaking from Solar PV Panel Supplier for modules being indigenous.
- b) IEC certificate module-IEC 61215/61646/62108.
- c) IEC certificate for module safety qualification -IEC 61730.
- d) Test certificate for Inverter/PCU-IEC 61683 and IEC 60068-2.
- e) IS 2062 certificate for module Mounting frames and leg assemblies.
- f) Stand report for mounting structure to withstand wind load of 150 Kmph.
- g) Cable certificate-IEC 60227/IEC60502.
- h) Switch, Circuit breakers, connectors certificate-IEC 60947 part I, II, III/ IS 60947 part I, II, III/EN 5052.
- i) Junction boxes certificate confirming to IP 65/21 as per IEC 529.
- j) Lighting arrester certificate – IS 3043-1986.
- k) Surge protection certificate – IS 60364-5-53.
- l) Layout of solar modules.
- m) All other drawings/ sketch/ line diagram.

## 6. AUTHORIZED TESTING LABORATORIES/CENTERS

Test certificates / reports can be from any of the NABL/ IEC accredited testing laboratories or MNRE approved test centres.

## 7. MAIN FEATURES & OPERATING MODE

- Clean regulated power to the load.
- “No-break” transfers from renewable energy to battery and battery to grid.
- MPPT solar charge regulator.
- The PCU shall operate with solar priority for feeding load and charging batteries.
- Stored power from batteries shall be the second priority to feed the load.
- Grid power shall be the last priority to feed the load. During such time, the PCU shall feed the load directly through the grid and shall also charge the batteries. Battery Charging through Grid shall be taken up only when batteries are undercharged and solar is not available or insufficient.

## 8. 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, as given in the Annexure-IV. The tenderer can provide additional information about the system.

## 9. 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.

## 10. 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.

## 11. 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.

## 12. QUALITY AND WORKMANSHIP

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.

## 13. OTHER REQUIREMENTS

The other referred Technical specifications have been prescribed by MNRE shall have to be maintained accordingly. Any supplies which have not been specifically mentioned in this contract but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the contractor without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV Plant.

# **PART-5**

## **SCOPE OF WORK**



## SCOPE OF WORK

**The work shall include Design, Fabrication, Manufacturing, Supply, Installation, Testing & Commissioning of On-grid Hybrid Solar power plants (along with civil works required for Battery Room) and Solar Street Light including warranty & maintenance for 5 years at Chandkuchi, Nalbari.**

- A. All works required for proper installation of Solar PV Power Plant including necessary civil and welding works for mounting structures of solar module, shall be done by the contractor. The entire work shall be performed on turnkey basis. All the works related to the proper installation and functioning of the system shall have to be carried out by the contractor in the prices offered by him.
- B. All necessary electrical wiring from electrical distribution box up to PCU of Solar PV Power Plant and back from PCU to distribution box shall have to be done by the contractor including supply of all required materials.
- C. The generated electricity from the power plant will be utilized to energize the dedicated load of the building. In case separate additional electric cable/wiring etc is required for connecting the dedicated load with solar power plant, it shall have to be supplied and laid down by the contractor as per requirement at the site and shall be covered in the scope of work. The wiring shall have to be done in concealed conduits.
- D. The proposed dedicated load to be energized through Solar Power plant shall have to be decided as per the storage capacity of solar Power Plant in consultation with the Tendering Authority.
- E. Necessary arrangements for storage of batteries of solar PV Power plant as per requirements for their proper protection shall have to be done by the contractor. Appropriate cabinets for battery banks, with the provision of racks for batteries should also be done if required, civil works required for battery rooms of the adequate size with proper ventilation shall have to be prepared according to the direction of the Tendering Authority.
- F. After completion of the proposed works, clearances of all temporary works/ materials shall be the sole responsibility of the contractor and this shall be removed immediately after the requirement of such temporary work is completed.
- G. General Aesthetics & cleanliness in regard to the installation of various systems shall have to be maintained in accordance with the aesthetics of the site.
- H. Arrangement of proper earthing mechanism and lightning arresters should be done at site as per the requirements of the solar power plant.
- I. The contractor shall supply/install the necessary tools/instruments required for proper operation of the plant and measure PV array Voltage, current, Power and solar radiation.

J. Supply and Installation of Display board of '3ft X 2ft' size showing all technical information of SPV plant shall be done by the contractor. The matter written on these boards shall be as per annexure-I.

K. The complete Solar PV Power Plant shall be handed over by the contractor to the beneficiary on the format at annexure-III

L. The complete Solar PV Power Plant shall be warranted and maintained by the contractor against any manufacturing/ design/ installation defects for a minimum period of 5 years from the date of installation.

M. Warranty, operation and Maintenance period will include rectification/ replacements of all the defective and consumable components/ items including batteries. However, all the non-functional parts/ materials/ items replaced during the warranty, operation and maintenance period shall be the property of the contractor.

N. After commissioning of the plant, the contractor will conduct one on-site training of the purchaser's /user's personnel regarding assembly, start-up, operation, maintenance and repairs of the Solar PV Power Plant.

O. During the 5 year's warranty, operation & maintenance period, the contractor Will have to make all necessary arrangements for satisfactory operation, maintenance and performance of the Power Plant.

P. Rectification of all the defects developed in the Solar PV Power Plant during warranty, and maintenance period shall have to be done by the contractor promptly, at the most within 10 days from the date of receipt of complaint.

Q. During Warranty, operation and Maintenance period, the contractor shall have to submit an annual performance & functionality report.

R. For proper functioning and maintenance of Solar Power Plant, contractors shall have to appoint at least one representative who has proper knowledge about the functioning of the solar plant for technical assistance on behalf of the contractor with whom the Tendering Authority can contact during the contract or warranty period.

During the warranty, operation & maintenance period, the Tendering Authority will have all rights to cross check the performance of the Solar PV Power Plant, the Tendering Authority may randomly pick up its components to get them tested at Govt. / MNRE approved any test centre. If during such tests any part is not found as per the specified technical parameters, the Tendering Authority will take the necessary action to recover the losses and to black list the firm and the same may be communicated to MNRE and other nodal agencies. The decision of the Tendering Authority in this regard will be final and binding on the contractor.

# **PART-6**

## **COST ESTIMATE**

## Cost Estimate of the Solar project

**Name of the institute** : Nalbari Poytechnic  
**Address** : Vill. Chandkuchi, Bahjani Mouza, Dist. Nalbari, Assam, PIN: 781334

Area required for installation (m <sup>2</sup> )	:	160 sq. meter		
Type (Ground mounted/rooftop)	:	Rooftop		
1. Specific location with coordinates	:	i. State : Assam ii. City : Nalbari iii. Specific location : Vill. – Chandkuchi iv. Mouza: :Bahjani v. Latitude : 26.3989° N vi. Longitude : 91.4185° E		
2. Total annual solar irradiance in the location (kWh/m <sup>2</sup> )	:	Radiation level at Nalbari is in the level of 4.5 to 5.0 kWh / Square meter		
3. Capacity of the proposed SPV plant (kW <sub>p</sub> )	:	15kWp (Hybrid)		
4. No. of modules	:		Per unit cost (INR):	Total cost (INR):
5. PV Module type (Mono/Multi)	:	Polycrystalline		
<i>PV Module parameters</i>				
Maximum Power Rating (W)	:			
Rated Current (A)	:			
Rated Voltage (V)	:			
Short Circuit Current (A)	:			
Open Circuit Voltage (V)	:			
Electrical conversion efficiency (%)	:			
6. No. Inverter/ Power Conditioning Unit (PCU)	:	1 No.	Per unit cost (INR):	Total cost (INR):
<i>Inverter/ PCU specifications</i>				
Rated Capacity	:	15KW		
Input Voltage	:			
Output Voltage Range	:			
Frequency	:			
Efficiency	:			
7. Type of battery	:			

8. No. of battery required	:		Per unit cost (INR):	Total cost (INR):
Rated capacity (Ah) and Voltage (V)	:			
9. Mounting requirement (Specify material)	:		Per unit cost (INR):	Total cost (INR):
10. Cables requirement (in m) a. DC cables b. AC cables c. No. of MC4 connector	:		Per unit cost (INR): a. b. c.	Total cost (INR):
11. Earthing, earthing mat and lightning arrester (Type and material)	:			Total cost (INR):
12. No. of Array Junction Box	:	No.	Per unit cost (INR):	Total cost (INR):
13. No. of DCDB	:	No.	Per unit cost (INR):	Total cost (INR):
14. No. of ACDB	:	No.	Per unit cost (INR):	Total cost (INR):
15. Supervisory control and data acquisition (SCADA), if any	:		Per unit cost (INR):	Total cost (INR):
16. Cable trays, ties, lugs, ferrules, glands etc.	:			Total cost (INR):
17. Transformer with specification, if any	:		Per unit cost (INR):	Total cost (INR):
18. Net-meter, if any	:		Per unit cost (INR):	Total cost (INR):
19. No of street light with pole structure	:	6 Nos.	Per unit cost (INR):	Total cost (INR):
20. Any other component not covered above	:		Per unit cost (INR):	Total cost (INR):
21. Civil construction for battery house	:	As per recommendation from the Tenderer		Total cost (INR):
22. Miscellaneous, if any	:			Total cost (INR):
<b>GRAND TOTAL (in Words): Rupees Twenty Lacs Only</b>				<b>: INR 2000000.00</b>

**PART-7**  
**TECHNICAL BID**

# TECHNICAL BID

Tender No .....

For Solar PV Power Plant of ..... kW

## 1. Solar PV Modules

Sl	Details regarding	Proposed by tenderer
1	Name of the manufacturer & Make of Solar Module	
2	Type of Solar Cell	
3	Make of Solar cell	
4	Specification of solar Module	Wp                  Voc                  Isc 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.	

## 2. Battery

Sl.	Details regarding	Proposed by tenderer
1	Name of the manufacturer & Make of Battery	
2	Model Type	
3	Battery Specifications	
4	Dimensions of Battery (size)	
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. BoS Items/Component

Sl	Details regarding	Proposed by tenderer
1	Name of the manufacturer & Make of PCU/ Inverter	
2	Name of the manufacturer & Make of Charge Controller/ MPPT Units	
3	Name of the manufacturer & Make of Switches/Circuit Breaker/ Connectors	
4	Name of the manufacturer & Make of Cables	
5	Name of the manufacturer & Make of array boxes	
6	Name of the manufacturer & Make of Lightning Arrestor	
7	Name of the manufacturer & Make of fuses	
8	Enclosed supporting documents if any	From Page No..... to.....
9	Details in case of any deviation from the technical specifications as specified in the tender document.	

(Attach additional sheets if required)

**(Signature of tenderer With Seal)**

## DETAILS OF EXPERIENCE

Please fill in information about the Solar PV Systems installed in the last three years by the Tenderer.

Details	Year		
	2017-18	2018-19	2019-20
Total Capacity of PV Installed (KW)			
Total Contract Amount			

(Account Details should be submitted with CA certification )

**(Signature of Tenderer)**

**(Seal)**

**NOTE: Above details without copies of work orders, completion certificates, satisfactory performance reports from the users and CA certificate will not be considered.**

**DETAILS OF THE PLANT****HYBRID SOLAR POWER PLANT at NALBARI POLYTECHNIC, VILLAGE -  
CHANDKUCHI, BAHJANI MOUZA, NALBARI****Owner of plant- NALBARI POLYTECHNIC**

Sl	Particulars	Details
1	Plant capacity	kWp
2	Nos of solar Modules	Nos.
3	Capacity of module	Wp each
4	Array combination of solar Modules	in series in parallel
5	Make of solar modules	
6	Capacity of inverters	KVA
7	Nos. of Inverter	Nos.
8	Make of Inverter	
9	Nos. of battery	Nos.
10	Total Battery Capacity	VAH
11	Make of Battery	
12	Installed by	

**FOR STREET LIGHT**

<b>Sl</b>	<b>Particulars</b>	<b>Details</b>
<b>1</b>	Nos. of street light with complete structure	Nos.
<b>2</b>	No of Modules in each street light	Nos.
<b>3</b>	Capacity of each module	Wp
<b>4</b>	Make of solar modules	
<b>5</b>	Battery capacity	VAH
<b>6</b>	Make of Battery	
<b>7</b>	LED light power	W
<b>8</b>	Make of Light	
<b>9</b>	Installed By	

**Signature of authorized signatory of firm****Seal****Name & Designation: -****Date: -**

**CERTIFICATE OF COMMISSIONING FOR SOLAR PV POWER PLANT**

Sl	Particulars	Details
1	Name of beneficiary (to whom plant has been allotted)	
2.	Project site/location address (with pin)	
3.	Contact no of beneficiary	
4.	Capacity of Solar Power Plant in kW	

**Declaration by beneficiary: -**

This is to certify that the above referred **Hybrid** Solar Power Plant **& Street light** has been installed and is working satisfactorily. We have been trained regarding operation of this Pant.

**Signature of Beneficiary: -**

Name: -

Date: -

Sl	Particulars	Details
1	<b>Specification of solar modules</b> a Type of modules (Mono/Poly/Other) b Make of modules and year of manufacturing c Wattage and no of modules d Indigenous modules or imported modules	
2.	<b>Specification of Inverter</b> a. Make b. Rating (KVA)	

3.	<b>Batteries</b> a. Make of Battery & year of manufacturing b. Type of Tubular Lead Acid/VRLA/GEL c. Number of batteries d. Rated AH capacity at C/10 e. Rate Voltage at C/10	
4.	Lightning arrester installed (yes/No)	
5.	Date of commissioning of solar power plant	

**Joint inspection report by the Tendering Authority official and installation Firm: -**

Certified that the above-mentioned solar PV Power plant installed by.....  
.....  
has been checked and found to be in accordance with the agreement and is working satisfactorily.

**Sign of the Tendering Authority official with seal**

Name & Designation

Date

**Signature of authorized Signatory of Firm with seal**

Name & Designation: -

Date

**Recommendation of the Tendering Authority officer: -**

On the basis of the above inspection report it is recommended to replace the payment of the firm as per the payment terms in the agreement of the Tendering Authority with the firm.

**Signature of the Tendering Authority official with seal**

Name & Designation: -

Date

**HANDING OVER CERTIFICATE**

Name of Site\_\_\_\_\_

Capacity of system installed (kWp)\_\_\_\_\_

<b>Sl</b>	<b>Component</b>	<b>Observation</b>
1.	<b>Modules</b>	
Make of modules and year of manufacturing.		
Wattage and no of modules <b>(Annex list of module serial no.)</b>		
2.	<b>Batteries</b>	
Make of Battery and year of manufacturing.		
Type:Tubular Lead Acid / VRLA/GEL		
Number of batteries		
Cabinets for battery banks		

3.	<b>PCU</b>	
Make and year of manufacturing		
Capacity of inverter		
4.	Display board of 6' X 4' size installed (Yes/No)	
5	<b>Other items</b> a. b. c. d.	
6	<b>Name of technical Person Trained to maintain system</b>  <b>Mobile No:</b>	

It is certified that the above solar power plant has been handed over/taken over on date .....in the running condition. Responsibility for security and safety of the equipment of the solar power plant shall be of user / beneficiary from now onwards.

The responsibility for 5 years warranty & maintenance of solar power plant shall be of M/S.....

<b>Handed over by</b>  Signature (firm)	<b>Taken over by</b>  Signature (Beneficiary)
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Name	Name
Designation	Designation
Official Seal	Official Seal
Date	Date

(On the letter head of the firm)

**WARRANTY OF THE SYSTEM INSTALLED**

Date of issue.....

To,

The .....

Ref: -..... Work order.....

Dear Sir/Madam,

I hereby warranty the Hybrid Solar Power plant of ..... kWp capacity as per following:

-

Sl	Particulars	Observation
1	Name of Beneficiary (to whom plant has been allotted)	
2.	Project site / Location Address (with Pin)	
3.	Contact no of beneficiary	
4.	<b>Specification of solar modules</b> a) Type o modules (Mono/Poly/Other) b) Make of modules & year of manufacturing c) Wattage and no of modules	
5	<b>Serial nos. of solar modules (enclose list)</b>	

6	<p><b>Batteries</b></p> <p>a) Make of Battery &amp; year of manufacturing</p> <p>b) Type of Tubular Lead Acid/VRLA/GEL</p> <p>c) Number of batteries</p> <p>d) Rated AH capacity at C/10</p> <p>e) Rate Voltage at C/10</p>	
7	<p><b>Specification of the PCU/Inverter</b></p> <p>a) Make</p> <p>b) Rating (KVA)</p>	
8.	<p><b>Date of commissioning of the system</b></p>	

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 over all workmanship of the SPV power plants/systems are warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years.

Solar PV modules used in solar power plants/ systems are warranted for their output peak watt capacity, which shall not be less than 90% at the end of 10 years and 80% at the end of 25 years.

**Authorized Signature of Firm with Seal.....**

Name & Designation: -

Date

**PERFORMANCE RATIO TEST OF SOLAR PV SYSTEM INSTALLED**

<b>Sl</b>	<b>Particulars</b>	<b>Observation</b>
1	Name of Beneficiary (to whom plant has been allotted)	
2	Project site / Location Address (with Pin)	
3	Capacity of solar power plant in KW	

This is to certify that the above-mentioned solar PV Power Plant has been installed by M/S.....  
and the system is working satisfactorily since last ..... days.

The detail of the performance of the system is as following: -

<b>Sl</b>	<b>Particulars</b>	<b>Recorded data</b>
1	Duration of test (1 hour)	Starting time Ending time
2.	<b>A-</b> energy generated on the solar PV system (as per inverter) during test period (in Wh)	
3.	<b>B-</b> Total capacity of the solar modules installed in the system (in Wh)	
4.	<b>C-</b> Average radiation during test period (Watt/m <sup>2</sup> )	

5	<b>Performance Ratio (%) = A/B*C X 100</b>	<b>(should not be less than 0.75)</b>
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**Signature of Tendering Authority Official**

**Seal**

**Name & Designation: -**

**Date: -**

**Signature of authorized signatory of firm**

**Seal**

**Name & Designation: -**

**Date: -**

**Recommendation of Testing Officer: -**

On the basis of performance (i.e.                    % PR) it is recommended to release the payment of the firm as per the payment terms in the agreements of Tendering Authority with firm.

**Signature of Testing Officer**

**Seal**

**Name & Designation: -**

**Date: -**