



(H.P Govt Energy Development Agency)  
Block 8-A SDA Complex Kasumpti Shimla-171009  
Telephone 0177- 2621623 Fax 0177-2622635 Website:- Himurja.nic.in

TENDER DOCUMENT

No. HIMURJA (F-7)/SPV Plant/NSM/2017-18

SUPPLY, INSTALLATION AND COMMISSIONING OF SOLAR  
PHOTO VOLTAIC POWER PLANTS 60 NOS. OF 1KWP EACH AT INDIVIDUAL  
HOUSEHOLDS AT SPITI VALLEY OF DISTRICT LAHAUL & SPITI

Issued By:

Name of the firm

Dated:

Date of opening: ---- 09.01.2018.

Time of opening: ---- 3.00 Hrs.

Price of document ---- Rs. 10,000/-

Note: - Only technical Bids will be opened on the said date. The date of opening of the Price Bids of the successful bidders will be intimated separately after technical evaluation



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### SHORT TERM TENDER NOTICE

Sealed tenders are hereby invited for the supply, installation and commissioning of 60 Nos. SPV power plants having a capacity of 1 kWp each in individual households at Spiti valley of Distt. Lahaul & Spiti, to be supplied in conformity with MNRE, GoI guidelines/ specifications. The tender documents can be purchased from the office of the undersigned by paying **Rs. 10,000/- only** in the shape of demand draft drawn in favour of Director, HIMURJA and payable at Shimla from 29.12.2017 to 08.01.2018. The tender document is also available on the website of HIMURJA i.e. himurja.nic.in which can be downloaded. The cost of downloaded tender document can be deposited with the tender. The tender complete in all respect shall be received up to 2.00 PM on **09.01.2018** and shall be opened on the same date at 3.00 PM in the presence of tenderers or their authorized representatives who wish to be present at the time of opening of tenders.

Tender Document No.	Name of work.	Completion time	Earnest Money
No. HIMURJA (F-7)/SPV Plant/NSM/ 2017-18	Supply, installation and commissioning of 60 Nos. SPV power plants each of 1 kWp capacity in individual households, at Spiti Valley in Distt. Lahaul & Spiti H.P.	5 months	Rs.3,00,000/-

#### Terms and Conditions:

- i) Tenders without earnest money will not be considered.
- ii) HIMURJA reserves the right to reject any or all the tenders without assigning any reason.
- iii) MNRE approved System Integrators under JNNSM of SPV systems or manufacturers of SPV Systems, having sufficient experience of installation and commissioning of minimum 10 kWp aggregate capacity SPV Power Plant are eligible. Bidders may submit the proof of their eligibility in the shape of work orders, commissioning and satisfactory operation reports along with the bid.
- iv) The average annual turnover of the firm should be Rs 1 crore for each immediate preceding three years.

Executive Engineer (E)  
HIMURJA, Urja Bhawan,  
Shimla-171009.

## SECTION - I

### INSTRUCTIONS TO BIDDERS

#### A. Introduction

##### 1. Source of Funds

1.1 The Project has been jointly funded by Govt of India, H.P. Govt.

##### 2. Bidders Eligibility and Qualification

2.1 MNRE approved System Integrators under JNNSM of SPV systems or manufacturers of SPV Systems, having sufficient experience of installation and commissioning of minimum 10 kWp capacity SPV Power Plant are eligible for tendering. The bidder should have income tax/sale tax clearance and CST/ VAT registration etc. as required under the rules. The average annual turnover of the firm should be Rs 1 crore for the each immediate preceding three years. Bidder may submit proof of their eligibility in the shape of work orders, commissioning and satisfactory operational reports along with the bid. In absence of sufficient experience, the tender is liable to be rejected straight way.

##### 3. Bid Form

3.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in the Bidding Documents, indicating the goods to be supplied, a brief description of the goods, quantity and prices. The rate should be quoted strictly as per scope of work and price bid.

##### 4. Documents Establishing Bidder's Eligibility and Qualifications

4.1 The Bidder shall furnish, as a part of its bid, documents establishing the bidder's eligibility to bid and its qualifications to perform the Contract if its bid is accepted.

##### 5. The documentary evidence of the Bidder's qualifications to perform the Contract if its bid is accepted, shall establish to the HIMURJA's satisfaction.

- (a) that the Bidder has the financial, technical and necessary production capability to perform the Contract.
- (b) that, in the case of a Bidder offering to supply goods under the contract which the Bidder did not manufacture or otherwise produce, the Bidder has been duly authorized by the goods' manufacturer or producer to supply the goods in the purchaser's country, in support of this will provide the documentary proof of infrastructure support for the same.

##### 6. The documentary evidence of conformity of the goods and services to the bidding documents may be in the form of literature, drawings and data, and shall consist of:

- (a) a detailed description of the essential technical and performance characteristics of the goods;

(b) a list giving full particulars, including available sources and current prices, of all spare parts, special tools, etc., necessary for the proper and continued functioning of the goods for a period to be specified in the Bid Data Sheet, following commencement of the goods by HIMURJA.

(c) a item-by-item commentary on the HIMURJA's Technical Specifications demonstrating the goods and services to those specification, or a statement of deviations and exceptions to the provisions of the Technical Specifications.

## **7. Earnest Money**

7.1 Tender accompanied by earnest money of Rs. 3,00,000/- (Three Lacs only) in the name of Director, HIMURJA, Shimla through demand draft only shall be accepted. **Those firms who have already deposited the EMD for earlier tender need not to deposit EMD.**

7.2 The earnest money is required to protect the HIMURJA against risk of Bidder's conduct which would warrant the security's forfeiture. No interest will be paid on Earnest Money.

7.3 Unsuccessful Bidder's earnest money will be discharged/returned as promptly as possible but not later than thirty (30) days after the expiry of the period of bid validity prescribed by the HIMURJA subject to receipt of request letter.

7.4 The successful Bidder's earnest money will be adjusted in the performance security.

7.5 The earnest money of successful bidder may be forfeited:

- a) If a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form.
- b) In case of successful Bidder fails to sign the Contract Agreement or to furnish required performance security.

## **8. Period of Validity of Bids**

Bids shall remain valid for the period of twelve (12) months from the date of opening of price bid. The validity of the bids can be extended further on mutual consent.

## **9. Format and Signing of Bid**

9.1 The Bidder shall submit their bid in original only.

9.2 The bid shall be typed or written in indelible ink and shall be signed by the Bidder or a person duly authorized to bind the Bidder to the Contract. All pages of the bid, except for un-amended printed literature, shall be initialed by the person signing the bid.

9.3 Any interlineations, erasures, or overwriting shall be valid only if they are initialed by the person or persons signing the bid.

## **B Submission of Bids**

## **10. Sealing and Marking of Bids**

The bidders shall submit their bids in original in the following manner:

10.1 The first envelope (A) must contain the requisite E.M.D. and document fees. It must be super scribed as the EMD & document fees on the envelope and must be properly sealed.

- 10.2 The second envelope (B) must contain the Technical bid and it must be super scribed as the Technical Bid on the envelope and must be properly sealed.
- 10.3 The third envelope (C) must contain the requisite Price Bid and it must be super scribed as the Price bid on the envelope and must be properly sealed.
- 10.4 All the above three envelopes ( A,B,C) must be duly sealed in a single envelope duly marked with date of opening.
- 10.5 Every envelope should contain the name and address of the firm with the Number of the NIT, Technical Bid and Price Bid.
- 10.6 The technical bid in all circumstances should not contain any reference to the prices quoted.

## **11. Deadline for Submission of Bids**

- 11.1 Bids must be submitted in the office in time i.e upto 2:00 P.M. on 09.01.2018.

## **12. Late Bids**

- 12.1 Any bid received by the HIMURJA after the deadline for submission of bids prescribed by the HIMURJA, will be rejected and/or returned unopened to the Bidder.

## **C Bid Opening and Evaluation**

### **13. Opening of Technical Bids by HIMURJA**

- 13.1 The HIMURJA will open the technical bids, in the presence of Bidders' representatives who wants to be present, at the time, on the date, and at the place specified in the Bid Data Sheet. The bidder's representatives who will be present shall sign a register evidencing their attendance.
- 13.2 The Bidders' names, the presence or absence of the requisite bid security and such other details as the HIMURJA, at its discretion, may consider appropriate will be announced at the opening, except for late bids, which shall be returned unopened to the Bidder.
- 13.3 The technical bids shall be evaluated by the HIMURJA for assessing responsiveness, bidders qualification and technical confirmation.
- 13.4 The bidders whose technical bids are declared as technically responsive and qualified shall be informed accordingly and their Price Bids shall be opened.
- 13.5 The bidders whose technical bids do not qualify, their Price Bids shall not be opened and the same shall be returned to the Bidders.
- 13.6 Price Bids opening date shall be conveyed subsequently.

### **14. Clarification of Bids**

- 14.1 During evaluation of the bids, the HIMURJA may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing, and no change in the prices or substance of the bid shall be sought, offered, or permitted.

If the firm does not respond to the clarification, the firm will be considered as non-responsive and the tender shall be rejected out rightly.

- 14.2 At any time prior to the submission of the tender or prior to the opening of the financial bid HIMURJA may for any reason whether at its own initiative or in response to a clarification requested by the tenderers may modify the tender document by amendments. The amendment will be uploaded on HIMURJA website or be notified in writing or by fax to all prospective tenderers who have received the tender documents and will be binding on them. HIMURJA will bear no responsibility or liability arising out of non receipt of the same in time or otherwise.

## **15. Evaluation and Comparison of Bids**

- 15.1 The HIMURJA will evaluate and compare bids which have been determined to be substantially responsive.
- 15.2 The detailed techno-commercial analysis of the bid shall be carried out by the HIMURJA.

## **16. Contacting the HIMURJA**

- 16.1 From the time of bid opening to the time of contract award, if any bidder wishes to contact the HIMURJA on any matter related to the bid, it should do so in writing.
- 16.2 Any effort by a Bidder to influence the HIMURJA in its decision on bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidder's bid.

## **D Award of Contract**

### **17. Award Criteria**

- 17.1 The HIMURJA will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
- 17.2 HIMURJA reserves the right to place order upon more than one manufacturer/ firm at the lowest accepted rates in case it is necessitated to execute the orders in time without seeking any consent from the firm with lowest offered rates.

### **18. HIMURJA's Right to Accept Any Bid and to Reject Any or All Bids**

- 18.1 The HIMURJA reserves the right to accept or reject any bid, and to cancel the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders.

### **19. Signing of Contract**

- 19.1 The successful Bidder will sign the contract within Twenty One (21) days from the issue of award letter.

## **20. Bid Security**

- 20.1 The successful bidder shall deposit with the Director, HIMURJA Bid security equal to 10% of the contract value within 15 days from the date of issue of the award letter in the form of demand draft for the faithful execution of the contract. No claim shall be made by the successful bidder against the purchaser for interest on security deposit.
- 20.2 The Earnest money deposit in the form of bank draft shall be adjusted against the Bid security.
- 20.3 The bid security shall be released after six month of the successful commissioning of the project.

## **21. Performance Security:-**

- 21.1 Bid Security will be treated as Performance Security after commissioning of the project. However, the firms can substitute the Performance Security by submitting a Bank Guarantee of equivalent amount valid for the remaining warranty period after six months from the successful installation of the systems. The purchaser shall be entitled and it shall be lawful on his part to forfeit the performance security deposit as per the contract in whole or in part in the event of any fault, failure of performance in all respects of the contract under reference or any other contract with the purchaser and purchaser shall also be entitled to deduct from the said deposit any loss or damage which the purchaser may suffer or be put to by reason of or due to any act or other default recoverable by the purchaser from the contract.
- 21.2 The Performance Security shall be denominated in the currency of the Contract.
- 21.3 The Performance Security shall be valid upto the warranty period and shall be released only after expiry of warranty period.

## **SECTION - II**

### **GENERAL CONDITIONS OF CONTRACT**

#### **Brief History**

The Solar Photovoltaic Power Plant of 1 kWp capacity have been proposed to be provided to individual households at Hansa vilaage in Spiti Valley in Distt. Lahaul & Spiti of the H.P. SPV Power Plant.

Accordingly, HIMURJA has prepared Tender Document No. HIMURJA (F-7)/SPV Plant/NSM/ 2017-18 for the supply, installation and commissioning of 60 Nos. SPV power plants each of 1 kWp capacity at individual households at Spiti Valley in Distt. Lahaul & Spiti, H.P.

The components of systems such as PV modules , battery, PCU( charge controller and inverter) supplied under the project will be picked randomly from the supplied lots by

Ministry for testing at SEC at manufacturers cost. In case any system / component fail, whole lot will be rejected and no payment will be released.

## **1 General Scope of Work:**

The general scope under this contract includes verification of site feasibility, design, engineering, manufacture, shop testing, inspection, packing & forwarding, transportation upto project site, loading & unloading, storage , erection, preliminary testing at site, installation, commissioning, performance testing & handing over of SPV power plants at individual household in the presence of HIMURJA. The scope of the work will also include the following:--

- a) Warranty period of five years which will commence from the date of successful commissioning and acceptance by the HIMURJA. During warranty period, the supplier will carry out preventive, routine and breakdown maintenance of all the plants including replacement of any components including DC battery , PCU etc. which goes bad free of cost.
- b) It includes mounting of modules, structure required for mounting the modules, Stand for DC battery and inverter / control panel and other miscellaneous works required for successful installation and commissioning of the plant.
- c) Provision will be made for automatic shift to conventional electric supply in case of failure of supply from SPV system.
- d) The firm will give undertaking of the performance of SPV Power plant to generate the required installed capacity on the attached Annexure VIII. The tenderers may quote their rates along with minimum requirement if any.

The Bidder has to ensure as under after consultation with individual beneficiary authorities:-

- i) The availability of shadow free area for the installation of SPV Modules on roof top or on ground.
  - ii) Indoor space for housing of batteries, inverter / control panel and facilitation for internal and external wiring as per site conditions.
- e) The quantum of the job can be increased or decreased and the bidder cannot claim any compensation on that part.

## **2. Incidental Services**

2.1 The supplier may be required to provide any or all of the following compulsory services

- (a) Performance or supervision of the on-site assembly and/or start-up of the supplied Goods;
- (b) Furnishing of sufficient T&P and tools required for assembly and/or maintenance of the supplied Goods;



- (c) Detailed operations and maintenance manual will be supplied to different units as under:-
- i) One set to HIMURJA H/Q
  - ii) One set to consignee
- (d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of five years or for time as agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract.
- (e) Training of the individual beneficiary handling the SPV Power Plant at the Supplier's plant and/or on site, in assembly, start-up, operation, maintenance and/or repair of the supplied Goods.

### **3. Payment**

Payment shall be made in the currency specified in the Contract in the following manner:

#### *Payment for Goods and services*

- (i) *On delivery:* Fifty percent (50%) of the contract price shall be paid on receipt of the goods and upon submission of bills duly verified by concerned Sr. Project Officer, of HIMURJA.
- (ii) *On Final Acceptance:* Fifty percent (50%) of the contract price shall be paid after completion of the following formalities :-
  - Erection, testing and successful commissioning of the power plant
  - Certificate from the beneficiary that he has been given training for operation & maintenance.
  - The balance payment will be released after submission of consolidated commissioning certificates to be issued by the concerned beneficiary and duly verified by the concerned Project Officer of HIMURJA.

### **4. Subcontracts**

The Supplier shall obtain approval of the HIMURJA in writing of all subcontracts to be awarded under the Contract if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract. The Performa of manufacturer authorization is as per Annexure IX.

### **5. Completion Time Period**

Delivery, installation and commissioning of the equipments should commence immediately after issue of Award letter. The supply should be completed within 4 (Four) months and installation & commissioning within 5 (Five) months from the date of issue of Award letter. The whole work is to be completed within Five **months** from the date of issue of Award Letter. Delay, if any, in supply of equipment and commissioning of the project shall be condoned on recommendation by the tender committee on justifiable / valid reasons only.

## 6. Liquidate Damages

If the award is not completed in accordance with the contract within the stipulated time for completion, the delay should be extendable up to four weeks for which the owner shall be entitled to liquidated damages and the said damages shall be payable by the Contractor on demand without there being any proof from the owner. The liquidated damages shall be payable @ 1 % per week, maximum @ 5% of the contract price i.e. @ 1% if delay is one week, @2% if delay is two weeks, @3% if delay is three weeks, @4% if delay is four weeks and @5% if delay is five weeks and will be recovered from any sums due to the successful bidder. Thereafter the award will be rescinded without any notice and the EMD deposited will be forfeited.

All disputes relating to this contract shall be subject to the jurisdiction of courts in Shimla and **Chief Executive Officer, HIMURJA** shall be the sole Arbitrator.

## 7. Inspection and Tests

The Himurja authorized representative shall have access to the supplier's work place at any time during working hours for the purpose of inspecting the manufacturer of the equipment and the supplier shall provide all necessary facilities for such inspection. No supply shall be dispatched without prior inspection and approval by the Himurja and the charges on account of inspection shall be borne by the supplier.

Inspection and tests prior to shipment of Goods and at final acceptance are as follows:

- 7.1 The inspection of the Goods shall be carried out to check whether the goods are in conformity with the technical specifications attached to the purchase order form and shall be in line with the inspection/test procedures laid down in the schedule of specifications and the contract conditions.
- 7.2 Manufacturer must have suitable facilities at their works for carrying out various routine and performance tests on the equipment.
- 7.3 All tests specified in the technical specifications approved by MNRE under JNNSM.
- 7.4 Approved supplier's drawings shall not be changed as provided in the bidding document without prior approval of the competent authority.
- 7.5 The HIMURJA shall have the right to inspect the supplier's premises and any part of the work at any time.
- 7.6 The supplier shall submit, within the time stated in the contract or in the programme, drawings showing how the plants are to be designed and any other information required for approval to HIMURJA.
- 7.7 Before the goods and equipment are taken over by the HIMURJA, the supplier shall supply operation and maintenance manuals together with drawings of the goods and equipment as built. These shall contain such details which will enable the HIMURJA to operate, maintain, adjust and repair all parts of the works as stated in the specifications.

The manuals and drawings shall be in the ruling language (English) and in such form and numbers as stated in the contract. Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawings have been supplied to the HIMURJA.

- 7.8 If the goods/services or any section fails to pass the Tests, the supplier may require such tests to be repeated on the same terms and conditions. All costs to which the HIMURJA may incur by the repetition of the tests under this sub-clause shall be deducted from the contract price.
- 7.9 If the HIMURJA and the supplier disagree on the interpretation of the test results each shall give a statement of his views to the other within 14 days after such disagreement arises. The statement shall be accompanied by all relevant evidence. The HIMURJA will review both the statements and render a final decision which shall be binding on the supplier.

## **8. Acceptance Certificate:**

- 8.1 On successful completion of acceptability test, receipt of deliverables etc, and after the HIMURJA is satisfied with the working on the plant, the acceptance certificate signed by the supplier and the representative of the HIMURJA will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the systems. If HIMURJA desires third party inspection can be carried out on the expenses of supplier before acceptance.
- 8.2 The training shall be imparted to the beneficiary after successful commissioning of the plant.

## **9. Spare Parts**

Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares such as Cable lugs, Nut & bolts, Screws, Switches, fuses, indicating lamps & blocking diodes lights/bulbs, spare modules, battery spares etc. sufficient for five year operation and maintenance at individual sites / at service centre. List of consumable spares and mandatory spare parts and components shall have to be supplied with the bid.

## **10. Maintenance Service**

### **A During warranty period**

Free maintenance services shall be provided by the supplier during the warranty period of five years. No payment will be made on this account as it is included in the cost of main equipment. This Maintenance Service will include:-

#### **a) Preventive & Routine Maintenance:-**

It includes minimum one visits of site which shall be done at least once in every six months and shall include activities such as cleaning of modules , checking of connections of panels, electric connections of arrays , control

panels, inverter , charge controllers, DC battery connections , specific gravity of battery and any other activity that may be required for proper functioning of the System as a whole. Proper record will be maintained by the firm on this account in the individual SPV Power Plant. Any spare and consumable required during period of five years will be supplied free of cost by the firm including replacement of any components which require replacement.

**b) Breakdown and corrective maintenance:**

Whenever a complaint is lodged by the user in the service centre , the firm shall attend to the complaint within a reasonable period of time and in any case the breakdown shall be corrected within a period not exceeding a week from the date of lodging of complaint. Failure to arrange for the immediate repair/replacement will be liable for penalty and the amount of penalty will be recovered from the performance security or any money lying with HIMURJA @ Rs.500/- only per day.

**11. Right to use defective equipment**

If after delivery, acceptance and installation and within the warranty period, the operation or use of the equipment proves to be unsatisfactory, the HIMURJA shall have the right to continue to operate or use such equipment until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made.

**12. Operation & Maintenance**

The firm will train the concerned beneficiary after commissioning, for the operation and routine maintenance of plant.

**13. Packing**

The Supplier shall provide such packing of the Goods as is required to prevent damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall be taken into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

**14. Specifications**

All the parts of the system will confirm to MNRE/ BIS specifications and as per the detailed specification of various components of SPV Power Plants to be installed in HP. All the terms and conditions and specifications prescribed in the tender document and in the guidelines issued by MNRE shall form the integral part of supply order. The minimum technical requirement / standards for SPV Power Plants to be deployed will confirm to Annexure-I (Part-A) of operational guidelines for implementation of Off- Grid and decentralized solar application during 12<sup>th</sup> plan period issued vide administrative approval No. 30/11/2012-

13/NSM dated 26.05.2014 by MNRE for PV modules, balance systems, warranty, identification and traceability etc.

**15. Price Low Clause**

If at any time during the supply period, the Firm offers similar SPV Power Plant of same capacity to some other customers on similar terms and conditions and technical specifications at reduced rates in respect of items contained in this order, then such reduced rates will also be applicable to this organization and the benefit will have to be passed on to HIMURJA.

**16. Location of Power Plant.**

Sr. No.	Name of site	Capacity
1.	Individual Household at Spiti valley in Distt. Lahaul & Spiti of H.P.	1 kWp with battery back up

## SECTION – III

**SCHEDULE OF REQUIREMENT**

<b>S. No.</b>	<b>Brief Description</b>	<b>Units</b>	<b>Make</b>
1	SPV modules of 200 Wp or above for a total capacity 1 kWp with RF identification tag.	1 Set	
2	SPV module mounting structure suitable for accommodating 1 kWp capacity SPV modules including any other structure as per site conditions.	1 Set	
3	PCU / Inverter as per specification	1 set	
4	Cables/Wiring requirement All cable trays including covers to be provided	As per requirement of site	BIS marked
5	Earthing set as per specification	1 Set	
6	Lightning arrestor complete set as per specification	1 Set	
7	Battery bank complete as per specifications 24 Volts, 300 AH at C/10 rate, VRLA tubular plate gel batteries.	1 Set	
8	Engineering, electrical drawings and installations and O&M manuals	3 Sets	
9	Energy meter for measurement of solar energy	1 No.	
10	Any miscellaneous work required for the installation of plant	L/S	
11	Internal and external wiring	L/S	

Note :

- i) The requirement for the plant and machinery is indicative and the supplier is required to include and quote for any other item left out in the schedule for successful working during warranty period. Any spare, consumable or any other item which goes bad will be replaced by the firm free of cost during warranty period.
- ii) Suppliers shall offer their complete design along with drawings for the plant in their bids.
- iii) Alternate makes can be offered for the equipment/ items and approval by HIMURJA. The specification of all the components including modules will conform strictly to the specification as prescribed in NSM by MNRE.

## TECHNICAL SPECIFICATION

ITEM	DESCRIPTION
<b>SPV Module</b>	<ul style="list-style-type: none"> <li>• The photovoltaic modules should be Mono/ Poly Crystalline with a total array capacity of 1.0 Kw. The each module should not be less than 200 Wp.</li> <li>• The photovoltaic modules must be qualified as per IEC 61215(revised) / IS 14286 standards and in addition, the modules must confirm to IEC 61730-I requirements for construction &amp; part-2 requirements for testing, for safety qualification.</li> <li>• The PV modules must be tested and approved from any of the NABL/BIS/IEC/MNRE Accredited Testing Calibration Laboratories.</li> <li>• The supplier shall provide performance guarantee for the PV modules used in the 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.</li> <li>• Necessary I-V curves of the SPV modules are required to be furnished.</li> <li>• Each module will be put in series with blocking diode.</li> </ul>
<b>System autonomy</b>	<b>1+1 day</b>
<b>Battery Bank</b>	<ul style="list-style-type: none"> <li>• VRLA tubular GEL type batteries confirming to National/ International standards, low maintenance, stationery at C/10 rate.</li> <li>• The batteries of 12 Volt, 150Ah (4Nos.) will be connected in series / parallel to form 24 Volt 300 Ah battery bank.</li> <li>• It will be staged in racks duly painted with acid resistant paint to cover less space where ever necessary.</li> <li>• The Test certificates should be from MNRE accredited Test centres i.e. SEC /ERTL East /ETDC Bangalore / CPRI Bangalore / ERTL North / UL Bangalore / TUV Rheinland / Inerteck for the tests as indicated on MNRE website.</li> </ul>
<b>Power Conditioning Unit/ Charge Controller</b>	<p>Power Conditioning Unit of capacity 1.2 KVA should convert DC Power into AC Power. A 24V DC to 230 V AC inverter will have following feather:</p> <ul style="list-style-type: none"> <li>• Type of Charge Controller - PWM/ MPPT based</li> <li>• Charging Algorithm - Bulk/ Absorption/ Float</li> <li>• Max. Voltage across Charge Controller - &lt; IV</li> <li>• Ideal Current - &lt; 10 mA</li> <li>• Max. Charging Current from PV Module - 40A</li> <li>• Max. Voltage from PV Module - 45 V</li> <li>• Normal Battery Voltage - 24 V</li> <li>• Solar Charge Controller efficiency - &gt; 95%</li> </ul> <p>Following facilities should be provide:</p>

	<p>Temperature compensation,  Auto Shut down in case of No battery,  SPV Reverse Polarity Protection,  Charge Controller should be MOSFET / IGBT based</p>
<b>Inverter</b>	<ul style="list-style-type: none"> <li>• Output Voltage of Inverter - 230V AC <math>\pm</math> 2 %</li> <li>• Output Frequency - 50Hz <math>\pm</math> 1 Hz</li> <li>• Efficiency of Inverter - &gt;85% for loads both linear &amp; non-linear</li> <li>• Power Factor - 0.8 lagging to unity</li> <li>• Ambient Temperature - -5° C to 55° C</li> <li>• Relative Humidity - 90% non- condensing</li> </ul>
<b>Protection</b>	<ul style="list-style-type: none"> <li>• Battery Over Voltage (Automatic Shutdown)</li> <li>• Battery Under Voltage (Automatic Shutdown)</li> <li>• Over load( The system should try atleast 3 times in case it persists, it should shutdown)</li> <li>• Over Temperature Protection</li> <li>• Short Circuit (Similar to Overload)</li> <li>• Electro protection to be provided against sustained fault in addition to MCB</li> </ul>
<b>Indications</b>	<ul style="list-style-type: none"> <li>• Battery low</li> <li>• Overload</li> <li>• Inverter ON</li> <li>• Input &amp; Output Voltage</li> <li>• Input Current</li> <li>• Percentage of Power Output</li> </ul> <p>The indication should be through LCD Digital Display with backlighting.</p> <p>The integrated charge controller &amp; inverter (also known as Power Conditioning Unit) will be preferred.</p> <p>The following Test certificates will be required:</p> <p>Solar charge controller design specification : IEC 62093</p> <p>Efficiency Test : IEC 61683</p> <p>Cold Test : IEC 60068-2-1</p> <p>Dry Heat Test : IEC 60068-2-2</p> <p>Change of temperature : IEC 60068-2-14</p> <p>Damp Heat Test : IEC 60068-2-30</p> <p>IP 21 Test : IEC 60529</p> <p>THE Test certificates should be from MNRE accredited Test centres i.e. SEC / ERTL East / ETDC Bangalore / CPRI Bangalore / ERTL North / UL Bangalore /</p>



	TUV Rheinland / Inertek for the tests as indicated on MNRE <b>website</b> .
<b>Junction Box</b>	<p>One Junction will be required to combine the group of modules.</p> <p>The junction box shall be dust and water proof and made of thermoplastic the terminals will be connected to copper lugs or bus-bar of proper sizes. The junction boxes shall be of reputed make.</p>
<b>Structure for Module Frame</b>	<p>Modules shall be mounted on supporting structure made out of painted MS angle of required structural strength either on the roof top or at ground as per the site requirement structure:</p> <ol style="list-style-type: none"> <li>1. The size of M.S. (painted) angle should be 50 x 50 x 6mm. The structures are to be fitted either on the roof top or at ground properly and south faced. It should withstand wind speed up to 200 Km/hr.</li> <li>2. Foundation- The legs of the structure made with hot dip GI angles will be fixed and grouted in the PCC foundation columns of size 300 mm x 300 mm made with 1:2:4 cement concrete. The minimum ground clearance from the lowest part of any module shall be 500 mm. While making foundation design due consideration will be given to weight of module assembly &amp; maximum wind speed of 200 km/ hr.</li> <li>3. The work includes necessary excavation, concreting, back feeling, shoring and shuttering etc.</li> </ol>
<b>Connecting Cables</b>	<p>PVC insulated copper cables(ISI marked) for:</p> <ul style="list-style-type: none"> <li>• Module interconnections (4.0mm<sup>2</sup> copper single core multi strand), module parallel interconnection (6.0mm<sup>2</sup> copper single core multi strand).</li> <li>• Array or AJB to charge controller (10.0mm<sup>2</sup> copper two core).</li> <li>• Charge controller to battery (10.0mm<sup>2</sup> copper two core multi strand).</li> <li>• Battery to PCU (10.0mm<sup>2</sup> copper single core multi strand) might be double cables if required.</li> <li>• PCU to load / charge over ( single core copper cable 6.0mm<sup>2</sup> multi strand) and for further distribution points ( single core copper cable 4.0mm<sup>2</sup> and 2.5 mm<sup>2</sup> multi strand)</li> <li>• All cables to be supplied should be as per BIS and should have proper current carrying capacity and should not get heated on running.</li> <li>• All the cables shall be adequately connected.</li> <li>• Outside of terminal / panels / enclosures shall be protected by conduits.</li> <li>• Cables shall be provided with dry type compression glands wherever they enter junction boxes, panels, enclosures.</li> </ul>
<b>Lightning Protection</b>	Suitable Nos. of lightning arrestors shall be provided in the array field.
<b>Earthing Protection</b>	Array structure, chassis of inverter and lightning arrestors should be grounded properly as per IS:3043-1987.
<b>Tool Kit and Spares</b>	One necessary tool kit and spares will have to be provided by the supplier.
<b>Display Board</b>	A display board of size 2.5 ft x 1.5 ft made of MS 40mm x 40mm square pipe and

flexes is to be erected at the plant site indicating:

Capacity of Solar Power Plant : 1 kWp

Promoted by : HIMURJA with logo

Name of supplier : M/s..... with contact No.

## SECTION -IV

*Annexure- I*

### TENDER FORM

1. Tender No:
2. Name of the work:
3. Last date and time of submission of the documents:
4. Amount of Earnest Money Deposit:  
DD and Date
5. Date and time of opening of the tender:
6. Place of opening of the tender:
7. Name and status of firm/company  
individual to whom the tender document  
is issued :
8. Validity of tender
7. Name of the authorized representative to  
Sign the tender

(Signature of Tenderer)

with designation

- All the columns must be filled by the tenderer.

*GENERAL PARTICULARS OF THE TENDERER*

1. Name of tenderer:
2. Address for correspondence:
3. Telephone No. and Fax No.
4. Name and Designation of the  
Authorized Representative of the tenderer  
to whom all the references shall  
be made:
5. Amount and reference of E.M.D.  
Deposited (Drawn on Bank & D.D. No.& date)
6. Financial capability of the contractor/  
Firm for carrying out the work:
7. Has the firm ever been  
debarred by any Govt. Deptt/Agency/organization  
for undertaking any work:
8. Details of offer (Mention No of pages):
9. Reference of any other information  
attached by the tenderer:
10. Authorized representative for any correspondence
11. Whether service center for after sales service  
set up in the state, give address

(Signature of Tenderer)

with designation

*Annexure- III*

**EXPERIENCE OF THE TENDERER**

Please fill in the information about the similar projects undertaken over the last five years

1. Name of organization by whom work was awarded. Please give Project wise detail of projects installed/ commissioned:-
2. Name and location of the works.
3. Total amount of Contract.
4. Year of Award.
5. Detail of involvement in  
work as an individual or as a  
company.
6. Was the work completed satisfactorily  
and within the stipulated time period.
7. Particulars of evidence enclosed in token of above
8. Whether list of past supplies enclosed as per Annexure V
9. Whether past performance obtained from HIMURJAs / utilities enclosed

-----

(Signature of Tenderer)

with designation

***DECLARATION BY THE TENDERER***

I/We \_\_\_\_\_

(herein after referred to as the tenderer) being desirous of tendering for the design, manufacture, supply, erection, testing , installation and commissioning of SPV power plants of 1 kWp individual households at Spiti Valley in Distt. Lahaul & Spiti and different part of the H.P including warranty period of 5 years as shown in scope of tender specification . We have fully understood the nature of the work and carefully noted all the terms and conditions, specifications etc. as mentioned in the tender documents, hereby declare that:-

- 1 The tenderer is fully aware of all the requirements of the tender documents and agrees with all the provisions of the tender documents.
- 2 The tenderer is capable of executing and completing the work as required in the tender.
- 3 The tenderer accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.
- 4 The tenderer is financially solvent and sound to execute the tender.
- 5 The tenderer is sufficiently experienced and competent to perform the contract to the satisfaction of HIMURJA.
- 6 The information and statements submitted with the tender are true.
- 7 The tenderer has not been debarred from similar type of work by any Govt Dept./Agency/Organization.
- 8 This offer will remain valid for acceptance for 12 (Twelve) months from the date of opening of the tender.
- 9 The tenderer gives the assurance to execute the tendered work as per the specifications, terms and conditions and in exact configuration of the sample submitted on award of the work.

(Signature of Tenderer)

with designation

## SCHEDULE OF PAST SUPPLIES/ WORKS EXECUTED IN THE LAST FIVE YEARS

S No	Description	Supply order/ Work award No. and date	Name of Agency	Date of Supply/ commissionin g as per order	Actual date of supply/ commissioning on

(Signature of Tenderer)  
with designation

Note:-

Performance certificate from the concerned utilities along with their communication address, e-mail and FAX No. is required for authentication of certificates.

**GUARANTEED TECHNICAL PARAMETERS**

S.No.	ITEM	PARTICULARS
1	<b>SOLAR PHOTOVOLTAIC MODULES</b>	
1.1	MANUFACTURER	
1.2	SIZE	
1.3	Type	
1.4	P nom	
1.5	P max	
1.6	I mp	
1.7	V mp	
1.8	Module EFFICIENCY	
1.9	No. of cells in a module	
1.10	Whether meets IEC- 61215 2 <sup>nd</sup> edition <b>and IEC 61730 standard.</b> Whether <b>Test certificates submitted along with the bid</b>	
1.11	Warranty of modules	
2	<b>PCU</b>	
2.1	<b>Make</b>	
2.2	Type of Charge Controller	
2.3	Charging Algorithm	
2.4	Max. Voltage across Charge Controller	
2.5	Ideal Current	
2.6	Max. Charging Current from PV Module	
2.7	Max. Voltage from PV Module	
2.8	Normal Battery Voltage	
2.9	Solar Charge Controller efficiency	
2.10	Protection features (complete detail be given)	
3	<b>Battery</b>	
3.1	Type	
3.2	Manufacturers name	
3.3	Capacity Ah at C/10 rate	
3.4	DOD %	
3.5	Rated normal voltage	
3.6	Rated maximum voltage	
3.7	Rated minimum voltage	
3.8	Applicable standard	
3.9	Ampere hour efficiency	
3.10	Whether meets IEC / IS standards	

Signature of the Bidder \_\_\_\_\_



**FORMAT FOR BANK GUARANTEE AGAINST PERFORMANCE SECURITY**

**(To be stamped in accordance with Stamp Act if any, of the Country of the Issuing Bank)**

Bank Guarantee No. : .....

Date:.....

To ..... (Name of the HIMURJA)

Whereas ..... (Name of the HIMURJA)  
hereinafter called “The supplier” has undertaken, in pursuance of Contract  
No.....-dated ..... 20..... to supply  
..... (Description of Goods and Services)  
hereinafter called “the contract”.

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a Bank Guarantee by a recognized Bank for the sum specified therein as security for compliance with the Supplier’s performance obligations under the contract for Operation, Maintenance and Repairs of the entire system including cost of spares for a period of 5 years from the date of issue of acceptance certificate by the HIMURJA.

AND WHEREAS we have agreed to give the Supplier a Guarantee

THEREFORE WE hereby affirm that we are Guarantors and responsible to you on behalf of the Supplier, up to a total of Rs..... (Amount of guarantee in words and figures) being 10% of the total cost of contract value and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the contract and without cavil or argument, any sum or sums within the limit of Rs..... (Amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until..... day of.....20.....

Signature and Seal of Guarantors

.....  
.....  
Date:.....20.....

Note :

1. SUPPLIER SHOULD ENSURE THAT SEAL AND CODE No. OF THE SIGNATORY IS PUT BY THE BANKERS, BEFORE SUBMISSION OF THE BANK GUARANTEES.

**UNDERTAKING TO BE FURNISHED BY BIDDERS**

We, M/S ..... with  
Registered office at ..... undertake to  
ensure generation of electrical energy from the Solar Power Plant of 1 kWp to be installed by us  
as per the details / technical specifications given in Tender document.

Authorized Signatory

Name of the Company with stamp

**MANUFACTURERS' AUTHORIZATION FORM**

No. \_\_\_\_\_

dated

To

Tender No.    Tender document No. HIMURJA (F-7)/SPV Plant/NSM/ 2017-18

Dear Sir:

We \_\_\_\_\_ who are established and reputable manufacturers of \_\_\_\_\_ (name & descriptions of goods offered) having factories at (address of factory) do hereby authorize M/s \_\_\_\_\_ (Name and address of Agent) to submit a bid, and sign the contract with you for the goods manufactured by us against the above NIT.

We hereby extend our full guarantee and warranty for the goods and services offered for supply by the above firm against their project.

Yours faithfully,

(Name)

(Name of manufacturers)

Note: Their letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to legally bind the manufacturer. It should be included by the Bidder in its technical bid.

## SECTION-V

### Price Schedule of Main Equipment

#### Annexure F-1

S.No.	Description	Qty	Rate per kWp	Amount
1	FOR cost of 1 kWp Power Plant with battery system complete in all respect as per clause No. 1 of GCC & Technical Specifications including design, engineering, manufacturing , shop testing, inspection, supply, installation, commissioning at individual households at Spiti Valley in Distt. Lahaul & Spiti of the H.P with warranty period of five years after successful commissioning.	60Nos		

Note:-

- i) FOR cost will include all applicable taxes, duties. Nothing shall be paid extra.
- ii) Bill of material will be supplied separately.
- iii) Cost breakup of the power plant as per Annexure-F-2 (attached) be supplied.

Signature

## COST BREAK-UP OF POWER PLANT

### Annexure F-2

S No.	FOR cost of	Qty	Rate (Rs.)	Amount (Rs.)
1	SPV modules of 200 Wp or above with RF identification tag.	1 Set		
2	Mounting structure for above as per specs.	1 set		
3	PCU / Inverter as per specification	1 set		
4	Cables/Wiring (As per requirement of site)	L/S		
5	Earthing set as per specification	1 Set		
6	Battery bank complete as per specifications 24 Volts , 300 AH at C/10 rate	1 Set		
7	Engineering, electrical drawings and installations and O&M manuals	3 Sets		
8	Any miscellaneous work required for the installation of plant	L/S		
9	Energy meter for measurement of Solar Energy	1 No.		
	Total			

Note: - Above break up is only indicative and for billing purpose.

Signature