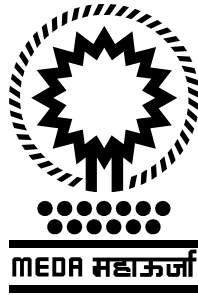




MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA), PUNE.

TENDER DOCUMENT NO:- SPV /2011/CR-98/SOLAR.

TENDER FOR DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING, COMMISSIONING WITH FIVE YEARS COMPREHENSIVE MAINTENANCE CONTRACT OF (20 KW X 4) OFF-GRID SPV POWER PLANTS, AT VARIOUS COLLECTOR OFFICE BUILDINGS IN THE STATE OF MAHARASHTRA.



MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA)

(A Government of Maharashtra Institution)

**S. No. 191/A, Phase 1, MHADA COMMERCIAL COMPLEX
OPP. TRIDAL NAGAR, YERWADA, PUNE - 411 006.**

PHONE NO: 020 – 26614103 / 26614393

FAX NO: 020 - 26615031

E-mail: solar@mahaurja.com , re@mahaurja.com

Issued to: M/s_____

Assistant Director (A/F):

Date:

Signature of Tenderer
firm

Stamp of the 1



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TENDER NOTICE

Maharashtra Energy Development Agency

(A Government of Maharashtra Institution)
S.No.191-A, MHADA Commercial Complex,
Opp.Tridal Nagar, Yerwada, Pune 411 006.

Sealed Tenders are invited from MNRE approved Manufacturers, authorized dealers for Design, Manufacture, Supply, Installation, Commissioning with 5 years Comprehensive Maintenance Contract of (20 kW X 4) off-grid SPV Power Plants, at various Collector Office Buildings in the state of Maharashtra.

Period of issue of tender document	: 04/03/2013 to 25/03/2013 during working days and office hours only.
Cost of Tender Document	: Rs 3000/- (Rs. Three thousand only) non refundable by cash/ D.D. in favour of Director General, MEDA payable at Pune from nationalized bank only. If required by post Rs. 500/- will be charged as postal charges. The tender document can be downloaded from MEDA website (www.mahaurja.com). In such case the tenderer shall enclose cost of tender document by separate D.D. along with tender.
Sale & Deposit of Tender	: MEDA Office, Pune.
Estimated Cost	: Rs 176 Lakhs for (20 kW X 4) Off-Grid SPV Power plants
Earnest Money Deposit	: 3% of the estimated cost for systems as mentioned in Annexure-7 of tender document by D.D. in favour of Director General, MEDA payable at Pune from Nationalized bank.
Security Deposit	: 5% of the total contract value, by D.D. in favour of Director General, MEDA payable at Pune.
Period of Completion	: Four month.
Pre-Bid Meeting	: 11/03/2013 at 14.00 hrs. at MEDA, Pune.
Date of Submission	: 25/03/2013 at 13.00 hrs. at MEDA, Pune.
Date of Opening	: 25/03/2013 at 15.00 hrs. at MEDA, Pune.

Director General, MEDA reserves the right to accept or reject any / all tenders without assigning any reason thereof.

**Sd/-
Director General
MEDA,
Pune.**



DETAILED TENDER NOTICE

NAME OF WORK: TENDER DOCUMENT FOR DESIGN, MANUFACTURE, SUPPLY, INSTALLATION, TESTING, COMMISSIONING WITH FIVE YEARS COMPREHENSIVE MAINTENANCE CONTRACT OF (20 kW X 4) OFF-GRID SPV POWER PLANTS, AT VARIOUS COLLECTOR OFFICE BUILDINGS IN THE STATE OF MAHARASHTRA

Eligibility Criteria: -

- a. Tenderer should be SPV system manufacturer.
- b. The products / systems / devices quoted in tender should be as per MNRE specification.
- c. The Tenderer should have supplied & commissioned minimum 50 kW (aggregate) capacity SPV Power Plants for any Nodal Agency / Govt. Organization / Semi Govt. organization in India during last 3 years.
- d. The tenderer should have average turnover of minimum 50 Lakhs for 20 kW SPV Power plants instead of minimum 75% of total estimated cost during last three years.
- e. The tenderer shall quote all or any of the systems mentioned in Annexure (SPV Power Plant) for Various Collector office Buildings in the State of Maharashtra mentioned in **Annexure-1**.

All above criteria shall be strictly followed. Tenderer should quote only if he is eligible.

1. Estimated cost: **Rs: 176 Lakhs** for (20 kW X 4) Off-Grid SPV Power plants
2. Cost of Tender form : Rs.3000/- (Rs. Three thousand only), by cash / D.D. in favour of Director General, MEDA, Pune payable at Pune from nationalized bank, tender document will be available at the office of Director General, MEDA Pune. The tender document can be downloaded from MEDA website (www.mahaurja.com). In such case the tenderer shall enclose cost of tender by separate D.D. at the time of submission of tender document and same shall be enclosed in **Envelope -1**.
3. Validity Period: The tender shall remain valid for the period of four months from the date of submission of Tender document.
4. Tender without requisite amount of EMD shall be out rightly rejected. No tenderer is exempted from EMD / SD. Correspondence on request from any tenderer on exemption of EMD / SD will not entertained by MEDA.
5. Tenderer is abiding to the corrections/changes if any in the tender document accepted by MEDA officials at the time of pre-bid meeting.



6. Blank Tender and any other information will be available at the office of Director General, MEDA Pune on all working days except Sundays and Public Holidays declared by the Government of Maharashtra, during 10.15 am to 5 pm from 04/03/2013 to 25/03/2013 Complete filled Tender forms will be received in sealed cover, addressed to the Director General, MEDA, Pune in his office, in person / by courier / post / R.P.A.D. up to 13.00 pm on or before 25/03/2013 MEDA will not be responsible for any delay caused for submission by courier / post. The tenders will be opened at 15.00 pm at MEDA Pune on 25/03/2013 as far as possible.
7. Tenderer should submit the Tender document on or before the date and time specified in the Tender document. Tenders sent by post or by courier or R.P.A.D. or by other any means shall also reach within the stipulated time. MEDA will not consider any postal/courier delay.
8. All the information furnished and document produced with the Tender shall be in English language only. The Tender notice and Tender document shall form a part of contract agreement.
9. Issue and / or submission of Tender document do not mean that tenderer is qualified for awarding the work.
10. The tenderer shall sign and put firm's stamp on each page of the tender.
11. The original tender document shall be submitted with all Annexure as per procedure for submission of tender on due date and time.
12. The conditional tenders will be rejected out rightly.
13. Director General, MEDA reserve the right to reject / accept any or all Tender without assigning any reason thereof.
14. Completion of work is four months from the date of issue of work order.



PROCEDURE FOR SUBMISSION OF TENDER DOCUMENT:

Tender shall be submitted in **two envelope system** as details given below:

A. Envelope No.1: Technical Tender

The first envelop shall be clearly marked as “**ENVELOPE NO.1: Technical Tender**”, “**Name of work:** “Tender document for Design, Manufacture, Supply, Installation, Commissioning with 5 years Comprehensive Maintenance Contract of (20 kW X 4) Off-Grid SPV Power Plants, at various Collector Office Buildings in the State of Maharashtra.” **Tender notice No.SPV/2011/CR-98/SOLAR/** (please mention serial No. of Tender) & Name and Address of tenderer and shall contain the following documents.

I. Attested copies of following document.

1. Test Certificate for SPV Systems issued by MNRE or its authorized Test Centers for IS standards and IEC standards should be valid upto **31st March, 2013**.
2. Undertaking as per the **Annexure-2** on Rs.100/- stamp paper.
3. Original Tender Document duly signed and stamped on each page.
4. Copy of the recently paid Income Tax Challan, PAN number, registration under VAT, service tax, professional tax etc.
5. Earnest Money Deposit (EMD) as given in **Annexure-7**.
6. Copy of declaration as given in **Annexure-9** of Tender document & copy of agreement (In case of dealer).
7. Availability of infrastructure with tender for Comprehensive Maintenance Contract (CMC).

II. Detailed bar chart indicating schedule of project commissioning.

III. Information of the tenderer regarding its technical staff, experience in this field, turnover during last three years, its legal status and other related important information. Also produce attested copies of its legal status.

The tenderer should also specify the name of the authorized person who will be transacting with MEDA, Pune (Authority Letter).

IV. The list of installation indicating supply and installation of MNRE approved SPV Power Plant during the last 3 yrs. **Annexure-4 (To be retyped and attach with Tender Document) and list of work in hand **Annexure-5**.**



- V. The tenderer shall submit the copies of the work orders and commissioning reports duly signed by the users who have commissioned SPV power plants of total minimum 50 kW capacities for any Nodal Agency / Govt. Organization / Semi Govt. Organization in India during last 3 years.
- VI. The tenderer should visit the site & carryout the survey along with concern persons of various Collector office Buildings in the State of Maharashtra and submit the certificate indicating that the survey is carried out by the tenderer as per **Annexure – 8**.

B. Envelope No.2: Financial Offer.

“ENVELOPE NO.2: Financial Offer”, **“Name of work:** Tender document for Design, Manufacture, Supply, Installation, Commissioning with 5 years Comprehensive Maintenance Contract of (20 kW X 4) Off-Grid SPV Power Plants, at various Collector Office Buildings in the State of Maharashtra.” **Tender notice No. SPV/2011/CR-98/SOLAR** (Please mention serial No. of Tender) & Name and Address of tenderer.

- C. The two sealed envelopes No.1 and No.2 shall be put together in one common cover and sealed. This sealed cover shall be marked with Tender document for “Design, Manufacture, Supply, Installation, Commissioning with 5 years Comprehensive Maintenance Contract of (20 kW X 4) Off-Grid SPV Power Plants, at various Collector Office Buildings in the State of Maharashtra”, Tender notice No: SPV/2011/CR-98/SOLAR (Please mention serial No. of Tender) & Name and Address of tenderer.**

D. Opening of Tenders:

On the date specified in the Tender notice, following procedure shall be adopted for opening of the Tenders.

Envelope No. 1

Envelope No-1 will be opened first to verify technical & other requirements as specified under at ‘A’ above. All the contents and Annexure required to be submitted for fulfillment of tender conditions shall be thoroughly checked and verified.

Envelope No.2

1. Tenderer can take out the financial bid page from original tender document & should use the same for quoting financial bid which is to be submitted in **envelope2**.
2. Those tenders, who have fulfilled the conditions of technical bid, shall be called for the opening of the financial bid. The date of opening of financial bid will be communicated to the concerned eligible tenderers by MEDA.



Director General, MEDA, Pune reserves the right to postpone date of opening of Tender and / or Envelope – 2. Director General, MEDA Pune reserves the right to reject / accept any / all Tenders without assigning any reason thereof. Opening of **Envelope - 2** does not mean that the tenderer is eligible for the contract.

● **SCOPE OF WORK**

The tenderer shall carry out following activities:

- A) Design, manufacture, supply, installation and commissioning of suitable support for the PV panels and other components with the accessories.
- B) Civil work (grouting) for PV structure. Also anti-corrosive material must be used for mounting structure for SPV plant.
- C) The fabricated material (stands, bracket etc.) should be Anodized Aluminum Alloy having suitable thickness according to requirement of the site conditions.
- D) The fabricated frames must be made hot dip Galvanized Iron with FRP coating on it with Stainless Steel (S.S.304) nut-bolts having brush / hairline finish quality.
- E) SPV Power plant shall be installed as per the specifications provided in the technical offer.
- F) Provide sealed & tested energy meter at consumption side & generation side of SPV Power Plant.
- G) Provide electrochemical marking (embossing) on each solar module frame which will shows name of manufacturer, year of installation and capacity of solar module.
- H) Transmission and Distribution line. It shall be the responsibility of the tenderer to provide distribution system in such a way that all rooms and electrical end points get the desired power.
- I) Supply of manual for Operation and Maintenance of all the system in two languages i.e. in English and in Marathi to concern persons several of Collector Office Buildings in the State of Maharashtra.
- J) Supply and installation of control equipments required for the system.
- K) Training to the user for operation and maintenance of the system.



- L) Any additional works not covered above, but necessary for the functioning of the system and required as per specification incorporated. The items of minor nature, which are not mentioned, shall be incorporated by the tenderer.
- M) Regarding cabling work (external & internal) & construction of control room, the tenderer is required to visit the site and as per actual site conditions quote (including drawing & design) accordingly.
- N) Regarding actual work to be carried out at the site tenderer needs to execute the work in consultation with authorities of various Collector Office Buildings in the State of Maharashtra.
- O) The installed & commissioned systems shall be handed over to various Collector Office Buildings in the State of Maharashtra by the selected tenderer. The tenderer shall provide Comprehensive Maintenance Contract (CMC) of 5 years from date of commissioning with all necessary Documents.
- P) The tenderer shall provide the necessary training to identified representative approved by various Collector Offices in the State of Maharashtra for proper daily operation and maintenance of installed system.
- Q) The CMC period shall be 5 years from date of commissioning of system. The successful tenderer shall visit the installation quarterly, carry out regular servicing of installed systems, and submit performance reports of installed system duly certified by authorities of various Collector Office Buildings in the State of Maharashtra. In addition, the tenderer shall submit performance reports (yearly) of installed system duly certified by authorities of various Collector Offices in the State of Maharashtra as well as MEDA. It is responsibility of Collector Office authorities of Maharashtra to keep the installed system functional after completion of 5 years CMC period by entering into Annual Maintenance Contract by appointing suitable agency.



● **GENERAL TERMS AND CONDITION:**

1. The material used for the work shall be new & best quality available and work should be carried out with best workmanship. The material used and works carried out shall be as per IS / IEC wherever applicable.
2. You shall be responsible for any damage occurred, if any, to other installations of the site during the course of work.
3. The Tenderer should provide appropriate tools and equipment's to the workmen and ensure that those are in proper working condition and the workmen use the appropriate tools and take precaution "PLEASE NOTE THAT ANY ACCIDENT TO THE WORK MEN / PUBLIC / ANIMALS / PROPERTY BOTH MOVABLE AND IMMOVABLE SHALL BE ENTIRE AND SOLE RESPONSIBILITY OF THE TENDERER AND ANY PROCEEDING ARISING OUT OF THE SAME SHALL BE AT THE TENDERER'S RISK AND COST. MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) OR ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR ANY SUCH INCIDENT".
4. PLEASE NOTE THAT THE QUANTITY PROVIDED IN THE TENDER DOCUMENT ARE APPROXIMATE AND PROVIDED ONLY FOR THE GUIDELINES. HOWEVER, THE TENDERERS SHALL VISIT THE PLACES OF INSTALLATIONS AND VERIFY EACH AND EVERY ITEM, SITE CONDITIONS, APPROACH ROAD, REQUIREMENT OF LAND, SOIL CONDITIONS & WATER AVAILABILITY FOR SITE.
5. Tenderer should provide necessary manufacturer's test certificates for materials being used for the work. Tenderer should provide facilities and bear the cost for the same. I-V curve of all the panels erected by manufacturers shall be provided to the MEDA.
6. The selected tenderers are bound to work on the guideline provided by MEDA / various Collector Offices authorities in the State of Maharashtra from time to time. Guidelines if issued in future by MEDA/ various Collector Offices authorities in the State of Maharashtra, the changes proposed will also be applicable without enhancement in project cost till the completion of 5 years period.
7. The tenderer shall submit detail drawing of mounting structure with detail specifications includes size; materials used for mounting structure for installation of (20 kW X 4) Off-Grid SPV power plants to be installed at various Collector Office Buildings in the State of Maharashtra given in technical specifications of SPV power plants **Annexure-6**.
8. It will be responsibility of the tenderer to ensure the satisfactory performance of the system.
9. Please note that for any of the discrepancy observed during the period of installation and commissioning, conditions specified by MNRE / MEDA shall be final & binding.
10. The Tenderer shall comply with the provision of contract labour. (Regulation and Abolition) Act 1970, minimum wages Act. 1948, payment of the wages Act. 1963 Workmen's Compensation Act. 1961, the contract labour (Regulation and



Abolition) Act, 1979 and all other related Acts and any modification thereof or any law relating there to and rules made there under from time to time.

11. MEDA will not pay any interest on any amount due from MEDA.
12. If any information / confirmation on any point of this tender condition are required tenderer may contact / write to General Manager (RE), MEDA Pune giving tender reference no. etc.
13. In the event of dispute arise during installation & commissioning of the systems related to the work and documents, decision of the Director General, MEDA shall be final.
14. The Director General, MEDA, Pune reserves the rights to distribute the work among the tenderer who are eligible and have submitted the offers.
15. Once the tenderer has submitted his offer and subsequently if he is not interested to work, in such cases MEDA will forfeit his EMD amount.
16. At the time of placing work order and during the implementation MEDA can revise the technical terms and conditions if revised by MNRE, which will be binding on the tenderers.
17. It should be noted that Director General, MEDA, Pune has right to terminate the work order, if the selected tenderers fails to complete the work within given time & conditions.
18. It is binding on the successful tenderer to submit original certificates, documents required by MEDA. Tenderer should submit the same at earliest.
19. Director General, MEDA, Pune reserves the right to cancel the Tenders without assigning any reason thereof.
20. Director General, MEDA, Pune reserves the right to select L2 tenderer i.e. second lowest tenderer to complete the work, if L1 i.e. lowest tenderer is fails to fulfill tender conditions or fails to complete the work.
21. MEDA at its discretion may visit tenderer's factory for testing / inspection of the material to be utilized for work. The testing shall be carried out in manufacturer's premises and / or at appropriate testing laboratory or as per direction of Director General or his authorized representative. However, inspection of material at site will be considered as final inspection.

● **TECHNICAL SPECIFICATION:**

The technical specifications of SPV Power Plants are given in **Annexure-6**.

● **TENDERER TO STUDY CONDITIONS:**

The Tenderer shall be deemed to have carefully examined the works and site conditions, the general and the special conditions, specifications, schedules and drawings and shall be deemed to have visited the sites of the work and to



have fully informed himself regarding local conditions and carried out his own investigations to arrive at rates quoted in the Tender. In this regard, tenderer shall get his doubts cleared well in time and no extra time / extension shall be given for reason of doubt clarification. Tenderer will be given necessary information to the best of knowledge of MEDA, Pune, if asked for.

If tenderer shall have any doubt as to the meaning of any portions of these general conditions or the special conditions, or the scope of the work or the specifications and drawings, or any other matter concerning the contract, he shall attend the Pre-Bid meeting. Once the Tender is submitted, the matter will be decided according to the Tender conditions in the absence of such authentic pre-clarification.

- **INSPECTION:**

Tenderer shall inform MEDA, Pune as well as authorities of Government/semi Govt. buildings in writing when any portion of the work is ready for inspection giving sufficient notice to enable MEDA to send representative to inspect the same without affecting the further progress of the work. The work shall not be considered in accordance with the terms of the contract until the competent person from MEDA and representative of various Government and Semi-Government Buildings of Maharashtra give in writing to that effect.

Approval of materials or workmanship or approval of part of the work during the progress of execution shall not bind the Director General, MEDA or in any way affect him even to reject the work, which is to be completed, without affecting quality of work. In such cases the issue of his certificate for completion of work as per given standards will be binding and until such alternation and modifications or reconstruction shall be effected at your cost which enable to certify that the work has been completed to his satisfaction.

- **MISCELLANEOUS:**

Rate shall be inclusive of all types of taxes, octroi, loading, unloading, transportation, insurance and all applicable taxes. At later stage no correspondence in this regard shall be entertained.

No escalation in the cost of the systems / works or additional cost shall be accepted.

- **TERMS OF PAYMENTS:**

1. 85% of the total cost will be released after supply, installation & successful commissioning of the systems duly certified by Tenderer, Officer of MEDA & authorized person of various Collector Office Buildings in the State of Maharashtra.
2. 15% of the total cost shall be released on submission of three month successful performance report of the system duly certified by Officer of MEDA, authorized person of various Collector Office Buildings in the State of Maharashtra and submission of performance bank guarantee of 10% of total project cost from any Nationalized Bank valid for period of 5 years.



Deduction:-

- The TDS at the source will be deducted as per the Govt. rule and regulations.
- MEDA will issue necessary certificates of TDS deduction
- 'C' / 'D' form will not issued by MEDA.

Payment Terms for Comprehensive Maintenance Contract (CMC):

5 years CMC cost will be released against submission of Performance Bank Guarantee valid for 5 years from the date of completion of project work. The submission of performance Bank Guarantee is mandatory for successful tenderer. For releasing the 5 years CMC cost the tenderer has to submit following documents along with his claim.

- a) Performance Bank Guarantee equivalent to 10% of the project cost from any Nationalized Bank valid up to 5 years from date of completion of the project.
- b) Latest report of systems functioning at various Collector Office Buildings in the State of Maharashtra duly certified by authorized person of Collector Offices in the State of Maharashtra.

- **PENALTY:**

In case the tenderer fails to complete the work within the time period specified in the work order / contract with MEDA, Pune, a sum equivalent to 1% of the total contract value shall be deducted for each week of delay subject to a maximum deduction of 10% of the contract value.

- **GUARANTEED GENERATION:**

The tenderer shall give a guaranteed generation of minimum 3 units (kWh) per kW per day from SPV Power Plant during 300 sunny days in a year during comprehensive maintenance contract period. Otherwise, tenderer have to pay an amount of Rs.50/- per unit as compensation for the number of units not supplied against the guaranteed generation. The tenderer shall provide sealed & tested energy meter at consumption side & generation side of SPV Power Plant. Tenderer should quote the guaranteed generation in the offer.



- **EARNEST MONEY DEPOSIT (EMD), SECURITY DEPOSIT (SD) & FORFEITING OF EMD :**

A. EARNEST MONEY DEPOSIT:

Tender shall be accompanied with EMD at 3% of estimated amount in the form of DD in favour of Maharashtra Energy Development Agency payable at Pune of Nationalized bank. It shall be retained by MEDA. (Estimated to be about four months). EMD shall be returned to unsuccessful tenderer after acceptance of work order by successful tenderer and EMD of successful tenderer shall be returned after submission of security deposit by successful tenderer.

B. SECURITY DEPOSIT:

1. The tenderer shall furnish Security deposit at 5% of the total contract value within 10 days from the date of issue of work order by way of demand draft of nationalized bank in favour of Maharashtra Energy Development Agency, Pune.
2. Failure to comply with the terms of security deposit shall result into cancellation of Letter of Intent without any further reference to the tenderer and the EMD shall be forfeited.
3. The security deposit shall be liable to be forfeited wholly or partly at the sole discretion of the MEDA, if the tenderer either fails to execute the work of above projects or fails to fulfill the contractual obligations or fails to settle in full his dues to the MEDA.
4. In case of premature termination of the contract, the SD will be forfeited and the MEDA will be at liberty to recover the loss suffered by it & if additional cost is to be paid, the same shall be recovered from the tenderer.
5. The MEDA is empowered to recover from the SD for any sum due and for any other sum that may be fixed by the MEDA as being the amount or loss or losses or damages suffered by it due to delay in performance and / or non-performance and / or partial performance of any of the conditions of the contract and / or non-performance of guarantee obligations.
6. The security deposit shall be released to the tenderer only after contract is completed to the satisfaction of the MEDA.

- **FORFEITING OF EMD:**

The EMD paid or submitted by the tenderer shall be forfeited if:

In any case if the tenderer withdraws his tender before finalization of work order.



The tenderer does not accept work order.

The tenderer violates any of the provisions of the terms and conditions of this tender.

The tenderer fails to deposit requisite Security deposit.

The tenderer fails / refuses to execute the order as herein, the tenderer shall be deemed to have abandoned the contract & such an act shall amount to and be construed as the tenderer's calculated and willful breach of contract, the cost and consequence of which shall be to the sole account of the tenderer and in such an event the MEDA shall have full right to claim damages thereof in addition to the forfeiture of EMD.

- **BILLS TO BE ON PRINTED FORMS:**

The Tenderer shall submit all bills in 3 copies to the Director General, MEDA, Pune.

- **PRICE VARIATION:**

Under any circumstances & for any reasons, escalation in the contract value will not be considered by MEDA.

- **JURISDICTION:**

In case of any dispute, in the documentation and during implementation, commissioning, completion and CMC period, all the matter will be resolve under PUNE Jurisdiction only.

- **TIME FRAME:**

The time frame for the completion of work is four months from the date of issue of work order.



DETAILS OF EARNEST MONEY DEPOSIT

(Separately typed preferable computerized and On Tenderer Letter head)

Ref. No.

Date:

The Director General,
Maharashtra Energy Development Agency
S.No.191/A, MHADA Commercial Complex,
Near Tridal Nagar, Yerwada,
PUNE - 411 006.

Subject: Earnest Money Deposit (EMD) for the Tender No. Dated

Respected Sir,

I / We _____ (hereinafter referred to as the Tenderer) being desirous of Biding for the work under the above mentioned Tender document and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc., as mentioned in the Tender document.

I / We feel an immense pleasure to quote our most competitive rates herewith duly signed by me / us. I / We have quoted separately for the systems and the Earnest Money Deposit / s has been submitted separately in **Envelop 1**;

EMD details

Sr. No.	Name of System	Estimated Cost in Rs.	EMD 3% of Estimated Cost in Rs.	EMD Details (Nature, Ref. D.D. No., Date, etc.)

Note: -

- The tenderer shall mention the name of system; accordingly he will submit EMD at 3% of estimated cost of the systems in above format.

(Signature of Tenderer)

Name : _____

Date :

Designation : _____

Place :

Seal :

Signature of Tenderer

16
Stamp of the firm



ANNEXURE-1

Proposed Systems

Sr. No.	Particulars	Capacity	Proposed Place
1	SPV power plant	20 kW (off-Grid)	District Collector Office Building, Jalna.
2	SPV power plant	20 kW (off-Grid)	District Collector Office Building, Yawatmal.
3	SPV power plant	20 kW (off-Grid)	District Collector Office Building, Nagpur.
4	SPV power plant	20 kW (off-Grid)	District Collector Office Building, Nashik.



ANNEXURE-2

DECLARATION

(To be submitted on Rs.100/- stamp paper)

I / We, hereby declare that I / We have made myself / ourselves thoroughly conversant with the sub – soil conditions, local conditions regarding all materials and Labour of which I / we have based my / our rates of this work. The specifications, conditions and lead of materials on this work have been carefully studied and understood by me / us before submitting this Tender. I / We undertake to use only the best materials defined / approved by the Ministry of New and Renewable Energy (MNRE) Govt.

The systems will be provided as per the specifications and guidelines issued by the Ministry of New and Renewable Energy / MEDA. We are bound to adhere to the guidelines issued by the Ministry of New and Renewable Energy / MEDA from time to time. We also hereby commit that if in future MNRE make any changes in the specifications of the systems the same will be incorporated in the present Tender projects. We hereby agree that the work will be executed within the cost of Tender mentioned in the financial bid and there will be no escalation in cost for any reason thereof. We also agree that if we fail to complete the work and leave the work in middle, Maharashtra Energy Development Agency, Pune shall have right to recover the full amount from us. I / We shall accept any amendments made by MEDA from time to time during total project completion period including 5 years Comprehensive maintenance contract (CMC).

I am / We are also commit that we shall complete the work within stipulated time period specified in the work order. We will not ask for any further time extension.

I am / We are bound to work as per Tender and work Order issued by MEDA for this work with 5 years Comprehensive Maintenance Contract. In case of failure of the same, we shall be responsible for any loss and for the action taken by competent Authority of MEDA resulting to ban to work in the State of Maharashtra.

I / We shall comply with the provision of Contract Labour. (Regulation and Abolition) Act 1970, Minimum Wages Act. 1948, Payment of Wages Act. 1963, Workmen's Compensation Act. 1961, the Contract Labour (Regulation and Abolition) Act, 1979 and all other related Acts and any modification thereof or any law relating there to and rules made there under from time to time. MEDA shall not be responsible in this regard.

I / We shall be wholly responsible for any accident or any unusual / unexpected circumstances held during the execution of work & also during the CMC period of 5 years.

(Signature of Tenderer)

Name : _____

Date :

Designation : _____

Place :

Seal :

Signature of Tenderer

18
Stamp of the firm

**PART A****COMPANY PROFILE**

A) Information:	
Name of Company:	
Address of Head Office:	
Contact Person:	
Telephone:	
Telefax:	
E-Mail:	
No. of Branches (Dealers) and their addresses	
Address for Correspondence:	
Contact Person:	
Telephone:	
Telefax:	
E-Mail:	
B) Business Organization: (Please tick wherever applicable & attach all supporting documents)	
Sole proprietorship	
Private Limited	
Limited Company	
Joint Venture	
Others (Please Specify Status)	
C) Business Management :	
Attach Corporate Organization Chart with Names.	



D) Total Number of Employees Employed:	
1) At Head Office	
2) At Branch Office	
3) At Site	
E) Is Your Organization a Subsidiary of Another Company?	Yes/ No
If Yes, of whom?	
F) Financial Capability:	
Annual Turnover Last 3 Years: Attach Balance sheets of last 3 years. Rs. in Lakhs	
Projected this year	
Last year	
One year before last year	
Two year before last year	
Three year before last year	
Four year before last year	
Name and address of the bankers with Contact person and contact numbers.	
G) Whether your company hold following certificates:	Yes/ No
ISO 9001-2000	
ISO 11001-1996	
OHSAS-18001-1999	
If No, do you substantiate a need to have them	Yes/ No
H) Whether your company had worked with the organization which holds above certificates?	Yes/ No
If, yes which organization -	
I) Are there any Litigations/ Court cases against your company?	Yes/ No
If yes, give details :	
J) Any other Information that you want to give?	



PART B

STAFF DETAILS

Name of the Organization :				
<u>List of staff having relevant work experience</u>				
Sr. No	Name	Qualification	Designation	Total Experience in years



PART C

STAFF DETAILS

<u>Other staff</u>				
Sr. No	Category	Available in Company's Roll (In Nos.)	Deployment Strength (In Nos.)	Total Deployment (In Nos.)
		A	B	A+B

[illegible]

Note : 2. Attach relevant completion certificates document for works in previous 3 years.

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**WORK EXPERIENCE**

Name of the Organization :

List of Works in Hand

Sr. No	Name of the Project	Name & address of the Client	Contact Telephone Numbers of the Client	Major Items of work	Total Value of your Work in Rs.	Period		Working As		Percentage of Completion (Financial)
						Start Date	Scheduled Finish Date	Subtenderer directly under Client	Subtenderer of Main Tenderer	
								(Tick as applicable)		

Note: Attach relevant photocopy of Work orders / all supporting document.**Authorized Signatory
Company Seal****Date:****Place:**

Signature of Tenderer

Stamp of the firm

**ANNEXURE-6****TECHNICAL SPECIFICATIONS OF 20 kW (off-grid)SPV POWER PLANT**

1.	Solar PV modules and array
2.	Module mounting structure
3.	Power Conditioning Unit (PCU)
4.	Maximum power point tracker (MPPT)
5.	Inverter
6.	Battery Bank
7.	Junction Box
8.	Charge Controller
9.	AC Distribution Board (ACDB)
10.	Cable and accessories
11.	Solar Distillation plant
12.	Distribution System
13.	Earthling and Lighting Protection
14.	Spare parts
15.	Danger Plates
16.	Tool Kits
17.	Display Board
18.	Control Room

1. Solar PV modules and array-

- The PV modules must qualify to the latest edition of any of the following IEC PV module qualification test or equivalent BIS standards for module design qualification and type approval :
Crystalline Silicon Solar Cell Modules IEC 61215 / IS 14286
- Crystalline high power cells shall be used in the Solar Photovoltaic module. The peak power of Solar Module shall not be less than 100 Wp. Use of Higher rate of modules are always preferable.
- To connect the solar module interconnection cable shall be provided. Photo / electrical conversion efficiency of SPV module shall be greater than or equal to 12%. Module shall be made of high transmissivity glass front surface giving high encapsulation and silicon rubber edge sealant for module protection and mechanical support.
- All materials used shall have a proven history of reliable and stable operation in external applications. It shall perform satisfactorily in relative humidity up to 100% with temperatures between - 10 Deg C and + 85 Deg C and withstand gusts of wind up to 200km/h from back side of the panel.
- Solar module shall be mono / multi crystalline type, employing lamination technology using established polymer (EVA) and tedlar laminate.
- Sample modules, representative of the production processes employed in the manufacture of the offered module shall be in accordance with the requirements of MNRE / IEC 61215 (revised)/ IS 14286 and shall be certified by SEC, MNRE India - New Delhi or its authorized test center. The bidder shall submit appropriate certificates.
- PV modules must qualify to IEC 61730 Part I & II, for safety qualification testing and to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701



- Full rated output of the SPV Array to be ensured after one year of operation. Number of modules and array capacity will depend on the rated output of individual modules. The peak power rating of the Solar PV array should not be less than 20 kW after one year of operation.

1.1 Other general requirements of PV module

- The rated output power of any supplied module shall not vary more than 3-5% from the average power rating of all modules.
- The module frame is made of corrosion resistant materials, which is electrolytically compatible with the structural material used for mounting the module.
- Protective devices against surges at the PV module are provided, if required. Low voltage drop bypass and / or blocking diode(s) may also be provided, if required.
- Module Junction box (weather resistant) is designed for long life out door operation in harsh environment.
- PV modules used must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 12 years (Twelve years) and 80% at the end of 25 years (Twenty five years).
- The solar modules shall have suitable encapsulation and sealing arrangements to protect the silicon cells from the environment. The arrangement and the material of encapsulation shall be compatible with the thermal expansion properties of the Silicon cells and the module framing arrangement / material. The encapsulation arrangement shall ensure complete moisture proofing for the entire life of the solar modules.
- Each module shall have low iron tempered glass front for strength and superior light transmission. It shall also have tough multi layered polymer back sheet for environment protection against moisture and provide high voltage electrical insulation.
- The fill factor of modules shall not be less than 0.70 (typical)
- Array capacity shall depend on size of the power plant and number of modules required shall be worked out accordingly.

1.2 Identification And Traceability

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

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



Until March 2013, the RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions. **It may be noted that from 1st April 2013 onwards; RFID shall be mandatory placed inside the module laminate**

Data sheet shall be furnished by tenderer duly filled as follows and submit separately:

1)	Mounting arrangement for Solar module	:	
2)	Solar module frame material	:	
3)	Module type	:	
4)	Module dimensions	:	
5)	No. of solar cells per module	:	
6)	Solar cell manufacturer type	:	
7)	Cable gland at module Junction Box	:	
8)	Weather resistant HDPE junction Box (IP55)	:	
9)	Make of Solar module	:	
10)	Country	:	
11)	Max. Temperature rise of solar cells under severe working condition over max. Ambient temperature		
12)	Nominal voltage	:	
13)	Operating voltage of solar module (nom)	:	
14)	Peak power voltage (Vmp) at STC	:	
15)	Peak Power current (Imp) at STC	:	
16)	Open circuit voltage (Voc) at STC	:	
17)	Short circuit current (Isc) at STC	:	
18)	Weight of each module	:	

1.3 Orientation and Tilt of PV Module

Modules alignment and tilt angle shall be calculated to provide the maximum annual energy output. This shall be calculated based on the site Latitude and Longitude values.

2. Module mounting structure

- Leg assembly of module mounting structure made of different diameter hot dip galvanized may be accepted. The work should be completed with supply, fitting fixing of clamps, saddles, nut & bolts etc. While quoting the rate, the bidder may mention the design & type of structure offered. All nuts & bolts shall be made of very good quality stainless steel.
- The structure shall be designed to allow easy replacement of any module and shall be in line with site requirements.
- The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.
- The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time it will withstand wind speed up to maximum 200 km/h.



- The manufacturer shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings.
- The drawings along with detailed design shall be submitted to MEDA for approval before starting the execution work. The work will be carried out as per designs approved by MEDA.
- **PCC ARRAY FOUNDATION BASE:** The legs of the structures made with GI angles will be fixed and grouted in the PCC foundation columns made with 1:2:4 cement concrete. The minimum clearance of the lowest part of any module structure shall not be less 500 mm from ground level. While making foundation design, due consideration shall be given to weight of module assembly, maximum wind speed of 200 km/hr and seismic factors for the site. The work includes necessary excavation, concrete-ing, back filling, shoring & shuttering etc.
- The bidder can visit the site before quoting rate for civil works. After taking in to consideration all aspects of the site, condition of soil etc., the bidder shall quote for civil works. No extra claim shall be entertained at post project stage. The foundation design of module structure design shall be submitted to MEDA for approval. The work will be carried out as per designs approved by MEDA.
- Incase of any defects arising in the building during guarantee period of Five year, the bidders shall rectify the same at their own cost.
- Solar PV modules are to be installed & fixed with the module mounting structures with appropriate size stainless steel nuts & bolts.
- The array structure shall be made of hot dip galvanized MS angles of size not less than 50mm X 50mm X 6mm size. The minimum thickness of galvanization should be at least 120 microns. All nuts & bolts shall be made of very good quality of stainless steel. The minimum ground clearance of the lowest part of the module structure shall be 500 mm.
- The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.

3. Power Conditioning Unit (PCU)-

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels before powering equipment designed for nominal mains AC supply. 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" OR simply PCU. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to maximize Solar PV array energy input into the System. PCU should conform IEC 61683, IEC 60068 as per specifications.

PCU refers to combination of charge controller, inverter and AC charger and shall be supplied as integrated unit or separate units.

3.1 PCU specifications of power plants

Power Conditioning Unit (Solar Charge Controller + Inverter)	
Switching device	MOSFET/IGBT
Type	MPPT based PWM charger to charge 240 V battery bank



Input voltage from PV array	240V DC for 20 kW units.(The voltage variation shall be as per change in array output)
Protections	➤ Short circuit protection ➤ Input under voltage / Deep discharge of battery ➤ Input surge voltage protection ➤ Over current ➤ Battery reverse polarity protection ➤ Solar array reverse blocking diode (provided in array junction box) ➤ DC rated fuse at input and AC rated fuse at output with suitable contactor/solid-state switches for safe start-up & shutdown of system ➤ Load surge current ➤ Over temperature ➤ Under / Over output voltage ➤ Under / Over frequency ➤ Automatic / manual isolation at input & output ➤ Suitable protection for solid-state switching devices
Dielectric strength	1.1kV between input/output and ground with EMI protections removed
Cooling	Solar natural and Forced air cooling with temperature sensitive fan operation
Ambient operation (max)	<u>50° C</u>
Relative humidity	95% maximum
Assembly & mounting	As per normal industry practice
Finish	Epoxy powder coating
Cable entry	From rear 200mm above ground level
Load test at factory	Minimum 6 hours at full load
Features	➤ Stand-alone and hybrid mode of operation. ➤ High quality with high efficiency and reliability ➤ Microprocessor based intelligent controller ➤ Self monitoring capability. ➤ Integral design with MPPT solar charge controller and inverter ➤ Highly reliable & efficient solid-state switching devices ➤ Rated for continuous operation at full load ➤ High over-load capability of 200% surge for 10 seconds ➤ Inverter output power factor of 0.8 lag ➤ Automatic re-start facility after over load triggered shutdown
Efficiency	➤ 90% at rated load and normal operating conditions ➤ 85% (min) at 25% load and nominal input voltage with UPF load
%THD	Sine-wave output with 3% THD at full load UPF and nominal input voltage



Output voltage	415 (+12.5-20%)V AC
Output frequency	50Hz $\pm$ 0.5Hz
%Regulation	5% against input voltage and load variation
Indications	As many as possible with relevance
AC charger input	240 V AC, 50 Hz from AC mains grid
Enclosure	IP 30 (For indoor application)
Weight / Dimension	The details of the inverter will be provided in the specification / user manual
Battery type	Tubular lead acid type

4. Maximum Power Point Tracker (MPPT)

Maximum power point tracker shall be integrated into the PCU to maximize energy drawn from the Solar PV array. The MPPT should be microprocessor / micro-controller based to minimize power losses. The details of working mechanism of MPPT shall be mentioned.

The efficiency of the Charge controller (MPPT based with data logger) shall not be less than 94% and shall be suitably designed to meet array capacity.

MPPT must conform IEC 62093, IEC 60068 as per specifications.

5. Inverter

- Inverters shall be of very high quality having high efficiency and shall be completely compatible with the charge controller and distribution panel.
- Inverter should conform IEC 61683, IEC 60068 as per specifications.
- The inverter shall be designed for continuous, reliable power supply as per specifications. The inverter shall have high conversion efficiency from 25 percent load to the full rated load. The efficiency of the inverter shall be more than 90% at full load and more than 88% at partial load (50%-75%). The supplier shall specify the conversion efficiency in the offer.
- The inverter shall be designed for extreme temperatures.
- The Inverter shall have internal protection arrangement against any sustained fault in the feeder.
- The dimension, weight, foundation details etc. of the inverter shall be clearly indicated in the detailed technical specification.
- Each solid-state electronic device shall have to be protected to ensure long life of the inverter as well as smooth functioning of the inverter.
- Supplier shall indicate tripping voltage & start up voltage for the inverters & this should be perfectly matched with the recommendation of battery manufacturers.
- The PCU shall be mounted on a suitable reinforced concrete pad inside control room not susceptible to inundation by water. All cable entry to and from the PCU shall be fully sheathed to prevent access of rodents, termites or other insects into the PCU from bottom/top of the PCU in form of a detachable gland plate.
- For the Monitoring of Unit generated provision of Ah meters at input side shall be accomplished with Energy meter and voltmeters at suitable place and included in the technical specification clearly.



- Provision for the Equalizing Charging of battery periodically shall be made and state clearly in the technical details.
- The tenderer shall furnish details of proper operation, maintenance and trouble shooting details to MEDA.
- The tenderer shall intimate MEDA prior to dispatch of the inverter for inspection. Shop tests on the inverter shall be conducted in the presence of the authorized representative of MEDA in order to verify the capacity and proper working of all control and protection arrangement.
- The inverter will be highly efficient. The inverter should conform IEC 61683 / IEC 60068 and should be based on PWM technology and using IGBT. Inverters would display its own parameters and also the parameters of battery bank connected to the inverter. The inverters will have the facility by which the inverter's capacity can be set at any point between 25 KVA for 20 KW SPV power plants by means of either software or hardware. The inverter's capacity should on minimum 25 KVA for 20 KW SPV power plants. The inverters should be designed to be completely compatible with the charge controllers and distribution panels and are of integrated design.
- Salient features of the Inverters shall be as follows:

Nominal Capacity	25 KVA minimum(for 20 kW capacity)
Input / Voltage	240 V DC Nominal (for 20 kW capacity) The voltage variation shall be as per change in array output.
Regulation	From minimum to maximum voltage 1%
Output frequency	50 Hz +/- 0.5 Hz
Overload Capacity	200% for 30 Second.
Efficiency	80% at 50% of load and More than 90% at full load 0.8 PF
Short Circuit Protection	Circuit Breaker and Electronics protection against sustained fault.
Low Battery Voltage	Automatic Shut Down
Total Harmonic Distortion	Less than 3%
Over Voltage	Automatic Shut Down
AC over Current/Load	Automatic Shut Down
Protection	Over Voltage both at Input & Output Over Current both at Input & Output Over Frequency Surge voltage inducted at output due to external source.
Protection Degree	IP65
Instrumentation & Indication	Input & Output voltage, Input & Output Current, Frequency, Power output, different status of inverter, kind of fault by audio signal.

6. Battery Bank-

- The batteries shall be solar photovoltaic batteries of flooded electrolyte, low maintenance, lead Acid and made of hard rubber container.
- Storage batteries should conform IEC 61427 / IS 1651 / IS 133369 as per specifications.



- The batteries shall use 2V cells and battery capacity is to be designed at C10 rate with end cell cut off voltage of 1.85 V per cell.
- Battery terminal shall be provided with covers.
- Batteries shall be provided with micro porous vent plugs with floats.
- Charging instructions shall be provided along with the batteries.
- Suitable carrying handle shall be provided.
- A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank. The features and dimensions of the battery rack shall be provided along with the bid document.
- The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
- Bidder shall mention the design cycle life of batteries at 80%, 10% and 20% depth of discharge at 27 deg. C. .
- The batteries shall be designed for operating in ambient temperature of site in the state of Maharashtra.
- The self discharge of batteries shall be less than 3 % per month at 20 deg. C and less than 6% per month at 30 deg. C
- The charge efficiency shall be more than 90% up to 70% state of charge.
- The topping up frequency shall be 12 – 18 months.
- The batteries shall consist of individual cells, which can be carried separately with ease while transporting.
- Offered batteries shall comply to the following:

10 % of DOD: 7200 cycles

50 % of DOD: 3000 cycles

80 % of DOD: 1200 cycles

The Battery Bank shall be designed to provide 3 days ("2 No Sun" days) autonomy. Bidder to provide battery sizing details along with their offer. The distance between two batteries may be kept 6 inches & vice versa.

- There will be one battery bank comprising of capacity 240 V/1200Ah for 20kW SPV Power Plant. The batteries should be of tubular plate lead acid & low maintenance type and shall have long service life. The cells should confirm IEC 61427 / IS 1651 / IS 133369 and as per specification given below shall be provided.

Container	Polypropylene Co-polymer/hard rubbers with carrying handle.
Cover	Protective cover of polypropylenes against dirt & possible short circuit.
Terminals	Made of lead alloy suitable for bolted connection. The terminals should be greased with petroleum gel.
Electrolyte	Battery grade Sulphuric acid
Self Discharge	Less than 3% per month at 30 degree C
Life expectancy	1500 cycle duty at 27degree C at 80% depth of discharge 3000 cycle duty at 50% discharge.
Voltage	2 Volt
Approval	Batteries shall have to be approved by ERTL or CPRI or SEC or any MNRE approved test centers
Service Life	Should perform satisfactory for a minimum period of 5 year under operating conditions as mentioned.

Each battery bank will contain suitable wooden rack, hydrometer, thermometer, cell tester and connecting leads etc.



6.1 Battery Rack & Accessories

Battery interconnecting links shall be provided for interconnecting the cells in series and in parallel as needed. Connectors for inter cell connection (series / parallel) shall be maintenance free screws. Insulated terminal covers shall be provided.

6.2 Battery protection panel

The battery protection panel shall be made of CRCA sheet having two incoming and two outgoing terminals. There shall be 2 Nos. HRC fuses of suitable rating with fuse holder/base etc as required. 2 poles MCB/ MCCB can also be used for isolation purpose in stead of fuses, if required.

7. Junction Boxes

The junction boxes shall be dust, vermin and waterproof and made of FRP / Thermo Plastic. The terminals shall be connected to copper bus bar arrangement of proper sizes. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and out going cables. Suitable markings shall be provided on the bus bar for easy identification and cable ferrules shall be fitted at the cable termination points for identification. Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make and should be as per IP 65 (for outdoor), IP 21 (for indoor) & as per IEC 62208.

The junction boxes shall have suitable arrangement for the Following:

- Combine groups of modules into independent charging sub-arrays that shall be wired to the controller.
- Provide arrangement for disconnection for each of the groups.
- Provide a test point for each sub-group for quick fault location.
- To provide group array isolation.
- The rating of the JB's shall be suitable with adequate safety factor to inter connect the Solar PV array.

8. Charge Controller Unit:

- The Charge Controller shall be dual input type, where under normal condition the input is fed from a SPV panel and in the absence of SPV power or low SPV power conditions an external single phase AC source can be used for battery charging. A selector switch shall be provided for choosing between those modes. When the batteries are charged from external AC sources, the charging current should be set manually depending on the capacity of the source and the charging requirement of the batteries. The charge controller shall be preferably PWM type employing IGBT switching elements.
- Charge controller should conform IEC 62093 / IEC 60068 as per specification.
- The charging sequence from SPV array or external AC source shall be as follows:



a) From SPV Array:

The battery shall be charged at the maximum rate depending on the solar radiation till the battery terminal voltage reaches 2.25 volts per cell. The battery charging should be automatically terminated when the rate of increase of battery voltage is steady (dv / dt sensing). The charger shall switch on the 'trickle charge after this.

b) From AC Source:

The battery shall be charged at the rate manually set depending on the battery condition or capacity of AC source. The maximum rate shall be internally preset. The battery charging should be automatically terminated when the rate of increase of battery voltage is steady (dv / dt sensing) or when the battery terminal voltage reaches 2.25 volts per cell.

Salient features of the Charge Controller shall be as follows:

Switching elements	IGBT
Type of Charger	PWM

Input :

From PV 20 KWp, 240V/1200Ah nominal DC from Solar PV array

Output Voltage: Suitable for charging 240V/1200Ah nominal battery bank from 20 KWp SPV array.

Protections :Short Circuit, Deep Discharge, Input Surge Voltage, Over Current (load), Battery Reverse Polarity, Solar array reverse polarity.

Indication :String 'ON', Main 'ON', Charging 'ON', 80% Charged, 100% Charged, Charger Overload, Battery On Trickle.

Battery disconnected / Fault Battery Reverse Polarity, Low Solar Power, System Fault and Charger over Temperature and Input Over / Under Voltage (for AC).

MIMIC Diagram : To indicate power flow and operation of the charge controller/ battery charger; shall have provision for visual indications of existing power input/output through MIMIC diagram.

Tenderer may design Power Conditioning Unit (PCU) which consists of a solar charge controller & inverter as per design mentioned above. Also it should have a Grid Charger.

It provides the facility to charge the battery bank either through Solar or Grid set. The PCU continuously monitors the state of Battery Voltage, Solar Power output and the loads. Due to sustained usage of power, when the Battery Voltage falls below a preset level, the PCU will automatically transfer the load to the grid power and also charge the Batteries through the in-built Grid Charger. Once the batteries are



charged to the preset level, the PCU cuts off the Grid power from the system and will restore to feeding the loads from the battery bank & continue to charge the battery bank from the available solar power.

The PCU always gives preference to the solar power and will use Grid power only when the solar power / battery charge is insufficient to meet the load requirement.

Salient Features:

- Priority of charging is from Solar Panels.
- Over heating Protection.
- Dual Display Showing PV & Inverter output.
- Short circuit & Over load Protection.
- Inbuilt Heavy Duty Solar Charge Controller.
- No Load Shut Down for load = 5% not applicable for > 1 kVA systems)
- Fully equipped with powerful Grid Charger.
- User friendly client and Web based Software.

9. AC Distribution Board (ACDB)-

- An ACDB shall be provided in between PCU and Load point.
- It shall have a MCB of suitable rating for connection to load point
- It shall have AC voltmeter and ammeter of suitable rating.
- It shall have MCB's to supply power to control room loads such as exhaust fans, lighting loads and power plug sockets.

10. Cables and accessories-

All the cables shall be supplied conforming to IEC 60189 / IS 694 / IS 1554 or IS / IEC 69947 shall be of 650 V/1.1 kV grade as per requirement. Only PVC copper cables shall be used. The size of the cables between array interconnections, array to junction boxes, junction box to PCU, PCU to ACDB etc shall be so selected to keep the voltage drop and losses to the minimum.

The bidder shall supply installation accessories, which are required to install and successfully commission the power plant.

10.1 Cables & Wirings:

- All cables to be supplied should be as per IEC 60189 / IS 694 / IS 1554 or IS / IEC 69947 and should have proper current carrying capacity. The cable shall be PVC insulated PVC sheathed copper conductor.
- All wiring in the control room shall be carried out with minimum 4 sq. mm. PVC insulated copper conductor in surface/recessed steel conduct in control room & solar hut. All wiring shall be done with an appropriate size Cu conductor as earth wire. All wirings whether it is indoors or outdoors are to be casing capping system. As and when required flexible pipe may be used.
- All cables and wires used shall be of copper conductors of suitable cross-section with cross linked polythene or polyvinyl insulated with polyvinyl sheath. Stranded and flexible cable shall be used. Non-stranded cable shall not be acceptable expect otherwise mentioned and permitted.



- Buried underground cables shall be armored. Unarmored buried underground cables shall be enclosed with suitable conduits. Unless, otherwise, specified, all other interconnecting cables shall be armored.
- Conductor size of cables and wires shall be selected based on efficient design criteria such that the overall electrical energy loss in any section of cable or wire is shall be less than 3% under the designed operating conditions. Conductor size of less than 4 sq. mm shall not be accepted.
- Cable/wire connections shall be soldered, crimp-on type or split bolt type. Wire nut connections shall not be used.
- All cables shall be adequately supported. Outside of the terminals/panels/enclosures shall be protected by conduits. Cables shall be provided with dry type compression glands wherever they enter junction boxes/panels/enclosures.
- All cables shall be suited marked or coded for easy identification. Cables and wires shall conform to the relevant standards suppliers to specify the specification.
- The wiring must be carried out in casing capping only.

11. Solar Distillation Plant:

Approved quality solar distillation Plant of 1000 mm X 1000 mm shall be installed on suitable GI structure. Supply of Solar Distillation Plant includes construction of suitable foundation for the distillation plant. Atleast two numbers of plastic pots and one funnel are to be supplied along with each of the two water Distillation plants.

12. Distribution System-

- Single line diagram of the AC Distribution line shall be attached along with general point wiring diagram of sample room with the Technical details.
- Details of cable used for the distribution and transmission purpose along with their current carrying capacity and make shall be enclosed.
- Supply installation of Energy meter from reputed company. The energy meter shall be tested by State Electricity Board (SEB) and sealed by SEB. Testing certificate shall be submitted.

13. Earthing and lightning protection-

Earthing: The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

- The Earthing for array and distribution system & Power plant equipment shall be made with GI pipe, 4.5 m long 10 mm diameter including accessories and providing masonry enclosures with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS:3043. Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each array structure of the SPV yard shall be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.
- The inverters and battery charger and all equipment inside the control room and battery room to be connected to earth through 25 mm X 5mm tinned copper strip including supplying of material and soldering. As earth bus is provided inside the control room with 25 mm X 5mm tinned copper strip.



- In compliance to Rule 33 and 61 of Indian Electricity Rules, 1956 (as amended up to date), all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.

Lightning: The SPV Power Plant shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc.

Metal oxide variastors shall be provided inside the Array Junction Boxes. In addition suitable MOV's also shall be provided in the Inverter to protect the inverter from over voltage.

13.1 **Lightning & Over Voltage Protection System:**

- The SPV power plant should be provided with Lightning and over voltage protection. Connected with proper earth pits. The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV or other sub-system components. The source of over voltage can be lightning or other atmospheric disturbance.
- The lightning Conductors shall be made of 25 mm diameter 1000 mm long GI spike as per provisions of IS 2309-1969. Necessary concrete foundation for holding the lightning conductor in position to be made after giving due consideration to maximum wind speed and maintenance requirement at site in future. The lightning conductor shall be earthed through 20 mm X 3 mm thick GI flat earth pits/earth bus made with 25 mm X 5 mm GI flats.

14. **Spare parts-**

Bidder shall keep stock of essential spares at their nearest service center and/or at each site at their cost during the CMC of 5 years including 2 years guarantee. List of such spare part shall be enclosed with the technical details.

MNRE / MEDA / various Government and Semi- Government Buildings of Maharashtra and any other parties will not liable to pay for such stock and bidder shall be fully responsible for the same.

15. **Danger plates:-**

The tenderer shall provide at least 8 Danger Notice Plates of 200mm X 150 mm made of mild steel sheet, minimum 2mm thick and vitreous enameled white on both sides and with inscription in signal red color on front side as required. The inscription shall be in English and local language. Out of eight, four danger notice shall have to be provided at PV Yard & Four-danger notice at Control Room & Battery room.

16. **Tool kits:**

Necessary tools kit is to be provided along with the each Power Plant for any routine maintenance or immediate repair.

17. **Display Board:**

The tenderer shall provide the display board of size 3 ft x 3 ft which gives detailed circuit diagram of the system with its description.



18. Control Room:

For 20 kWp SPV power plant, 8 ft. x 8 ft., with proper doors, windows, exhaust fans and a lid proof floor for Control Room. Load bearing structure shall be provided for the control room cabin.

19. Installation and commissioning-

- Detailed project execution plan shall be submitted along with the offer.
- While quoting for power plant, the bidder shall quote for Installation and commissioning of power plants in the financial offer.
- The bidder is responsible for arranging all the accessories and measuring instruments required to smoothly commission the power plants.
- The plant shall be commissioned in the presence of MEDA authorized personnel or its nominated representative
- An acceptance report shall be prepared and signed by all participating parties.

20. Packing, shipping and marking-

The bidder shall be responsible for assuring that all commodities shipped are properly packed and protected to prevent damage or deterioration during shipment. Packaging and shipping costs shall be borne by the supplier. Customs clearance and all costs and actions associated with import duties, taxes and processing of documents within India are borne by the bidder.

21. Insurance:

The bidder shall provide insurance coverage ex-factory until commissioning and acceptance for replacement or repair of any part of the consignment due to damage or loss.

22. Comprehensive Maintenance Contract (CMC):

The PV module (s), battery bank, Inverter and other sub - components will be warranted as per the given clause. The manufacturers can also provide additional information about the system and conditions of warranty as necessary

23. Scope of Operation & Maintenance of SPV Power Plant for a period of 5 years from date of commissioning.

- Regular operation & maintenance of the SPV Power Plant for a period of 5 years after commissioning along with supply of consumable items as and when necessary and submission of daily performance data of the power plant shall come, under the operation & maintenance contract.
- Installer should depute his Engineer for 3 months for operation & maintain of the proposed systems and for giving training to the personnel deputed by various Collector Offices in the State of Maharashtra.



- The breakdown maintenance of the entire system including supply of necessary spare parts if any shall be for a period of 5 years from the date of commissioning of power plant. The operation and maintenance schedule of the SPV power plant during the 5 years contract period shall be as detailed below:
- 5 years operation and maintenance period shall begin on the date actual commissioning of the power plant. The requisite number of qualified and trained personnel is to be deputed by various Collector Office Buildings of Maharashtra round the clock from the very first day.
- The power plant shall ON for twenty-four hours; therefore, the deputed personnel should be placed for round the clock. However, the security of the power plant will rest with the suppliers till such time operation and maintenance of the power plant is not handed over to the purchaser.
- The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.
- The deputed personnel should keep daily log sheet for the power plant as per format to be supplied by SNA/Implementing Agency after commissioning of the power plant.
- The deputed personnel shall be in a position to check and test all the equipment regularly, so that preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behavior of any equipment shall be brought to the notice of respective SNA/Implementing Agency immediately for appropriate action.
- The deputed personnel shall keep clean the power plant in all time. Cooking in the control room will not be allowed under any circumstances.
- Normal and preventive maintenance of the power plant such as cleaning of module surface, topping up of batteries, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of battery terminals, etc. are also the duties of the deputed personnel.
- Deputed personnel will operate the plant in accordance with the availability of solar energy stored in the battery bank. Under no circumstances the operator shall take such actions those are not damaging to the Power Plant and the battery bank. In case of non-availability of solar power suitable notice board may be displayed. In the notice board in front of the control room to avoid local problems.
- During operation and maintenance of period of one year of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons pertaining to the deputed personnel, what-so-ever, the supplier shall be responsible for immediate replacement/rectification. The damaged component may be repaired or replaced by new component. It is understood after examination the performance of the component or the system shall not degrade.

**Summary for 20 kW (off-grid) SPV Power Plant :**

Sr. No.	Particulars		Specifications
			20 kW SPV Plant
1	Solar PV Modules		
	a	Capacity	20000 Wp
	b	Make	Any MNRE approved OR IEC 61215 (revised)
	c	Module	100/180/200/220/250/275Wp OR Equivalent
	d	No. of SPV Modules	Depends on Module wattage
2	Solar Charge Controller		As per the requirement
3	Module Mounting Structure		As per the available places at site
4	Power Conditioning Unit (As per design specification given in tender which includes charge controller, inverter & Grid charger. The output power should be of 3 phase)		1 No.
	Inverter		minimum 25 kVA
5	Battery No. of batteries depends on Ah of the Battery capacity (2 Volt cell must be used)		1200Ah / 240V
6	Cabling with casing capping		As required at site
7	Transmission, Distribution & point wiring		As required at site
8	Monitoring, Control & protection device		1 Set
9	Metering at generation side		1 No. (at AC side of Inverter)
10	Metering at consumption side		1 No. (Towards Load)
11	Spares		Set of required fuses, screws, & terminals etc as required.



FORMAT: COMMITMENT FROM THE TENDERER

(To be submitted for SPV Power Plant system separately)

We here by confirm that the proposed 20 kW SPV Power plants at various Collector Office Buildings in the State of Maharashtra, will provide the assured generation of 60 units per day respectively (during 300 sunny days in a year), at consumption side energy meter in control cabin/room as certified by joint meter reading of manufacturer's representative and users representative.

However, for 5 years we hereby commit to pay an amount of Rs.50/- per unit as compensation to Maharashtra Energy Development Agency, Pune for the amount of units unable to supply against the guaranteed generation.

(Signature of Tenderer)

Name : _____

Designation: _____

Seal :

Date :

Place :



ANNEXURE-7

ESTIMATED COST AND EMD DETAILS

Sl. No.	Name of system	Capacity / Nos.	Estimated Cost (In Rs/-)	EMD 3% of Estimated Cost (In Rs/-)
1	Solar Photovoltaic Power Plant (Off-Grid)	(20kW X 4)	176 Lakhs	528000.00
		TOTAL		

Note: - The tenderer have to submit EMD at 3% of estimated cost.



SITE VISIT REPORT LETTER
(To be submitted on letterhead of tenderer)

Date: -----

To,
Director General,
Maharashtra Energy Development Agency,
MEDA, Pune.

Sub. : Site Visit Report for Collector Office Building in the State of Maharashtra to be electrified through SPV Power Plants.

Ref. : MEDA's Tender No.-----

Sir,

This has reference to above referred tender of electrification of Collector Office Building of Maharashtra to be electrified through Solar Power. I / We here by declare that we have visited sites. I / We made ourselves acquainted with site conditions, approach to site, requirement of land, soil conditions, availability of water, requirement of tender conditions etc. I / We verified all details required to execute the projects. I / We have no problems in undertaking the projects and complete them in the given time period.

Thanking you

Yours faithfully,

(Signature of Tenderer)

Name of Tenderer -----

Designation -----

Seal:

**Signature of Collector Office
Building authorities.**

Seal:.....

Date:.....

Signature of Tender



ANNEXURE - 9

DECLARATION

(To be submitted on Rs. 100/- stamp paper)

M/s.....having permanent address..... is our authorized Dealer for supply, installation, testing, commissioning etc. of Solar Photovoltaic Systems in the state of Maharashtra. We are authorizing him to participate in the tender floated by Maharashtra Energy Development Agency (MEDA), Pune. We hereby authorize him to quote in the tender for this project.

1.

2.

We will be fully responsible for all the technical specifications, guarantee etc. for the total work executed by him in the above project during the tenure of the project inclusive of 5 years CMC period. And also in case if dealer does not complete the work in stipulated time, then we shall be responsible and complete the work in the above project.

(Signature of Tenderer)

Name : _____

Date : _____

Designation : _____

Place : _____

Seal :



ANNEXURE-10

FINANCIAL OFFER FOR SOLAR PHOTOVOLTAIC POWER PLANT

The cost of installation of SPV power plants shall include cost of distribution systems and wiring inside the Collector Office Buildings in the State of Maharashtra with CFLs, switches, MCBs, fuse, etc. as per their respective technical specification. The cost details for 20 kW (Off Grid) SPV power plants should be submitted as follows:

Sr. No	Name of System	Capacity	Cost of SPV Power Plant (Cost of Material + Cost of installation & commissioning with 5 yrs. CMC + Cost of Control room) (Rs.) & (Please quote separately) (a)	Cost of distribution lines (Material cost + installation and commissioning cost as per MSEB norms) with 5 yrs. CMC (Rs.) (b)	Total Cost of SPV Power plant (including 5 yrs. CMC) (Rs.) (a)+(b)
1	SPV power plant (Off-Grid)	(20 kW X 4)			
	TOTAL				

Rupees in word -----

Cost is inclusive of all taxes, insurance, octroi, transportation, loading-unloading, installation & commissioning and CMC of 5 years.

(Signature of Tenderer)

Name: _____

Date :

Designation: _____

Place :

Seal:



ANNEXURE-11

TENDERER'S GENERAL INFORMATION
(To be typed separately)

To,
Director General
MEDA, Pune

Subject : Tender No. MEDA/..... for.....

- 1. Name of Bidder / Firm**
- 2. Status of Firm** Proprietorship Firm / Partnership Firm [Mark ✓]
- 3. Number of Years in Operation**
- 4. Registered Address**
.....
- 5. Operational Address** [if different from above].....
.....
.....
- 6. Telephone Number**
[Area Code] [Number]
- 7. E-mail Address & Web Site**
- 8. Tele-fax Number**
[Area Code] [Number]
- 9. PAN [Number]**
[Enclose Copy of 'PAN CARD']
- 10. Service Tax Number**
[Enclose Copy of 'Service Tax Registration Certificate']

(Signature of Tenderer)

Name: _____

Date:

Designation: _____

Place:

Seal:

Signature of Tenderer

Stamp of the firm



CHECK LIST

Documents to be submitted in Envelope No. - 1.

- Tenderer's General Information refers **Annexure-11**
- Original tender document duly signed and stamped on each page
- Details of Earnest Money Deposit as format given in tender document at page no.16.
- Earnest Money Deposit (EMD) refers **Annexure-7.**
- Name of authorized person (power of attorney) for submitting the document.
- Name of the Banker
- Undertaking on Rs. 100/- stamp paper refers **Annexure-2.**
- Copy of recently paid Income Tax Challan, PAN number, registration under VAT, service tax, professional tax etc.
- Copy of declaration (In case of dealer) refers **Annexure-9.**
- Copy of agreement (In case of dealer)
- Information on Infrastructure for maintenance work
- Information of the firm refers **Annexure-3.**
- P & L, Balance sheets or certificate from CA for indicating the turn over of minimum 75% of estimated cost during last 3 years.
- IEC 61215 (revised) or equivalent certificate for SPV module.
- Copies of the commissioning reports for SPV power plants of total minimum 50 kW capacity duly signed by the user.
- Detail drawing of mounting structure for 20 kW (Off-Grid) Solar PV power plants.
- Site visit report duly certified by Collector Office Buildings in the State of Maharashtra authorities refers **Annexure-8.**
- Bar chart

If any of the documents is not submitted in envelope 1, the tender will be rejected.

Document to be submitted in Envelope No.- 2.

- Financial offer in prescribed format refers **Annexure-10**

Note: - Tenderer should submit the complete tender document and other required documents to be attached as per the list mentioned in the order given as above.