

Manipur Renewable Energy Development Agency (MANIREDA),

An autonomous Govt. Agency under the Deptt.of Power, Manipur,
2nd Floor, South Block, Secured Office Complex, A.T. Line, Near Imphal Hotel, Imphal – 795001, Manipur
Ph.:0385- 2421594, e-mail: manireda99@yahoo.com

Expression of Interest

EOI No.4/SPP/RT/MANIREDA/2017-18

August, 2017

For

Empanelment of Channel Partner

For

Supply, erection, testing and commissioning including warranty,
operation & maintenance for 5 years of grid interactive
rooftop solar PV power plant of various capacities in Manipur

EOI NO:4/SPP/RT/MANIREDA/2017-18

Particulars of Work

Eligible and prospective Bidders may quote their offers as per details mentioned below:

Particulars of work	Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive rooftop solar PV power plant of various capacities in the State of Manipur
Cost of bid document (Non-refundable)	Rs.1,500/- (Rupees One Thousand Five Hundred only in the form of DD favouring Director, MANIREDA) Bid submitted without cost of bid will be rejected.
Earnest Money Deposit	Rs. 3,00,000.00 (Rupees Three Lakh) only.
Period of Empanelment	One year (Extendable on performance of the firm).
Date of commencement for Issue of bid documents	19-08-2017 (to be downloaded from www.manireda.com)
Pre-Bid discussion	31-08-2017 at 2.00 PM
Last date & time of submission of bids document	11-09-2017 upto 1.00 PM (bid received after the due date/time will not be entertained)
Date & time of opening Technical bid - Part-I	11-09-2017 at 2.00 PM
Date & time of opening Financial bid - Part-II	Will inform to successful bidders in the Technical bid (Part-I)
Place of submission of bid documents and address for communication.	Manipur Renewable Energy Development Agency (MANIREDA) 2 nd Floor, South Block, Secured Office Complex, A.T.Line, Near Imphal Hotel, Imphal – 795001, Manipur. E-mail: manireda99@yahoo.com

A. BACKGROUND

The Government of India launched the National Action Plan for Climate Change (NAPCC) in 2008 to promote ecologically sustainable growth while addressing India's energy security challenge. The Jawaharlal Nehru National Solar Mission (JNNSM) is one of the initiatives to mitigate emissions from fossil fuels in the energy sector by promoting solar power. The aim of the Mission is to focus on setting up an enabling environment for solar technology penetration in the country both at a centralized and decentralized level by way of focusing on promoting Off grid/ Grid Connected Solar Power Generation including hybrid systems to meet/supplement power, heating and cooling energy requirements. These systems still require interventions to bring down costs but the key challenge is to provide an enabling framework and support for entrepreneurs to develop markets. In order to create a sustained interest within the investor community, Ministry of New & Renewable Energy (MNRE), Govt of India has given the details of various promotional activities on the website of MNRE www.mnre.gov.in.

Under this scheme, individuals, residential/ Institutional/ Social Sectors /Govt. building owners are eligible to set up Solar Power Plant within the prescribed capacity limit of upto 500 kW at one site. Capital subsidy upto maximum 70% of the benchmark cost of the system as per the latest notification of MNRE or upto maximum 70% of the actual cost arrived through competitive bidding process, whichever is lower, is admissible from (MNRE), Government of India for all rooftops other than for industrial and commercial buildings and Government Buildings. The Ministry revised rate of CFA from time to time.

MANIREDA has been given a target of 50 MW Grid Interactive Rooftop solar power plants under this scheme by 2022.

In order to provide technical assistance and determination of the competitive cost and fixation of CFA of the solar power project to be installed at various premises/organizations under the Manipur grid interactive rooftop solar PV power plant scheme, MANIREDA invites bids for empanelment of firms for supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of Grid Interactive Rooftop Solar Power Plants of capacities upto 500 kWp in the State of Manipur from the various Channel Partners and New Entrepreneurs empanelled by MNRE.

B. Scope of Work :

Work for installation of rooftop grid connected solar power plants shall involve;

- (i) Identification and motivation of prospective beneficiaries.
- (ii) Obtaining no objection certificate(NOC) from concerned DISCOM for grid connectivity.
- (iii) Supply, installation, commissioning and maintenance for 5 Years of roof top SPV grid connected Power Plant as per schedule given. Maintenance of Solar Photovoltaic Power Plant would include wear and tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU), Energy meters (for NET/GROSS connection), spares, consumables & other parts for a period of 5 years. Replacement of parts free of cost shall be against manufacturing defect only. Anti-theft Nut & Bolts must be used for fixing the PV modules.

- (iv) Establishing “After sales service centres” in concerned area to cater the maintenance needs of beneficiaries.
- (v) MANIREDA will empanel those firms who are successful in this empanelment process and wish to provide their services on the lowest quoted prices which are received under this offer.
- (vi) The selected firms will have to execute the selected projects for which the sites can either be identified by the firms or on the sites allocated by MANIREDA under the Grid Interactive Roof top Solar Power Plants in accordance with technical specification and various other requirements as per latest directives / guidelines of MNRE under JNNSM. The various group of size / capacity of the grid interactive rooftop solar power plant shall be as under:

SI. No	Group of sizes/Capacity	Location
1	1 to 3 KWp	Anywhere in the State of Manipur
2	Above 3 to 8 kWp	
3	Above 8 to 10 KWp	
4	Above 10 to 50 KWp	
5	Above 50 to 100 KWp	
6	Above 100 to 300 KWp	
7	Above 300 to 500 KWp	

- (vii) The successful empanelled firms may approach the applicants registered by MANIREDA for receiving the orders on the rates approved by MANIREDA for Turnkey Execution of the Solar PV Plants. MANIREDA will not be responsible in case any empanelled firm does not get any work order from the registered applicants under the Grid Interactive Roof Top Solar PV Power Plants Scheme. The registered applicants under this scheme shall be free to install their projects from any firm subject to the condition that project shall have to be installed/commissioned as per the MNRE and MANIREDA guidelines.
- (viii) The empanelled firms will supply, erect, test and commission the Solar Power Plant and shall make all necessary arrangement for evacuation and injection of power/surplus power to the MSPDCL grid at the interconnection point. The admissible CFA released by the MNRE, GoI shall be released to registered applicant after successful commissioning of the plant and verification of the plant by MANIREDA.
- (ix) The empanelled firms should revise their quoted rates on every quarterly basis and the revised rates will be uploaded accordingly.

C. SITE / PROJECT LOCATION

It may be noted that under “Grid Interactive Roof Top Solar PV Power Plant Scheme”, projects of varying capacities shall be allotted. The project installation may differ from site to site. The following types may be considered:

- Flat Roof Top
- Inclined Roofs
- Any feasible elevated part of building

The bidders shall submit the price based on flat roof with height upto G+2.
No additional payments above quoted rates shall be admissible in any case.

D. INFORMATION TO THE FIRM/BIDDER

1. Bid submission by the bidder.
- 1.1 Each bidder should submit financial bid based on “**Flat Roof with height upto G+2**” as per the annexed Format.
- 1.2 The firm/bidder should submit their offer in two separate sealed envelopes i.e.

Part-I TECHNICAL PARTICULARS

(along with the cost of the document and Earnest Money & complete EOI document duly signed on each page excluding financial offer) and

PART- II FINANCIAL OFFER BASED ON FLAT ROOF(Height upto G+2)

Both these envelopes should be put and sealed in another envelope addressed to
The Director,
Manipur Renewable Energy Development Agency (MANIREDA)
2nd Floor, South Block, Secured Office Complex, A.T.Line,
Near Imphal Hotel, Imphal – 795001,

subscribed with the following :-

- a. EOI No. 4/SPP/RT/MANIREDA/2017-18
- b. Offer for installation of Solar Power Plant under
“Grid Connected Rooftop Solar and Small Power Plant Scheme”
- c. Name and address of the firm.

- 1.3 The technical particulars shall be opened on due date and time. The financial offer of only technically short listed proposals shall be opened. The date of opening of the financial offer shall be communicated to the technically successful firms/bidders.

2. Earnest Money/Security Amount:-

- 2.1 Earnest money deposit @ Rs.3.00 lakhs is required to be deposited along with the bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.
- 2.2 Earnest money can be deposited in the form of Bank Guarantee / FDR / Demand Draft in favour of Director, MANIREDA , from any Nationalised Bank payable at Imphal and the document as proof should be enclosed.
- 2.3 For successful bidder(s), EMD submitted shall be taken as SD/PGF as detailed at clause 2.6 below.
- 2.4 EMD would be forfeited in case of non- compliance of the work order by the successful bidder.
- 2.5 In case of claim for exemption from deposition of Earnest money, sufficient proof in support of claim for exemption of EMD as prescribed in Govt. of India Notification is to be attached with the bid.
- 2.6 Security Deposit/ Performance Guarantee Fees: The successful bidder must deposit the Security amount / Performance Guarantee fees @ Rs.3.00 lakhs after selection as empanelment in the form of Bank Guarantees valid from the date of acceptance till the

completion of empanelment period. The said deposit would be forfeited, if the supplies are not made as per the Terms & Conditions of the work order and this bid. Security deposit & PGF amount will be refunded after the expiry of the empanelment period subject to satisfactory execution / performance of the systems.

- 2.7 The earnest money of all unsuccessful bidders shall be released soon after selection of selected bidder(s) without any interest against submission of their written intimation regarding acceptance of work and deposition of security deposit amount.

3. Pre-Bid Discussion & Authority of Person Signing the Documents

3.1 A Pre-Bid Meeting will be held at the Office of Director, MANIREDA, on the designated Date and Time mentioned in 'Bid at a glance' on Page No.4 of this Bid Document. All the prospective Bidders are to attend this Pre-Bid Meeting without fail.

3.2 In the Pre-Bid discussion, the following points shall be discussed:

- a) Rates to be quoted based only on **flat rooftops (height upto G+2) of the buildings,**
- b) Plant and equipments to be installed,
- c) Smooth and in-time implementation of the project, etc.

3.3 Tenders of the Bidders who do not attend this Pre-Bid Meeting will be outrightly rejected & Technical Bids submitted by them will not be opened during Technical Bid. Any complaint beyond the Pre-Bid discussion shall not be entertained under any circumstances.

4. Selection of Bidder:-

MANIREDA shall empanel more than one qualified bidder and selection of work executing firm shall be done by the promoter/beneficiary on their preference.

5. Duration of Empanelment:-

The selected firms/bidders will be empanelled initially for one year. Empanelment period may be extended on the basis of performance of the firm.

6. Eligibility criteria

- 6.1 The Bidder should be an MNRE empanelled Channel Partner and New Entrepreneur (the copy of certificate/letter issued by MNRE to the firm in this regard should be enclosed for rooftop grid connected solar power plants for the current year. List shall be valid as on date of issue of tender).
- 6.2 No price and purchase preference will be available on these projects.
- 6.3 Should have average turnover of Rs. 1 Crore or more during the last three years.
- 6.4 Should have experience of successful commissioning of minimum aggregate of 100 kWp of off grid / grid interactive solar power plant and at least one solar power plant having minimum capacity of 20 kWp during last three years. For experience, supportive documents are to be enclosed.
- 6.5 For channel partners/eligible firms based in Manipur, the above experience & turnover may be relaxable instead their satisfactory performance shall be taken into account.
- 6.6 The channel partners should have/willing to open adequate field service setup to provide good after sale services including necessary repair and maintenance in the state of Manipur within a month after empanelment preferably in Imphal. The service centre should be located at customer friendly area with minimum infrastructural requirements, maintenance of adequate spares with competent and trained technicians.

- 6.7 Attested copies of valid Test Certificates & supporting documents of components of Solar PV Power Plant as specified and required in the Technical- Bid of this tender document should be submitted alongwith the bid.
- 6.8 The channel partner should fulfil all requirements as per provisions under JNNSM, MNRE, GOI.
- 6.9 All the components including power plant, software's and other components mentioned should be quoted as a single item. No partial quotes are accepted. For all the equipment the bidder should have an authorisation certificate from OEM(Original Equipment Manufacturer).

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

7. Payments Terms :-

Empanelled firms will have to receive orders from the purchaser (registered with MANIREDA) on the rates not higher than the approved rate by MANIREDA and will get payments as under:-

- 7.1 70% amount of the work value shall be paid by the purchaser after successful installation, commissioning of the Solar PV Power Plant and injection of surplus power (if any) into the MSPDCL grid confirming to technical specification as specified in this EoI and verification by MANIREDA, on submission of invoice to the purchaser and release of applicable CFA by MNRE, GoI.
- 7.2 20% amount of the work value shall be paid by the purchaser 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 and release of CFA by MNRE, GoI.
- 7.3 10% of the total contract value shall be treated as performance security and shall be paid against satisfactory performance of the Solar PV Power Plant during warrantee, operation and maintenance period which includes maintaining a minimum annual performance ratio of 75%. This amount shall be paid by the purchaser in 5 equal annual instalments, starting from completion of one year from the date of Commissioning at site. The bidder shall have to submit annual performance & functionality report to Purchaser and MANIREDA for the release of annual payments.
- 7.4 Copies of invoices after inspection shall be submitted to MANIREDA along with Project Completion Report, Photographs, and other required documents.
- 7.5 Tax clearance certificates of the firm should be produced as and when insisted by MANIREDA.

8. Bid evaluation

8.1 The evaluation process comprises of the following steps:

- Step I - Evaluation check of Bid as per the eligibility criteria
- Step II – Evaluation of Technical Bid
- Step III - Evaluation of Price Bid
- Step IV - Selection of Bidders(s) for empanelment

8.2 Responsiveness check of technical bid

The evaluation check of Bid submitted by Bidders shall be scrutinized to establish responsiveness to the requirements laid down in the EoI.

- a. Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney, format for disclosure, valid Bid Bond etc.;
- b. Bid not signed by Bidder in the manner indicated in this EoI;
- c. Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria;
- d. Information not submitted in the formats specified in this EOI;
- e. Bid being conditional in nature;
- f. Bid not received by the Bid deadline;
- g. Bid having Conflict of Interest;
- h. Bidder delaying in submission of additional information or clarifications sought by MANIREDA as applicable;
- i. Bidder makes any misrepresentation.

Each Bid shall be checked for compliance with the submission requirements set forth in this EoI before the evaluation of Bidder's fulfilment of Eligibility Criteria is taken up.

8.3 Evaluation of bidder's fulfilment of eligibility criteria

Evaluation of Bidder's eligibility will be carried out based on the information furnished by the Bidder as per the prescribed Formats and related documentary evidence in support of meeting the Eligibility Criteria. Non-availability of information and related documentary evidence for the satisfaction of Eligibility Criteria may cause the Bid to be non-responsive.

8.4 Evaluation of Technical Bid

Detailed Technical evaluation criteria:

a) The Bids shall be evaluated on the basis of the application and the supporting documents submitted by them.

b) The evaluation would be Quality and Cost based. The Technical Proposal would be evaluated first and points would be allotted to each of the bidders as follows:

SL. No.	Field	Points	
A	Empanelment in MNRE		
1	'Category A' Channel Partners of MNRE List	70	70
2	'Category B' Channel Partners of MNRE List	65	
3	'Category C' Channel Partners of MNRE List	60	
4	Empanelled New Entrepreneur of MNRE List	50	
B	Experience of supply, installation & commissioning of Grid Connected Solar PV Power Project, with net/ gross metering facility, (commissioned at least one month prior to last date of submission of offer)		
1	Above 100 KWp upto 500 KWp capacity	10	10
2	Above 1 KWp upto 100 KWp	5	
C	Financial capability- Average turnover for last 3 years		
1	More than 1 Crore	10	10
D	Bidder Company registered in Manipur (Enclose copy of company registration in Manipur- if applicable)	10	10

Note: - Documents to be submitted in support of the above Criteria:-

1. Documentary Proof regarding being empanelled in MNRE as Empanelled Channel Partner or New Entrepreneur
2. For Experience of Projects installed & commissioned, a copy of the Completion certificate issued by the beneficiary should be enclosed.
3. CA certificate on letter head of CA regarding Average Turnover for last three years.
4. Copy of registration in Manipur- if applicable.

The minimum Score to be obtained to qualify technically should be at least 60 points otherwise the financial offer shall not be considered.

8.5 Evaluation of price bid

- i) Price Bid (Envelope II) of the Qualified Bidders shall be opened in presence of the representatives of such Qualified Bidders, who wish to be present, on a date as may be intimated by MANIREDA to the Bidders through website or Email. The evaluation of Price Bid shall be carried out based on the information furnished in Envelope II (Price Bid).
- ii) The Price Bid submitted by the Bidders shall be scrutinized to ensure conformity with the EOI. Any Bid not meeting any of the requirements of this EOI may cause the Bid to be considered "Non-responsive" at the sole decision of MANIREDA.
- iii) The price quoted shall be revised on quarterly basis and the revised rates shall be uploaded accordingly to the website of MANIREDA.
- iv) MANIREDA will prepare the list of rates offered by bidder(s) in Rupees per Kilowatt for each group of size/capacity as mentioned in the Bid.

8.6 Selection of bidder(s) for empanelment

- i. Only the bidders who are technically qualified as per terms of MANIREDA will be considered for empanelment.
- ii. The rates quoted by bidder for every group of size/capacity (kWp) will be taken as the offer rate of the firm.
- iii. The empanelled firms should not charge more than their offered/quoted rate for a particular capacity (kWp) from the promoter/beneficiary.
- iv. Empanelment of additional bidders may be considered for the firms who got empanelment certificate from MNRE after the date of advertisement of this EOI /who missed this EOI, subject to approval of MANIREDA.
- v. The list of the successful empanelled bidders / firms and their capacity wise offered rate will be circulated to the registered applicants.

8.7 Letter of Award

- i) The eligible registered applicant shall issue work order to any one of the empanelled firms as per his/her choice at the rate (in Rs/KW) not more than the approved rate by MANIREDA.
- ii) If any empanelled firm gets order from any of the purchaser, it shall complete supply, erection, testing & commissioning, storage, civil work, within the mutually agreed time period between the registered applicant and empanelled firm. However, the maximum time for the execution of the project shall be 2 months from the date of issue of work order.
- iii) The registered applicant and the concerned empanelled firm shall enter into an agreement for successful installation/commissioning of the project. The draft agreement will be provided by MANIREDA.

- iv) In case of breach of any terms of the agreement by any party, MANIREDA may forfeit the EMD/Security money of the concerned empanelled firm or may cancel the registered project of the applicant, as the case may be.

8.8 CFA disbursement

- i) MANIREDA will disburse the applicable CFA to the registered applicant directly on completion of necessary formalities and procedures.
- ii) The applicable CFA shall be calculated on the benchmark cost fixed by MNRE/ the rates finalized by MANIREDA through this EOI, whichever is lower is applicable.
- iii) In case MNRE deducts applicable subsidy due to delay in project execution or any other reasons like revision of benchmark cost, percentage of applicable subsidy on benchmark cost etc, then the actual subsidy amount provided by MNRE shall be released to registered applicant.
- iv) Total liability of MANIREDA under this contract shall be limited to release of subsidy after 3 months of successful commissioning and acceptance of project.
- v) Joint inspection by MANIREDA shall be carried out before release of subsidy. Bidder should provide all the data and necessary proof of meeting the technical specifications as specified in the EOI.

9. MANIREDA's Right to accept any bid and to reject any or all bids

- 9.1 The MANIREDA 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.

10. Signing of Contract

The successful Bidder(s) will sign a Memorandum of Agreement on the terms of contract with MANIREDA within fifteen (15) days from the date of issue of empanelment letter.

SECTION-II

TECHNICAL SPECIFICATION

Technical specification of the Grid Interactive Rooftop Solar Power plant shall be in accordance with the latest MNRE technical specifications as issued by notification No.30/11/2012-13/NSM dated 26/06/14 or as directed by MNRE for the grid interactive rooftop and small SPV power plant from time to time.

1. Brief Description of the System

The main components of the SPV plant are

- PV Modules
- Civil Work
- Module Mounting Structure
- Array Junction Boxes
- String Monitoring Boxes
- Grid Tie Inverters
- Step- up Transformer – LT
- Step- up Transformer – HT
- Monitoring System as per predefined parameters
- Earth System
- Lightning & Surge Protection
- DC Cables
- AC Cables
- Illumination System
- AC Metering and Grid Interconnection System

This list is of general nature and some of the components may not be required or may be combined or other components not mentioned in the list may be required as per the system finally designed.

2. Typical Power Generation Scheme

The system consists mainly of the following:

- Solar PV array – which produces DC electricity when solar rays are incident on it
- Power Conditioning Units (PCU) or Inverters – which convert DC (Direct Current) electricity into AC (Alternating Current) electricity and facilitate synchronization with the grid power
- Transformers – which transform the AC output of the Power Conditioning Units to the level required at the grid The SPV array (constituting solar PV modules of selected rating connected in series and parallel combinations to build up the Voltage and Current parameters as per desired design modalities) produces DC electricity when Solar insolation is incident on it. The DC power thus produced is taken through various junction boxes and isolators and connected to the Inverter

The Inverter houses the inverter circuitry which converts DC power supply into AC power supply, the synchronization circuitry which actualizes the tie-up of

solar PV source to the grid source and the remote monitoring and control circuitry. A number of Inverters are connected in parallel as per the desired AC Power required.

Depending on the grid voltage level to which the solar PV power is being synchronized, different levels of step-up transformers may have to be deployed. The protection and metering circuits play a very significant role in the Inverter operation. Appropriate current transformers and potential transformers are used to tap required feed back signals to initiate action on metering and protection.

3 Typical System Components

Boundary conditions for support to Grid connected Solar PV Applications for all category of beneficiaries, including Individuals, Industrial/ Commercial / Non Commercial entities to be 1 kWpto 500 kWp. ApplicableBIS / Equivalent IEC Standards/ Applicable MNRE Specifications

A. Solar PV Modules	Standard Description		Standard number
Modules			
	(i)	a) Crystalline Silicon Terrestria PV modules	- IEC 61215 / IS14286
	(ii)	(a) Construction requirements (b) Testing & Safety qualification	- IEC 61730 (Pt. 1)/ Eq.IS - IEC 61730 (Pt. 2)/ Eq.IS
	(iii)	PV modules to be used in a highly corrosiveatmosphere (Coastal area etc,) must qualify Salt Mist corrosion Testing	- IEC 61701 / IS61701
	<p>Each PV module must use RFID tag which must contain the following information as per MNRE requirements:</p> <ul style="list-style-type: none"> (i) Name of the manufacturer of PV Module (ii) Name of the manufacturer of Solar Cells (iii) Month and year of manufacture (separately for solar cells and module) (iv) Peak wattage, I_m, V_m and FF for the module (v) Unique Sl. No. and Model No. of the module (vi) Date and year of obtaining IEC PV module qualification certificate (vii) Name of the test lab issuing IEC certificate (viii) Country of origin (separately for solar cells and module) (ix) I-V curve for the module (x) Other relevant information on traceability of solar cells and module as per ISO 9000 series <p>AUTHORISED TESTING LABORATORIES / CENTRES</p> <p>Performance of PV Modules, at STC conditions, must be tested and approved by one of the IEC / NABL Accredited Testing Laboratories including Solar Energy Centre of MNRE. For small capacity PV modules up to 50 Wp capacity STC performance will be sufficient. WARRANTY: PV modules used in solar power system 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</p>		

B. BOS item / system	Standard Description		Standard Number
Power Conditioners / Inverters including MPPT & Protections (More than 100Wp and up to 20kWp capacity only)	i	Environmental Testing	IEC 60068 - 2 (1,2,14,30) / Equivalent BIS Std
	ii	Efficiency Measurements	IEC 61683 / IS61683
	iii	Product safety standard	IEC 62109-1 (2010) IEC 62109-2 (2011)
	iv	Grid Connectivity utility interface	IEC 61727:2004 (as per IEEE 519 specifications)
	v	Test procedure for islanding prevention measures for utility/ interconnected PV inverters	IEC 62116 or IEEE 1547 and IEEE 1547.1
	vi	Electromagnetic compatibility and Electro Magnetic Interference	IEC 61000-6-1:2007 IEC 61000-6-3:2007 IEC 61000-3-2:2006 IEC 61000-3-3:2006
	vii	Ingress protection	IP54 (for outdoor)/IP21 (for indoor) As per IEC 529
	*Note: for testing Sl. No. i & ii beyond 10 kVA self-certification by manufacturers are acceptable in case if the Charge controller is not built-in the inverter, IEC 62093 test is required separately for charge controller		

Storage Batteries	Capacity Test; Charge / Discharge Efficiency and self discharge	As per relevant BIS Std.
Cables	General Test and Measuring Method PVC insulated cables for working voltage upto and including 1100 V and UV resistant for outdoor installation for A.C. cables. (It is suggested to use D.C. rated, UV resistant Photovoltaic cable having plug and play capability cables)	IEC 60227 / IS694, IEC 60502 / IS1554 (Part I & II)
Earthing	Grounding	IS3043:1986
Switches/ Circuit Breakers/ Connectors	General Requirements Connectors – safety A.C./D.C.	IEC 60947 Part 1, 11, III / IS 60947 Part 1, 11, III EN 50521
Junction Boxes/ enclosures for invertors / Charge Controllers / Luminaries	General Requirements	IP65 (for outdoor) / IP 21 (for indoor) As per IEC 529
Energy meters (for NET/GROSS connection)	As per CEA Guidelines	
Grid Connectivity	As prevalent in the State	
<p>AUTHORISED TESTING LABORATORIES / CENTERS : Test Certificates/ Reports for the B o S items / components can be from any one of the IEC / NABL Accredited Testing Laboratories or MNRE approved centers.</p> <p>WARRANTEE: The mechanical structures, electrical works, storage batteries etc and</p>		

	SPV power plants / systems must be warranted for a minimum period of 5 years
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C. Specification of Inverter

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage level to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)".

Technical features of the inverter to be as follows:

Switching devices	IGBT/MOSFET
Control	Microprocessor /DSP
Nominal AC output voltage and Frequency	415V, 3 Phase, 50 Hz (In case single phase inverters are offered, suitable arrangement for balancing the phases must be made.)
Output Frequency	50 Hz
Grid Frequency Synchronization range	+ 3 Hz or more
Ambient Temperature considered	-20 ⁰ C to 50 ⁰ C
Humidity	95 % Non-condensing
Protection of Enclosure	IP-20 (Minimum) for indoor
	IP-65 (Minimum) for outdoor
Grid Frequency Tolerance range	+ 3 or more
No-load losses	Less than 1% of rated power
Inverter Efficiency (minimum)	>93% (In case of 10 kW or above with in-built galvanic isolation)
	>97% (In case of 10 KW or above without in-built galvanic isolation)
	> 90% (In case of less than 10 kW)
THD	<3%
PF	> 0.9

- a) Three phase PCU/inverter shall be used with each power plant system (10Kw and/or above) but in case of less than 10 kW single phase inverter can be used.
- b) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- c) Inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- d) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- e) Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/IEC 62116 or equivalent BIS standard.
- f) In PCU/Inverter, there shall be a direct current isolation provided at the output by means of a suitable isolating transformer. If Isolation Transformer is not

incorporated with PCU/Inverter, there shall be a separate Isolation Transformer of suitable rating provided at the output side of PCU/PCU units for capacity more than 100 kW.

- g) The PCU/inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.
- h) The PCU / Inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/Equivalent BIS Std.
- i) The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/Equivalent BIS std. The junction boxes/enclosures should be IP65 (for outdoor)/IP 54 (indoor) and as per IEC 529 specifications.
- j) The PCU/ Inverters should be tested from the MNRE approved test centers/NABL/ BIS/IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

DOCUMENTATION

The Installer shall supply the following documentation:

- System description with working principles.
- System single line diagram.
- Solar PV array lay-out.
- Routing diagram of cables and wires.
- Data sheets and user manuals of the solar PV panels and the solar grid inverter.
- A system operation and maintenance manual.
- Name, address, mobile number and email address of the service centre to be contacted in case of failure or complaint.
- Warranty cards.
- Maintenance registers.

QUALITY AND WORKMANSHIP

Solar PV modules are designed to last 25 years or more. It is therefore essential that all 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 levels of quality and workmanship. During inspection MANIREDA 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.

FORMATS FOR SUBMITTING EoI

Covering Letter

Ref.No. _____ Date: _____

From: _____ (Insert name and address of Individual) _____
_____ Tel. #: Fax#: E-mail address#

To,
Director,
Manipur Renewable Energy Development Agency (MANIREDA)
2nd Floor, South Block, Secured Office Complex, A.T.Line,
Near Imphal Hotel, Imphal – 795001

Sub: EoI for the empanelment of the experienced firms for “Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive rooftop solar PV power plant of various capacities in the State of Manipur

Dear Sir,

We, the undersigned....(insert name of the ‘Bidder’) having read, examined and understood in detail the EoI Document for Implementation of Grid connected Roof Top Solar PV System Scheme in Manipur State in India hereby submit our Bid comprising of Price Bid and Technical Bid.

1. We give our unconditional acceptance to the EoI no. _____, dated.....and EoI Documents attached thereto, issued by Manipur Renewable Energy Development Agency, as amended. As a token of our acceptance to the EoI Documents, the same have been initiated by us and enclosed to the Bid. We shall ensure that we execute such EoI Documents as per the provisions of the EOI and provisions of such EOI Documents shall be binding on us.
2. EMD/Security money
We have enclosed a EMD/Security money of Rs.....(Insert Amount), in the form of bank guarantee no.....(Insert number of the bank guarantee) dated.....(Insert date of bank guarantee) as per Formatfrom(Insert name of bank providing EMD/Security money) and valid up toin terms of Clauseof this EoI
3. Acceptance
I. We hereby unconditionally and irrevocably agree and accept that the decision made by Manipur Renewable Energy Development Agency in respect of any matter regarding or arising out of the EoI shall be binding on us. We hereby expressly waive any and all claims in respect of Bid process.
II. We confirm that there are no litigations or disputes against us, which materially affect our ability to fulfil our obligations with regard to execution of projects.
4. Familiarity with Relevant Indian Laws & Regulations
We confirm that we have studied the provisions of the relevant Indian laws and regulations as required to enable us to submit this Bid and execute the EoI Documents, in the event of our selection as Successful Bidder. We further undertake and agree that all such factors as mentioned in EOI have been fully examined and considered while submitting the Bid.

5. Contact Person

Details of the contact person are furnished as under:

Name :
Address :
Phone Nos. :
Fax Nos. :
E-mail address :

6. We are enclosing herewith the Technical Bid (Envelope I) and Price Bid (Envelope II) containing duly signed formats, each one duly sealed separately, in one (1) original as desired by you in the EoI for your consideration.
7. It is confirmed that our Bid is consistent with all the requirements of submission as stated in the EoI and subsequent communications from Manipur Renewable Energy Development Agency.
8. The information submitted in our Bid is complete, strictly as per the requirements stipulated in the EOI and is correct to the best of our knowledge and understanding. We would be solely responsible for any errors or omissions in our Bid.
9. We confirm that all the terms and conditions of our Bid are valid for acceptance for a period offrom the Bid Deadline.
10. We confirm that we have not taken any deviation so as to be deemed non-responsive.

Dated the _____ day of _____, 20....

Thanking you,

Yours faithfully,

Name,

GENERAL PARTICULARS OF THE BIDDER

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

(Signature of Bidder)
with designation

EXPERIENCE OF THE BIDDER

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

Name of organization by whom work was awarded. Please give Project wise detail of projects installed/ commissioned:-

1. Name and location of the works.
2. Total amount of Contract.
3. Year of Award.
4. Detail of involvement in work as an individual or as a company.
5. Was the work completed satisfactorily and within the stipulated time period.
6. Particulars of evidence enclosed in token of above
7. Whether list of past supplies enclosed as per Annexure V
8. Whether past performance obtained from MANIREDA / utilities enclosed

(Signature of Bidder)
with designation

DECLARATION BY THE BIDDER

I/We _____ (herein after referred to as the bidder) being desirous of bidding for the supply, erection, testing , installation and commissioning of SPV power plants up to 500 kWp in different parts of Manipur including warranty period of 5 years as shown in scope of bid specification . We have fully understood the nature of the work and carefully noted all the terms and conditions, specifications etc. as mentioned in the bid documents, hereby declare that:-

1. The bidder is fully aware of all the requirements of the bid documents and agrees with all the provisions of the bid documents.
2. The bidder is capable of executing and completing the work as required in the bid.
3. The bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the bid.
4. The bidder is financially solvent and sound to execute the bid.
5. The bidder is sufficiently experienced and competent to perform the contract to the satisfaction of MANIREDA.
6. The information and statements submitted with the bid are true.
7. The bidder 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 bid/empanellment.
9. The bidder gives the assurance to execute the bid work as per the specifications, terms and conditions and in exact configuration of the sample submitted on award of the work.

**(Signature of Bidder)
with designation**

SCHEDULE OF PAST WORKS ACCOMPLISHED IN LAST THREE YEARS

Sl. No	Description	Work order No. and date	Name of Agency	Date of work completion as per order	Actual date of work completion/ commissioning

**(Signature of Bidder)
with designation**

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

PROFORMA FOR BANK GUARANTEE FOR EMD/Security money

(On Non-Judicial stamp paper of appropriate value)

Ref.:

Date:

Bank Guarantee No.:

To,

The Director,

Manipur Renewable Energy Development Agency (MANIREDA)

2nd Floor, South Block, Secured Office Complex, A.T.Line,

Near Imphal Hotel, Imphal – 795001

Dear Sir,

In accordance with Invitation of Bids under Bid document No..... M/S..... having its Registered/ Head Office at(hereinafter called the "Bidder") who wishes to participate in the said tender for implementation of Grid connected Roof Top Solar PV System Scheme in Manipur State as per tender specification.

We, the (Name & Address of the bank) and having our Head Office at(#)..... Guarantee and undertake to pay immediately on demand by (Manipur Renewable Energy Development Agency) hereinafter called the 'MANIREDA' the amount of(*)..... without any reservation, protest, demand and recourse to the extent of the said sum of Rs..... (Rupees.....only). Any such demand made by the 'MANIREDA' shall be conclusive and binding on us irrespective of any dispute or difference raised by the Bidder. This guarantee shall be irrevocable and shall remain valid up to (as per clause 2.1 of the EoI) . If any further extension of this guarantee is required, the same shall be extended to such required period on receiving instructions from M/s..... (Bidder's name) on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer, has set its hand and stamp on this day of 20 at

Witness: (Signature)

..... (Signature) (Name).....

..... (Name) (Designation with Bank)

Seal)..... (Official Address)

Stamp.....

Attorney as per Power of No.....

Date.....

Note:

1. (*) the amount shall be as specified in the Bid document. (#) Complete mailing address of the Head Office of the Bank to be given.
2. The Bank Guarantee shall be from a Bank as defined in Clause 2.1 of the Bid document.
3. The Stamp Paper of appropriate value shall be purchased in the name of guarantee issuing Bidder/bank issuing the guarantee.

Financial Bid

(The Format should be on the Letter Head of the firm)

Date : _____

From : _____ (Insert name and address of firm)

Tel.#: Fax#: E-mail address#

To,

Director,

Manipur Renewable Energy Development Agency (MANIREDA)

2nd Floor, South Block, Secured Office Complex, A.T.Line,

Near Imphal Hotel, Imphal – 795001

Name of Work: Empanelment of the experienced firms for “Supply, erection, testing and commissioning including warranty, operation & maintenance for 5 years of grid interactive rooftop solar PV power plant in the State of Manipur.

We give our unconditional financial rates in response of this EoI Document issued by MANIREDA based on **FLAT ROOF(height upto G+2)**:

SI No	Capacity and configuration of SPV power plant	System cost inclusive of taxes Per Kwp	Cost of Installation & commissioning inclusive of taxes Per Kwp	Rates for 5 years comprehensive maintenance Per Kwp	Total cost Per Kwp
1	1 to 3 KWp				
2	Above 3 to 8 kWp				
3	Above 8 to 10 KWp				
4	Above 10 to 50 KWp				
5	Above 50 to 100 KWp				
6	Above 100 to 300 KWp				
7	Above 300 to 500 KWp				

Note: The above rates are quoted in INR per KW and are inclusive of all the taxes and duties

Signature

Name

Designation with Seal