MAHARASHTRA ENERGY DEVELOPMENT AGENCY, DIVISIONAL OFFICE NAGPUR

(A Government of Maharashtra Institution)

e- TENDER FOR

DESIGN, FABRICATION, SUPPLY, INSTALLATION, TESTING, COMMISSIONING, OPERATION AND MAINTENANCE FOR A PERIOD OF 5 YEARS OF 175 KW DISTRIBUTED CAPACITY GRID CONNECTED SOLAR PV POWER PLANT WITH 4 HOURS BATTERY BACK UP UNDER ROOFTOP NET METERING AT SAMAJ KALYAN OFFICE AND VARIOUS HOSTELS/RESIDENTIAL SCHOOL UNDER SAMAAJ KALYAN, NAGPUR DISTRICT IN THE STATE OF MAHARASHTRA.

Tender Reference No.

TENDER NO. REN/SOLAR-NAG/SAMAJ KALYAN/59/2019-20

https://mahatenders.gov.in

TENDER DOCUMENT

Divisional General Manager (Nagpur)

MAHARASHTRA ENERGY DEVELOPMENT AGENCY

C/o Milk development Employee housing Co-operative Society, First Floor S. No. 244-A/5-N, Ward No. 66, Pam Road, Civil Lines G P O Square, Nagpur - 440 001

.

Phone No: - 0712/2564256

E-mail ID: - domedanagpur@mahaurja.com

Table of Contents

SECTION-I

BID INVITATION

- **Brief Description of the Bidding Process**
- **The General Manager (Divisional Office Nagpur)** on behalf of **MEDA (the Employer**), invites eligible bidder to submit a bid in accordance with the provisions of this Tender Document. In this Tender Document, the term "Bidder", which expression shall, unless repugnant to the context, include all parties who have submitted bids in response to this Tender Document within the stipulated time frame for submission.
- The Bidders shall submit the bids in two parts by following e-tendering process described in bidding documents. First part comprises of the technical bid and the second part comprise of the financial bid in accordance with this Tender Document.
- In terms of the Tender Document, a Bidder will be required to deposit non-refundable Tender document fee, along with its tender, the refundable Earnest Money Deposit (EMD).
- Divisional Office Nagpur will open the technical bid of the Bidder, by e-tendering process. The financial bid will be opened of those bidders which are qualified in technical bid.

BIDDING INFORMATION

1	Tender Reference No.	REN/SOLAR-NAG/SAMAJ KALYAN/59/2019-20
2	Date of sale of Tender document	30.06.2020
3	Last date and Time of submission of Bids	14.07.2020 at 17:00 Hrs
4	Date & Time of opening of Technical Bid	15.07.2020 at 18:00 hours
5	Date & Time of Pre-Bid Meeting	09.07.2020 at 12:30 hours MEDA Nagpur
6	Estimated Cost with 5 years CMC of 209kW distributed capacity Grid-Connected solar PV power plant with battery backup under roof-top net metering at various offices and hostel of Samaaj Kalyan in District Nagpur in the state of Maharashtra	**Rs. 2,36,25,000/-**
7	Earnest Money Deposit (EMD)	Rs. 2,36,250/-

8	Security Deposit:	3%* of contract value by Demand Draft (DD) in favour of MEDA payable at Chandrapur to be submitted online.
9	Address for communication and Venue for Tender opening	Divisional General Manager (Nagpur) MAHARASHTRA ENERGY DEVELOPMENT AGENCY C/o Milk development Employee Housing Co-operative Society, First Floor S. No. 244-A/5-N, Ward No. 66, Pam Road, Civil Lines G P O Square, Nagpur -440 001 Phone No: - 0712/2564256
10	Tender Document fee	**Rs. 10,000/-** (Rs. Ten Thousand Only) Non-refundable & Non-Transferable) to be submitted online.

The date & time of opening of Price Bid will be announced later.

- If any technical difficulties arise while filling up e-tender, please contact Divisional Office MEDA, Nagpur. It is compulsory to pay tender document fee, EMD through E-payment (online) at https://mahatenders.gov.in
- Eligible bidders can upload the Tenders through Maha-e-tender portal of GoM: https://mahatenders.gov.in

SECTION-II

INFORMATION AND INSTRUCTION TO BIDDERS

The General Manager (Divisional Office Nagpur), on behalf of MEDA (the Employer), invites bids from eligible bidders for "works" include Design, fabrication, supply, installation, testing, commissioning, operation and maintenance for a period of 5 years of 175 kw distributed capacity grid-connected solar pv power plant with 4 hrs battery backup under roof-top net metering at Samaj Kalyan Office and various Hostels/Residential School under Samaj Kalyan, Nagpur district in the state of Maharashtra. (Herein after referred to as the contract of works) and as described in the tender document on "Turnkey Contracts" under Tender No: TENDER NO. **REN/SOLAR-NAG/SAMAJ KALYAN/59/2019-20**.

1. Scope of Contract

The Scope of contract is as below:

- Design, fabrication, supply, installation, testing, commissioning, operation and maintenance for a period of 5 years of 175 kw distributed capacity grid-connected solar pv power plant with 4 hrs battery backup under roof-top net metering at Samaj Kalyan Office and various Hostels/Residential School under Samaj Kalyan, Nagpur district in the state of Maharashtra on "Turnkey" Contract Basis and as described in the Tender Document.

S.N.	Details of Site	Capacity (kw) Hybrid	Estimated cost
1	Assistant Commissioner Office, Samaaj Kalyan, in front of Govt. ITI, Shradhanandpeth, Nagpur	12	16,20,000/-
2	Dr. Babasaheb Ambedkar Backward class boys Government Hostel Bhagwannagar Dikshbhumi Nagpur	15	20,25,000/-
3	Dr. Babasaheb Ambedkar Backward class boys Government Hostel Near Hiwra Lake, Tal. Umred Dist. Nagpur	15	20,25,000/-
4	Backward Class Boys Government Hostel, Wanadongri, Tal. Hingna Dist. Nagpur	35	47,25,000/-
5	Backward Class Boys Government Hostel, Nanda Koradi, Tal. Kamptee Dist. Nagpur	35	47,25,000/-
6	Sant Muktabai Backward Class Girls Government Hostel, Civil lines Nagpur	5	6,75,000/-
7	Backward and Financial point of view Backward Class Girls Hostel, Civil lines Nagpur	5	6,75,000/-

8	Schedule cast and Navbudha Boys' and girls' Residential school, Waregaon Tal. Kamptee Dist. Nagpur	20	27,00,000/-
9	Backward Class Girls Government Hostel, Tal. Kalmeshwar Dist. Nagpur	15	20,25,000/-
10	Schedule cast and Navbudha Boys' and girls' Residential school, Wanadongri Tal. Hingna Dist. Nagpur	18	24,30,000/-
	Total	175 KW	Rs. 2,36,25,000/-

- The battery bank must be capable of providing battery back-up for the full load, bidder must consult with respective School's Authority for connection of Load to be taken on battery for minimum 4 hrs.
- Free replacement of defective components of systems within Comprehensive Maintenance Contract period (CMC) of 5 years after commissioning for efficient running of the Grid-connected Solar Photovoltaic Power Plants.
- The Works are to be carried out at Samaj Kalyan **offices and hostel/residential school under Samaaj Kalyan in District Nagpur** in the state of Maharashtra. **Bidder can quote only after the site visit of any 5 site mention above**.
- The successful Bidder will be required to complete the works within the stipulated time as specified in the tender document. The bidder shall ensure that sites of Solar Photovoltaic Power Plants should be installed and commissioned within **90 days** from the date of receipt of work order.
    - Selected bidder shall bind to operate and maintain the system as per the rules and regulations and modalities as prescribed by MNRE and MEDA for effective functioning of the project.
    - Bids shall be complete and cover all Works described in the tender. However, if any item of works required for completing the projects shall be deemed to be included in bidder's scope irrespective of whether it is specifically mentioned or not in the tender document.
    - Bidder should obtain statutory permissions from statutory bodies wherever required for execution of works.
    - **Bidder shall quote for the complete system.** Partial bids or bids which do not cover the entire scope of the project will be treated as incomplete and not responsive to the terms and conditions of tender are liable to be rejected.
    - Pre-bid meeting shall be the part of Tender document. Decisions taken in the pre-bid meeting

will be applicable to the tender**.** Accordingly, bidders have to quote the price and submit the necessary documents with the tender.

- **Bidder must unsure battery backup of existing FULL load for 4 hrs and minimum 60% of plant capacity as per Table No. 1, whichever is higher.**
- **Invertor installed must be single 3 phase hybrid invertor**
- **Bidder must provide compatibility certificate of Invertor & battery by the manufacturer.**

2. Eligibility

The bidder shall provide sufficient documentary evidences to satisfy the following conditions.

- The Bidder should provide valid registration certificate issued by MNRE / MEDA and IEC certificate of SPV Module, Inverter and Battery and test report from authorized test centre of MNRE, GoI.
- Shall manufacture/supply the material (Module, Battery & Inverter) only as per the standards mention in tender document.
- **The Bidder should have installed & commissioned 400 KW capacity (single or cumulative) Grid-connected roof top net metering systems and 50KW (single or cumulative) grid connected system with Battery Back Up/Off Grid during last 03 year along with Proof. The list of projects commissioned has to be submitted along with the tender. The copy of the Commissioning certificate and Work order / Contract / Agreement / from the Client / Owner shall be submitted**
- Is a manufacturer of SPV system or System Integrator and shall provide the test certificate of SPV system issued by MNRE or its authorized test centres.
- He shall supply the material (Module, Inverter and Battery) As per IEC Standards mention in technical Specification.

For submission of the bid (Grid connected), bidder must have to fulfil following criteria.

- Must have field service setup to provide good after sale services including necessary repair and maintenance in the state of Maharashtra, to carry out repair/replacement work within **48 hours** from the time of reporting the fault as and when required over the period of 5 years i.e. CMC period otherwise penalty of 0.1 percent per day will be imposed maximum up to 10%. Registered Office, service and dealership network in Jurisdiction of Nagpur is must. Accordingly, bidder has to submit the details thereof.
- Has provided goods after sale services for the works done by him during last three years.

- **Will not be having Joint venture**.
- Must have cumulative annual turnover of minimum **5 Crore** during last three years
- All above criteria shall be strictly followed. Bidder should quote only if he is eligible.

3. Standards/ Certificates

- The goods supplied and works executed under this contract shall confirm to the standards mentioned in the technical specification and where no applicable standard is mentioned, the latest version of Indian Standard Institution or Bureau of Indian Specification shall be applicable.
- The Bidder shall submit all the valid test certificates and reports of the system components following the latest MNRE Guidelines and the same components shall be supplied for which the test reports/ certificates are submitted.
- The manufacturer should submit test certificate of Module.

GUARNTEED GENERATION CLAUSE

The plant needs to be generated at least 4 units for 320 days of respected capacity. If system produces units below guaranteed generation as mentioned above then penalty of Rs. 6/- per unit will be levied. Accordingly, bidder has to quote.

4. Instructions

- Bidder shall upload Information, Experience Certificates, Test Reports and other such relevant document's specified in the list of other important documents.
- The bidder should visit the site & carryout the survey and upload the certificate indicating that the survey is carried out by the bidder as per **Appendix - IV**. The tender submitted without site visit report will be rejected out rightly.
- The technical proposals confirming to eligibility criteria and found satisfactory will be taken up for detailed technical evaluation. A technical evaluation committee shall evaluate the Bids submitted by bidders for detailed scrutiny. During evaluation of the technical bids, MEDA may at its discretion ask the bidders for clarification of their bid.
- In case bidder does not fulfil the technical bid the financial bid shall not be opened & he shall be disqualified from further bidding process.
- Price Proposals of bidders qualifying above conditions shall be subsequently opened. The time and date of the opening of the Price bid shall be intimated on web site by MEDA.
- The price bid will be opened in presence of the all technically qualified bidders.

- Bids submitted without EMD will be rejected. Bidder would need to upload the required documents through electronic mode only.
- The Bidder shall upload valid copies of
  - Central Sales Tax / VAT registration Certificate /GST registration certificate
  - PAN and Service Tax Registration Certificate issued by appropriate authority.
  - Income Tax Returns of previous three assessment years.
- For any Clarification / online support please contact at mail id domedachandrapur@mahaurja.com or domedanagpur@mahaurja.com
- **Divisional Office Nagpur** reserves the right
  - To reject or accept any or all tenders without assigning any reasons thereof.
  - The work order is not transferable. Subletting is not allowed.

    MEDA will not entertain any claim at any stage of successful bidder on the plea that the bidder was not having sufficiently acquainted himself to the site conditions.

5. Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of bid and MEDA will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

6. Language of Bid

All documents, drawings, instructions, design data, calculations, operation, maintenance and safety manuals, reports, labels and any other date shall be in English Language. The contract agreement and all correspondence between the MEDA and the bidder shall be in English language. Supporting documents and printed literature furnished by the bidder if provided in another language it shall be accompanied by an accurate translation of the relevant passages in the English language duly authenticated and certified by the bidder (exception for bidders from Maharashtra). Supporting materials, which are not translated into English, may not be considered. For the purpose of interpretation and evaluation of the Application, the English language translation shall prevail

7. Documents Comprising the Bid

The Bid prepared by the Bidder shall be uploaded in 'Two parts Viz. Technical and Financial bids comprising the following components. Bids shall electronically submit online in the E-tender platform and the documents shall be scanned and submitted.

Part I - Technical Proposal:

Bidder shall submit relevant certificates to fulfil the eligibility criteria prescribed in the tender document along with following documents/information.

- Bidder's Information Sheet

- Annual Turnover
- Self-Certification of No Barr/non-failure/blacklisted.
- Installation and Performance Credentials
- Experience for installation and commissioning of SPV power plants.
- Experience/set-up of after sales service
- Product technical specifications
- Standards maintained for various components to be used in the project
- Safety consideration for system protection
- Warranty certification of equipment / components

The Bidder is expected to verify all instructions, forms, terms and specifications in the Tender Document. Failure to furnish all information required in the tender document will be at the Bidder's risk and may result in rejection of the bid.

Part II - Financial bid

Financial Bid shall contain:

- The bidder should quote the price as against total tender estimate as shown in the tender document.
- The price quoted in the bid will be inclusive of all taxes, duties, insurance and all incidental charges for successful design, supply, installation, commissioning along with comprehensive maintenance for five years of Solar PV Power Plants.
- Prices shall be quoted in Indian Rupees only.
- In no circumstances, escalation in the prices will be entertained.
- Financial Bid uploaded with an adjustable price quotation will be treated as non-responsive and will be rejected.
- Any Bid not in accordance with above clauses of this Section will be rejected.

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

A) EARNEST MONEY DEPOSIT:

- The Earnest Money Deposit for this project of **Rs. 2,36,250/-** should be paid online through respective portal. The Companies are eligible for EMD exemption as per GR published on 1-12-2016 by Industry, Energy and Labour department by submitting the valid documentary proof**.** No interest shall be payable on the amount of Earnest Money. It shall be retained by MEDA. EMD shall be returned to unsuccessful Bidders after acceptance of work order by successful Bidder and EMD of successful Bidder shall be returned after submission of security deposit.

A) FORFEITING OF EMD:

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

1. The Bidder withdraws his tender before finalization of work order.
2. The Bidder does not accept work order.
3. The Bidder violates any of the terms and conditions of the tender.
4. The Bidder fails to deposit requisite Security deposit.
5. The Bidder fails / refuses to execute the contract, in this case MEDA shall have full right to claim damages thereof in addition to the forfeiture of EMD.

B) SECURITY DEPOSIT:

1. The Bidder shall furnish Security Deposit at **3%** of the total contract value after issuing of Letter of Intent (LOI), only after submission of SD which work order will be issued. SD must be submitted by demand draft of nationalized/scheduled bank in favour of **Maharashtra Energy Development Agency, Chandrapur.**
2. ***Additional Security Deposit (SD) clause: -**
    i. If bidder quotes within the limit of -20% to +10% of the estimated tender cost, the Security Deposit (SD) of 3% of contract value is to be deposited.
    ii. If bidder quotes below 20%, then bidder has to submit Security Deposit (SD) as mandatory 3% + additional % with respect to percentage below 20% of the total contract value. For ex. If Bidder quotes -24% then bidder has to submit 3% mandatory + 4% additional = **7% of the total** contract value as security deposit (SD).
3. Failure to comply with the terms of security deposit shall result into cancellation of work order without any further reference to the Bidder and the EMD shall be forfeited.
4. The security deposit shall be liable to be forfeited wholly or partly at the sole discretion of the MEDA, if the Bidder either fails to execute the work of above projects or fails to fulfil the contractual obligations or fails to settle in full his dues to the MEDA.
5. In case of premature termination of the contract, the security deposit will be forfeited and the MEDA will be at liberty to recover the losses suffered by it & if additional cost is to be paid, the same shall be recovered from the Bidder.
6. The MEDA is empowered to recover from the security deposit 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.

7. The security deposit shall be released to the Bidder only after contract is completed to the satisfaction of the MEDA.

8. PRICE VARIATION:

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

9. JURISDICTION:

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

10. TIME FRAME:

- The time frame for the completion of work is **90 days** from the date of issue of work order.

11. Period of Validity of Bid

- Bids shall remain valid for **180 days** after the date of opening of Technical Bid. A Bid valid for a shorter period shall be rejected by MEDA as non-responsive.
- In exceptional circumstances, MEDA may solicit the Bidder's consent to extend the period of validity. The request and the responses thereto shall be made in writing. The EMD provided shall also be suitably extended. A Bidder granting the request will not be required nor permitted to modify its bid.

12. Mode of submission of bids

- The Bids shall be submitted electronically in the e-tender platform only.
- Bids sent by any other mode like in person, post, Telex or Fax or e-mail will be rejected.
- MEDA may at its discretion ask Bidder to submit the hard copy of any of the document submitted on e-tender platform.

13. Deadline for Submission of Bids

- Bids must be uploaded by the bidder through e-tender process not later than the time and date specified in the invitation for Bids.
- The MEDA may, at the discretion, extend this deadline for submission of bids by issuing an addendum, in which case all rights and obligations of MEDA and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

14. Clarification of Bids

During evaluation of Bids, MEDA may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing and no change in prices or substances of the Bid shall be sought, offered or permitted.

15. Preliminary Examination

- The MEDA will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.
- Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between words and figures, the lower of the two will prevail. If the Bidder does not accept the correction of errors, its bid will be rejected.
- The Bidder is required to carefully examine the Technical Specification, terms and Conditions of Contract, and other details relating to supplies as given in the Bid Document.
- The Bidder shall be deemed to have examined the bid document including the agreement/ contract to have obtained information on all matters whatsoever that might affect to execute the project activity and to have satisfied himself as to the adequacy of his bid. The bidder shall be deemed to have known the scope, nature and magnitude of the supplies and the requirements of material and labour involved etc. and as to all supplies he has to complete in accordance with the Bid document.
- Bidder is advised to submit the bid on the basis of conditions stipulated in the Bid Document.
- Bidder's standard terms and conditions if any will not be considered. The cancellation / alteration / amendment / modification in Bid documents shall not be accepted by MEDA.
- Bid not submitted as per the instructions to bidders is liable to be rejected. Bid shall confirm in all respects with requirements and conditions referred in this bid document.

16. Acceptance or Rejection of Bids

- MEDA reserves the right to accept or reject any bid or all the bids and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability or any obligation to inform the affected bidder or bidders of the grounds for the said action.
- Any Bid with incomplete information is liable for rejection.
- For each category of pre-qualification criteria, the documentary evidence is to be produced duly attested by the authorized representative of the bidder and serially numbered. If the documentary proof is not submitted for any/all criteria the Bid is liable for rejection.

If any information given by the bidder is found to be false/ fictitious, the Bidder will be debarred for 3 years from participating in any other tenders of MEDA and will be black listed.

17. Criteria for Bids evaluation

Step 1: Test of Responsiveness

- Prior to evaluation of Bids, MEDA shall determine whether each Bid is responsive to the requirements of the tender document. A Bid shall be considered responsive only if all documents as outlined in the tender document for two stage bid process are submitted as per the pre-defined format.
- The MEDA reserves the right to reject any Bid which is non-responsive and no request for alteration, modification, substitution or withdrawal shall be entertained by the MEDA in respect of such Bid.

Step 2: Bid Evaluation

Bid evaluation will be carried out considering the information furnished by Bidders as per the Tender documents. Based on technical/ qualifying criteria preferred bidders will be short listed.

Technical Evaluation

- Only Technical Proposals conforming to minimum eligibility criteria and found to be responsive will be taken up for detailed technical evaluation. A technical/ tender committee shall evaluate the Bids submitted by bidders for a detailed scrutiny. During evaluation of Bids, MEDA, may, at its discretion, ask the bidders for clarification of their Proposals.

Financial Evaluation

The price bids of the eligible bidders will then be evaluated in the manner provided below;

- At the outset, the price bids of all the Bidders who are technically qualified in technical evaluation shall be opened in the presence of the Bidders Representatives.
- The bidder's names, the Bid Prices, total amount of each bid and other details as MEDA may consider appropriate, will be announced and recorded by MEDA at the opening. The bidder's authorized representatives will be required to sign this record.
- Bidder that has quoted the lowest price (inclusive of all the taxes/duties) without breach any technical specification as per terms and condition shall be declared as the preferred Bidder.
- The work orders shall be issued to the successful bidder who ever qualifies in the complete process as mentioned above.

18. Award Criteria and Award of Contract

MEDA will award the contract to the successful bidder whose bids has been determined to be substantially responsive and has been determined as the lowest evaluated bid as per the criteria mentioned above, provided further that the bidder is determined to be qualified to perform the contract satisfactorily.

19. Corrupt or Fraudulent Practices

MEDA requires that Bidders shall observe the highest standard of ethics during the execution of contracts. In pursuance of this policy, MEDA Defines, for the purposes of this provision, the terms set forth as follows:

- "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and
- "fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Government, and includes collusive practice among Bidders (prior to or after tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the Government of the benefits of free and open competition;
  - will reject a proposal for award if it determines that the Bidder recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;
  - will declare a firm ineligible for a period of 3 years, if it at any time it determines that the firm has engaged in corrupt or fraudulent practices in competing for awarded work at Government financed contract, or in executing, a contract.

20. Conditions for issuing Work Order to lowest bidder:

- If declared L1, as per financial bid evaluation, the bidder has to submit description and physical specification of materials in detail along with single line diagram of solar plant certified by Chartered Engineer/Electrical Contractor which will be used in project Also a letter of undertaking on the letter head of bidder's company mentioning similar material (with same specification and description) will be used/replicated at all awarded project sites needs to be submitted.
- The bidder has to submit documents related to labour insurance and material insurance made by him, also bidder should submit 1% charge of total contract value by demand draft at MEDA office as regards 'Labour Welfare Cess' according to the law.
- An undertaking by the bidder on **Rs.100/-** stamp paper mentioning his establishment of required service stations near the project sites within jurisdiction of concerned district, names of his site engineer/ manager & their contact phone numbers, also contact number & address of local personnel of the company who is responsible for carrying out comprehensive maintenance contract (CMC) of the project for 5 years.

21. Terms of Payment:

a. **Release of 60% of total project cost:**

It will be released after supply, installation & successful commissioning of the systems (including installation & commissioning of Net Meter and successful Evacuation of Power into the grid) duly certified by Bidder, Officer of MEDA, Nagpur & authorized person of Beneficiary, along with following documents:

- Joint Inspection Report duly signed by beneficiary, Bidder representative, MEDA official.
- Submission of Project Insurance policy documents effective from date of commissioning of the project for period of 05 years covering damage by natural calamities, fire, forceful damage of project, theft, etc.
- System Photograph accompanying MEDA official taken during joint inspection.
- Warranty/Guaranty Certificate of materials used in project.
- Serial Wise Test Reports of Panel comprising I-V curve and detail parameters of each panel.
- Test Report of inverter and batteries (if applicable)
- Comprehensive Maintenance Contract (CMC) document as per clause mentioned in section IV "Technical Specification of SPV Solar Plant" for 5 years on the letter head of bidder.
- RFID Reader must be carried at the time of inspection. The report generated from RFID Tag of each panel is to be attached.

b. Release of remaining 40% of total project cost:

- Three-month successful performance report in prescribed format of day/date wise generated automatically through Remote Real Time Monitoring System.
- Submission of Performance Bank Guarantee of 15% of total project cost from any Nationalized/Schedule Bank in favour of Maharashtra Energy Development Agency valid for 5 years.
- **Guaranteed Generation**: Before release of last 40% payment, a guaranteed generation during this Three months operation period will be verified.

A guaranteed automatic generation report in day/date wise format of minimum 4 units (KWh)/ kW/day calculates to monthly guaranteed generation as 4 units * 320 days * of respected capacity of each hostel= units/year from SPV power project is expected for a period of 5 years, if the total generation pertaining to this period (initial six months) observed to be less, than penalty of Rs. 6/unit will be levied and the supplier/bidder will have to pay penalty amount in the form of D.D. Payable to Maharashtra Energy Development Agency.

After completion of one year period from the date of installation of the project, total generated units will be counted and if those units are found less, necessary penalty as mentioned above will be levied. The penalty amount will be paid to the beneficiary in the

form of Demand Draft. However if the generated units are above than expected (minimum 4 units (KWH)) per KWP per day from SPV power plant in a year, then, in such case, the penalty amount paid by the supplier/bidder will be refunded to the concerned by MEDA

- For rest of the years till expiry of CMC period is up to 5 years, necessary bank guarantee submitted by the bidder will be considered to take care of active guaranteed generation of the project which will be expected as 4 units (KWh) or KW/day. If generation in these years found to be less, then penalty will be levied as Rs.6/- unit.

Deduction: -

i. The TDS at the source will be deducted as per the Govt. rule and regulations.
ii. MEDA will issue necessary certificates of TDS deduction
iii. 'C' / 'D' form will not issue by MEDA.
iv. Note that if bidder does not provide insurance against Labour and Material MEDA will process insurance at "Director of Insurance" and will deduct 1% of contract value against insurance claimed by them and 1% of contract value deduction against "Labour Welfare Cess" from payment towards successful bidder.

22. PROJECT TIMELINES:

- The time frame for the completion of work is 90 days from the date of issue of work order.

Sr. No.	Description	Timeline <Insert dates>
1.	Issuance of Letter of Award	Zero date
2.	Signing of Agreement with Battery Back-Up under Roof-Top Net Metering System at System at 4 different locations under Social Welfare Department, Gadchiroli, and Dist. Gadchiroli.	Zero date
3.	Registration of solar power Project with MEDA	Zero date
4.	Installation of Solar power Projects	within 60 calendar days after Issuance of Letter of Award
5.	Commissioning and Acceptance of Solar power project	Within 75 calendar days after Issuance of Letter of Award

Bidder should follow the project timelines and also bound to complete the progress of project work as per given below mild stones or else he will be liable for Penalty against incomplete milestone.

Sr. No.	Milestone	Work Status
1	In 45 days	> 60% Completion of work
2	In 60 days	>80% Completion of work
3	In 90 days	100%Commissioning and Acceptance of Solar power projects

23. TIME EXTENSION

- Only 07 days extension will be given in extreme condition the rights of decision for granting time extension will be reserved by MEDA. For further extension of time penalty of 1/2% of total project cost per week will be levied on the awarded bidder and maximum 10%.
- From date of issue of work order, every 07 day's report of work progression needs to be submitted to MEDA. The review of work progression will be taken and necessary altercation can be suggested, delay in work progression or failure to fulfil required altercation may lead to cancellation of work order. The rights for decision will be reserved by MEDA.

24. PENALTY CLAUSE

If the systems are not installed and commissioned within the stipulated period as mentioned in the work order the Bidder shall be required to pay penalty of 1/2% (half percent) of total amount per week, maximum up to 10% of the total cost of the systems and the amount shall be recovered either from the amount due to the Bidder or from Security Deposit.

If Successful bidder is not able to complete the project in due time the same shall be got done through other contractor and the Successful bidder has to bear all the cost incurred against the balance work left by him for the completion of project.

SECTION – III

GENERAL CONDITIONS OF CONTRACT (GCC)

1. General Terms and Conditions:

The following are the General Terms and Conditions of Contract for Supply, Installation and commissioning of SPV Power Plant, as per the specifications given in the document.

a) Bidder shall be responsible for any damage occurred, if any, at the site during the execution of work.

b) The Bidder 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 BIDDER AND ANY PROCEEDING ARRISING OUT OF THE SAME SHALL BE AT THE BIDDER'S RISK AND COST, MAHARASHTRA ENERGY DEVELOPMENT AGENCY (MEDA) OR ITS EMPLOYEES WILL NOT BE RESPONSIBLE FOR ANY SUCH INCIDENT".

c) Bidder should provide necessary manufacture's test certificates for materials being used for the work. Power curve of all the panels erected by manufacturers shall be provided to the Divisional Office Nagpur

d) The selected Bidder is bound to work on the guideline provided by MEDA from time to time. Guidelines if issued in future by MEDA, the changes proposed will also be applicable without augmentation in project cost till the completion of 5 years CMC period.

e) The Bidder shall carry out the work strictly according to the specifications as per given in Section-IV and complete the work within stipulated time.

f) It is the responsibility of Bidder to submit the reports for systems installed & commissioned and certificates for undertaking the responsibility of maintenance of the systems to MEDA with a copy to Beneficiary. Bidder shall also impart training to the user for regular Operation & Maintenance of the systems and certificate in this respect should be submitted.

g) Bidders should give Guarantee against any manufacturing defects from the date of commissioning up to CMC period. For any manufacturing defects, supplier shall replace defective parts at free of cost during the CMC period and shall keep the system functional.

h) MEDA officials will do inspection as and when necessary, during the execution of work and thereafter subsequent to installation and commissioning of the work for the purpose of issuing final completion certificate.

i) In the event of any discrepancy observed in specifications, the specifications given by MEDA will be final. In the event of dispute arising any time, related to this work and document, decision of Divisional General Manager (Divisional Office Nagpur) or his nominee shall be final.

j) MEDA at its discretion may visit supplier's factory for testing / inspection at any time during the period of supply and installation of the systems.

k) MEDA will not pay any interest on any amount, due to the Bidders.

l) During the inspection, if any deviations in Technical Specifications are observed, MEDA reserves right to test any solar module / system at any authorized test centre of MNRE. Bidder shall provide the facilities for getting the sample tested & the supplier shall bear the cost for the same.

m) If the supplier fails to complete the work or partially completes it then, MEDA reserve right to cancel the work order and get it done from other supplier and any loss due to this shall be recovered either from any amount due to the supplier or from his Security Deposit.

n) At the time of inspection of MEDA, manufacturer or supplier has to submit the I.V. curves and test reports of supplied PV modules to respective officer.

o) The Wiring must be carried out in casing-capping / conduit which are suitable as per site condition.

p) **In case of increasing / decreasing the sanctioned electric load at the project site for its proportionate matching for net metering system, it will be responsibility of successful Bidder / Manufacturer to apply for additional electric load if any, under the signature of concerned beneficiary and get the work done from MSEDCL before installation of net meter at the project site. The concerned Bidder / Manufacturer can start this activity parallelly while initiating the project activities at site. The cost incurred for the same (additional Security Deposit, Payment if any) has to be borne by bidder.**

q) **It will be responsibility of the Bidder for procurement and installation of Net Meter and its required accessories in the system.**

r) **It will be responsibility of the bidder to provide required Wi-Fi system through any network for real time monitoring of the system using internet and data for initial 1-year period, later the bidder / supplier may handover the Wi-Fi system to the beneficiary for its maintenance**.

s) It will be responsibility of the Bidder to ensure the satisfactory performance of the system.

t) The Bidder shall provide the display board of size 3ft x 3ft that gives detailed information of system along with the contact details of manufacturer. This will help the beneficiary during 5 years CMC period.

u) The Bidder 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 thereto and rules made there under from time to time.

v) If previous performance of any Bidder found unsatisfactory, he will be disqualified.

w) If any information / confirmation on any point of these tender conditions are required Bidder may contact / write to Divisional General Manager (Divisional Office Nagpur) giving tender reference no. etc.

x) In the event of dispute during installation & commissioning of the systems related to the work and documents, decision of the Divisional General Manager (Divisional Office Nagpur) shall be final.

y) The Divisional General Manager (Divisional Office Nagpur) reserves the rights to distribute the work among the Bidders who are eligible and have submitted the offers.

z) Once the Bidder submit his offer and subsequently if not interested to work, in such case MEDA will forfeit his EMD amount.

aa) 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 Bidder.

bb) The Divisional General Manager (Divisional Office Nagpur) reserves the right to select L2 Bidder i.e. second lowest Bidder to complete the work, if L1 i.e. lowest Bidder fails to fulfil tender conditions or fails to complete the work.

cc) It is binding on the successful Bidder to submit original certificates, documents required by MEDA.

2. Communications

- Wherever provision is made for the giving or issue of any notice, instruction, consent, approval, certificate or determination by any person, unless otherwise specified such communication shall be in writing and shall not be unreasonably withheld or delayed.
- Project review coordination meetings between the Beneficiary, MEDA's Representative and Contractor shall be conducted on a regular basis or as and when required by the MEDA, at locations decided by the MEDA, for Contractor's progress and plans for completing the remaining Works, to deal with matters affecting the progress of the Works, and to decide on responsibility for actions required to be taken. Decisions taken and instructions issued during the coordination meetings, as recorded in the Minutes, shall have the same force and effect as if they were written communications issued in this accordance.

The estimated work cost of the systems is given below.

S.N.	Particular	Capacity (kw) Hybrid	Estimated cost
1	12 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Assistant Commissioner Office, Samaaj Kalyan, in front of Govt. ITI, Shradhanandpeth, Nagpur	12	1620000

2	15 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Dr. Babasaheb Ambedkar Backward class boys Government Hostel Bhagwannagar Dikshbhumi Nagpur	15	2025000
3	15 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Dr. Babasaheb Ambedkar Backward class boys Government Hostel Near Hiwra Lake, Tal. Umred Dist. Nagpur	15	2025000
4	35 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Backward Class Boys Government Hostel, Wanadongri, Tal. Hingna Dist. Nagpur	35	4725000
5	35 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Backward Class Boys Government Hostel, Nanda Koradi, Tal. Kamptee Dist. Nagpur	35	4725000
6	5 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Sant Muktabai Backward Class Girls Government Hostel, Civil lines Nagpur	5	675000
7	5 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Backward and Financial point of view Backward Class Girls Hostel, Civil lines Nagpur	5	675000
8	20 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Schedule cast and Navbudha Boys and girls' Residential school, Waregaon Tal. Kamptee Dist. Nagpur	20	2700000
9	15 KW capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Backward Class Girls Government Hostel, Tal. Kalmeshwar Dist. Nagpur	15	2025000
10	18 KW capacity grid-connected solar pv power plant with battery backup under roof-top net	18	2430000

	metering at Schedule cast and Navbudha Boys and girls' Residential school, Wanadongri Tal. Hingna Dist. Nagpur		
	Total	175 KW	Rs. 2,36,25,000/-

The total estimated cost for the system is Rs. 2,36,25,000/-. Hence bidder has to submit the online EMD amount Rs. 2,36,250/-

- Government of Maharashtra, Industries, Energy and labour department Government resolution no. भांखस-2014/प्र. क्र.82/भाग-3/उद्योग-4 दि.30/10/2015 and "शासन निर्णय क्रमांक : क्र. निविदा - 2012/प्र.क्र. 97 /पंरा- 7 दिनांक 23 सप्टेंबर 2013 is applicable to this tender.

3. Manner of Execution

Execution of work shall be carried out in the approved manner as outlined in the technical specifications or where not outlined, in accordance with relevant MNRE / MEDA / BIS / Indian Standard Specifications, to the reasonable satisfaction of The Employer.

- The Contractor/Agency should successfully complete the project within timeframe set out by the employer and mutually agreed between Contractor / Agency and Employer.
- MEDA shall not be responsible for any loss or damage of any material when installing SPV power plants.
- Undertake necessary activities during the warranty period as set out in this Contract.
- It is the responsibility of successful bidder to make the insurance of SPV system from the date of commissioning up to the Completion of CMC period by following standard procedure.

4. Application

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the contract.

5. Standards

The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/ Indian Standards and as detailed in the Technical specifications Section as per the MNRE / MEDA requirements of the bid document and Annexure- A. The goods supplied under this contract shall confirm to the Standards mentioned, where appropriate Standards and Codes are not available, other suitable standards and codes as approved by the authoritative Indian Standards shall be used.

6. Inspection:

- The projects will be inspected for quality at any time during commissioning or after the completion of the project by MEDA officials.

- Bidder shall inform Divisional Office Nagpur in writing when any portion of the work is ready for inspection (site wise) giving sufficient notice to enable MEDA to depute officials 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 certifies in writing to that effect.
- The cost of Inspection shall be borne by Bidder only.
- Bidder shall carry RFID tag reader for verification of panel details, kit for testing earthing, meter for measuring structure's angle, multimeter etc.
- Bidder has to strictly follow the specifications given in the work order while carrying out the execution of work. During inspection if it is found that Bidder has deviated from the specifications, Bidder has to do the alteration / modification / reconstructions as per the given specifications at his own cost & risk.

7. Transportation

Where the Contractor/Agency is required under the contract to transport the goods to specified locations defined as Project sites, transport to such places including insurance, as shall be specified in the contract, shall be arranged by the Contractor / Agency, and the contract price shall include transportation costs.

8. Assignment

The Contractor / Agency shall not assign, in whole or in part to any third party, its obligations to perform under the contract, except with MEDA's prior written consent.

9. Sub-contracts

Sub-contract is strictly prohibited.

10. Termination for Default

MEDA without prejudice to any other remedy for breach of contract, by written notice of default sent to the Contractor/ Agency, terminate the contract in whole or part:

- If the Contractor / Agency fails to deliver any or all the goods within the period(s) or within any extension thereof granted by the MEDA or
- If the Contractor / Agency, in the judgment of MEDA has engaged in corrupt or fraudulent practices in competing for or in executing the contract.

In the event MEDA terminates the contract in whole or in part, MEDA may procure, upon such terms and in such manner as it deems. Appropriate goods or services similar to those undelivered and the Contractor / Agency shall be liable to MEDA for any excess costs for such similar goods or services. However, the Contractor / Agency shall continue the performance of the contract to the extent not terminated.

11. Applicable Law

The contract shall be interpreted in accordance with the laws of the Union of India.

12. Notices

Any notice given by one party to the other pursuant to this contract shall be sent to other party in writing or by cable, telex or facsimile and confirmed in writing to the other party's address specified. A notice shall be effective when delivered or on the notice's effective date, whichever is later.

13. Packing

- The Bidder shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the contract.
- The packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures during transit and open storage.
- Packing case size and weights shall take into consideration, where appropriate, the remoteness of the good's final destination and the absence of heavy handlings facilities at all points in transit.
- The packing, marking and documentation within and outside the item shall comply strictly with such special requirements as shall be provided for in the contract including additional requirements, if any and in any subsequent instructions ordered by the MEDA.

14. Danger plates:

The bidder shall provide at least 2 Danger Notice Plates near solar panel and inverter at each project site of 200 mm X 150 mm made of mild steel sheet, minimum 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required. The inscription shall be in English and local language.

15. Insurance:

- The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The bidder shall also take appropriate insurance during O&M period, if required.

- The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party / material / equipment / properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.

- 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.
- The bidder shall provide insurance coverage of Complete Project documents effective from date of commissioning of the project for period of 05 years covering damage by natural calamities, fire, forceful majeure, theft, etc.

16. Warranties and Guarantees:

The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 5 years from the date of commissioning of project. The successful bidder has to transfer all the Guarantees/ Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be joint responsibility of the Successful bidder and the owner of the project and MEDA will not be responsible in any way for any claims whatsoever on account of the above.

Undertaking

(On Rs.100/- Stamp Paper)

I _____ Age_____years, Occup- _____, Address _____, the (authorized signatory) of M/s …… (Company) hereby state that, I/my company is intending to participate for tender no. TENDER NO. **REN/SOLAR-NAG/SAMAJ KALYAN/59/2019-20**, Design, fabrication, supply, installation, testing, commissioning, operation and maintenance for a period of 5 years of 175 kw distributed capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Samaj Kalyan Office and various Hostels/Residential School under Samaj Kalyan, Nagpur district in the state of Maharashtra.

I have read all the terms & conditions mentioned in the Tender document of MEDA. I hereby further undertake and declare that all the terms & conditions mentioned in each and every page of the said tender document along with the clarifications released, if any, are binding on me / my company and I am fully aware that, in case of breach of any term or condition of the said Tender document, I am / My company is liable to be disqualified from the said tender process.

Sign:

Name of authorized Signatory:

Name of Company with Stamp:

Format: Commitment from the Tenderer

(On Rs.100/- Stamp Paper)

(To be submitted separately)

We here by confirm that the from proposed ……. KW Distributed capacity Grid-Connected solar PV power plant with battery backup under roof-top net metering of Samaaj Kalyan in Nagpur District in the state of Maharashtra.

We will provide the assured generation of 4 units per day per KW calculated as 4 units*320 days… kW= ….. units per year at energy meter in control cabin/room as certified by joint meter reading of manufacturer's representative and user's representative.

Unit per annum given below: -

S.N.	Site	Capacity (kw) Hybrid	Unit per annum
1	Assistant Commissioner Office, Samaaj Kalyan, in front of Govt. ITI, Shradhanandpeth, Nagpur	12	15360
2	Dr. Babasaheb Ambedkar Backward class boys Government Hostel Bhagwannagar Dikshbhumi Nagpur	15	19200
3	Dr. Babasaheb Ambedkar Backward class boys Government Hostel Near Hiwra Lake, Tal. Umred Dist. Nagpur	15	19200
4	Backward Class Boys Government Hostel, Wanadongri, Tal. Hingna Dist. Nagpur	35	44800
5	Backward Class Boys Government Hostel, Nanda Koradi, Tal. Kamptee Dist. Nagpur	35	44800
6	Sant Muktabai Backward Class Girls Government Hostel, Civil lines Nagpur	5	6400
7	Backward and Financial point of view Backward Class Girls Hostel, Civil lines Nagpur	5	6400
8	Schedule cast and Navbudha Boys and girls' Residential school, Waregaon Tal. Kamptee Dist. Nagpur	20	25600
9	Backward Class Girls Government Hostel, Tal. Kalmeshwar Dist. Nagpur	15	19200
10	Schedule cast and Navbudha Boys and girls' Residential school, Wanadongri Tal. Hingna Dist. Nagpur	18	23040
	Total	175 KW	224000

However, for 5 years we hereby commit to pay an amount of Rs.6 per unit as compensation to Samaj Kalyan, Nagpur for the amount of units unable to supply against the guaranteed generation.

Date :

Place :

Signature of the Tenderer

Seal

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

Affidavit

I..... (Name) has done the project of.....KW for (Beneficiary Name), Tender No hereby declare that the above-mentioned project is commissioned by abiding following:

The standards and norms set by Ministry of New and Renewable Energy (MNRE) is maintained while installation of project.

The project has been installed under the supervision of electrical contractor/supervisor, the electrical parameters involved in the project have been considered under supervision of electrical contractor/supervisor.

All electrical norms are followed, electrical safety measures are taken in consideration and the project is electrically safe. Electrical contractor/supervisor has authorized the electrical safety measures and norms.

The mechanical safety norms while designing and installation of structure are strictly followed. The solar hot dip structure is tested, approved from engineer and is capable of bearing the load of solar panels, withstand natural parameters (wind, rain) over the duration of project life.

The roof of the building is capable of bearing the load of hot dip galvanised structure and solar panel over the period of project life.

I will be responsible for maintenance of the project over the period of Comprehensive Maintenance Contract (CMC) i.e., 5 years and for the remaining 20 years the beneficiary is responsible for undertaking the maintenance work of the project.

In case of any mishap from the solar project with the parameter mentioned above, I will be responsible. I hereby undertake for the above.

Sign of Project Developer: .....

Stamp: ..... MEDA Official Sign:

Sign: Office Stamp:

Beneficiary Name: .....

Address: .....

.....

Undertaking

(On Rs.100/- Stamp Paper)

I _____, Age - _____, Years, Occup. - _____, Address- _____, the (authorized signatory) of M/s .....……..... (Company) hereby state that, I/my company is intending to participate for tender no. TENDER NO. **REN/SOLAR-NAG/SAMAJ KALYAN/59/2019-20**, Design, fabrication, supply, installation, testing, commissioning, operation and maintenance for a period of 5 years of 175 kw distributed capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Samaj Kalyan Office and various Hostels/Residential School under Samaj Kalyan, Nagpur district in the state of Maharashtra**.**

Sr no	component	Make (only 1)	IEC CERTIFICATION
1	**Solar Pannels**		
2	**Hybrid inverter**		
3	**Batteries**		

In case of breach of any component of the said Tender document, I am/my company is liable to be disqualified from the said tender process.

Here, I declare that document which I attached for technical scrutine, I will provide that company's component at actual site also

Sign:

Name of authorized Signatory:

Name of Company with Stamp:

TECHNICAL SPECIFICATION OF GRID CONNECTED SPV POWER PLANT WITH BATTERY BANK

Grid Tied Solar Rooftop Photovoltaic (SPV) Power Plant with Battery Bank

- **DEFINITION:-**

A Grid Tied Solar Rooftop Photovoltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables, Junction boxes, Distribution boxes and switches. PV Array is mounted on a suitable structure. Grid tied SPV system should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. Solar PV system shall consist of following equipment's / components.
Solar PV modules consisting of required number of Crystalline PV cells. Grid interactive Power Conditioning Unit with Remote Monitoring System Mounting Structures Junction Boxes.
Earthing and lightening protections.

IR/UV protected PVC Cables, pipes and accessories

- **SOLAR PHOTOVOLTAIC MODULES :-**

  - The PV modules used should be made in India.

  - The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-1 - requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.
    a. For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.
    b. The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 250 Wp and above wattage. Module capacity less than minimum 250 watts shall not be accepted.
    c. Adequate protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
    d. PV modules must be tested and approved by one of the IEC authorized test centres.
    e. The module frame shall be made of corrosion resistant materials, preferably having anodized aluminium.
    f. SPV plant shall be carefully designed & accommodate requisite numbers of the modules to achieve the rated power. MEDA/owners shall allow only minor changes at the time of execution.
    g. Other general requirement for the PV modules and subsystems shall be the Following:
    - The rated output power of any supplied module shall have tolerance within +/-3%.
    - The peak-power point voltage and the peak-power point current of any supplied

module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

- The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
- I-V curves at STC should be provided by Project developer.

➢ **SOLAR PV MODULES :-**

- Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each modules. This should be inside the laminate only.
  a. Name of the manufacture of the PV module
  b. Name of the manufacture of Solar Cells.
  c. Month & year of the manufacture (separate for solar cells and modules)
  d. Country of origin (separately for solar cells and module)
  e. I-V curve for the module Wattage, Im, Vm and FF for the module
  f. Unique Serial No and Model No of the module
  g. Date and year of obtaining IEC PV module qualification certificate.
  h. Name of the test lab issuing IEC certificate.
  i. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

➢ **WARRANTIES :-**

- Material Warranty:
  a. Material Warranty is defined as: The project developer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer ("Customer")
  b. Defects and/or failures due to manufacturing
  c. Defects and/or failures due to quality of materials
  d. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the project developer will repair or replace the solar module(s), at the Owners sole option.

- **Performance Warranty:**

a. The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

➢ BATTERY BANK:

- The batteries shall be solar photovoltaic batteries of Lithium Ferro Phosphate (LiFePO4) with appropriate container and stand. Storage batteries should confirm necessary standards as per specifications. Battery terminal shall be provided with covers. 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 as per battery requirement. The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
- 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 batteries shall consist of individual cells, which can be carried separately with ease while transporting.
- Offered batteries shall comply to the following:
  90 % of DOD: 4000-5000life cycles
- The Battery Bank shall be designed to provide 1 day autonomy.
- Bidders must use high voltage battery only.

There will be battery bank comprising of capacity bidder must acquire themselves for mention capacity for example only follow below table:

Table No. 1

Capacity	Battery Bank	
kWp	V	Ah
1	24	156
	48	90
2	24	300
	48	156
3	24	480
	48	240
4	24	636
	48	300

5	48	396
	96	216
6	48	480
	96	240
7	48	540
	96	276
8	48	636
	96	300
9	48	702
	96	360
10	96	396
	120	300

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.

Battery Type	Lithium ferro phosphate
Self Discharge	Less than 3% per month at 30 degree C
Life expectancy	4000-5000 cycle duty at 25degree C for90% depth of discharge.
Voltage	12 Volt
Approval	Batteries shall have to be approved by ERTL or CPRI or SEC or any MNRE approved test centres
Service Life	Should perform satisfactory for a minimum period of 5 year under operating conditions as mentioned.

Each battery bank will contain suitable rack, connecting leads, Battery Management System (BMS) etc.

- **ARRAY STRUCTURE :-**

  - Hot dip galvanized MS mounting structures may be used for mounting the modules / panels / arrays. Minimum thickness of galvanization should be at least 120 microns.
  - Each structure should have angle of inclination as per the site conditions to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
  - The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (wind speed of 150 kM/ hour).

It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to MEDA. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.

- The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.
- Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.
- Aluminium frames should be avoided for installations in coastal areas.

- The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.
- Regarding civil structures the Project developer need to take care of the load bearing capacity of the roof and need arrange suitable structures based on the quality of roof.
- The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m2.
- The minimum clearance of the structure from the roof level should be 300 mm.

➢ **JUNCTION BOXES (JBs) :-**

- The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP / FRP / Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires / cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.
- Copper bus bars / terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands. Provision of earthings. It should be placed at 5 feet height or above for ease of accessibility.
- Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.
- Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- All fuses shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.

➢ **DC DISTRIBUTION BOARD :-**

- DC Distribution panel to receive the DC output from the array field.
- DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65

protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

- **AC DISTRIBUTION PANEL BOARD :-**

  - AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
  - All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS 60947 part I, II and III.
  - The changeover switches, cabling work should be undertaken by the Project developer as part of the project.
  - All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz
  - The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
  - All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
  - Should conform to Indian Electricity Act and rules (till last amendment).
  - All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in supply voltage	+/- 10 %
Variation in supply frequency	+/- 3 Hz

- **PCU / ARRAY SIZE RATIO :-**

  - The combined wattage of all inverters should not be less than rated capacity of power plant under STC.
  - Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

- **PCU / INVERTER :-**

  - Inverters shall be of very high quality having high efficiency and shall be completely compatible with the charge controller and distribution panel.
  - Inverters 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 95% at full load and more than 88% at partial load (50%-75%).

- The Inverters shall be designed for extreme temperatures.
- The Inverters 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 inverter will be highly efficient. The inverter should conform IEC 61683 / IEC 60068 and should be based on PWM technology and using IGBT/MOSFET. Inverters would display its own parameters and also the parameters of battery bank connected to the inverter. The inverter's capacity must be as per 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	As per site requirement
Input / Voltage	As per inverter required for Plant. 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	90% at 50% of load and More than 97.80% 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 2%
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.

- The PCU required shall be of required rating as per site to convey DC power produced by SPV modules into AC power and adjust the voltage & frequency levels to meet the local grid conditions. The use of String Inverters of cumulative capacity as per site requirement must be preferred.
- 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.

➢ **INTEGRATION OF PV POWER WITH GRID :-**

- The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service, PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG power connection need to be provided.

➢ **DATA ACQUISITION SYSTEM / PLANT MONITORING:-**

- Data Acquisition System shall be provided for each of the solar PV plant above 10 kWp capacity.
- Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.
- Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system.
- The following parameters are accessible via the operating interface display in real time separately for solar power plant:
  a. AC Voltage.
  b. AC Output current.
  c. Output Power

d. Power factor.

e. DC Input Voltage.

f. DC Input Current.

g. Time Active.

h. Time disabled.

i. Time Idle.

j. Power produced

k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage.

- All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class.
- Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
- Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
- The data shall be recorded in a common work sheet chronologically date wise.

The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.

- All instantaneous data shall be shown on the computer screen.
- Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.
- Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.
- Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.
- Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and

other data of the plant for correlation with solar and environment data shall be provided.

- Remote Monitoring and data acquisition through Remote Monitoring System software at the owner / MEDA location with latest software/hardware configuration and service connectivity for online / real time data monitoring /control complete to be supplied and operation and maintenance / control to shall be provided.
- The Project developer shall be obligated to push real-time plant monitoring data on a specified interval (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably.

➢ **TRANSFORMER "IF REQUIRED" & METERING:-**

- Dry/oil type relevant kVA, 11kV/415V, 50 Hz Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work.
- The Bi-Directional electronic energy meter (0.5 S class) shall be installed for the measurement of import/Export of energy.
- The Project developer must take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network before commissioning of SPV plant.
- Reverse power relay shall be provided as per the local DISCOM requirement.

➢ **POWER CONSUMPTION:**

- Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of MEDA or MNRE. Decisions of appropriate authority like DISCOM, state regulator may be followed.

➢ **PROTECTIONS:-**

- The system should be provided with all necessary protections like earthing, Lightning, and grid islanding as follows:

➢ **LIGHTNING PROTECTION:-**

The SPV power plants shall be provided with lightning &overvoltage 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 The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 standard. The protection against induced high- voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

➢ **SURGE PROTECTION :-**

- Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement).

- **EARTHING PROTECTION :-**

  - Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lighting arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department/owner as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.
  - Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

- **GRID ISLANDING:-**

  - In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "Islands." Powered Islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.
  - A manual disconnect 4-pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

- **CABLES:-**

  - Cables of appropriate size to be used in the system shall have the following characteristics:
    a. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards

    b. Temp. Range: –10oC to +80oC.

    c. Voltage rating 660/1000V

    d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation

    e. Flexible

    f. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%)

    g. For the DC cabling, XLPE or, XLPO insulated and sheathed, UV-stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.

    h. For the AC cabling, PVC or, XLPE insulated and PVC sheathed single or, multi-

core multi-stranded flexible copper cables shall be used; Outdoor AC cables shall have a UV-stabilized outer sheath.

i. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. Outer sheath of cables shall be electron beam cross-linked XLPO type and black in colour.

j. The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.

k. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.

l. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm2 copper; the minimum AC cable size shall be 4.0 mm2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

m. Cable Routing / Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified. In addition, cable drum no. / Batch no. to be embossed/ printed at every one meter.

n. Cable Jacket should also be electron beam cross-linked XLPO, flame retardant, UV resistant and black in colour.

o. All cables and connectors for use for installation of solar field must be of solar grade which can withstand harsh environment conditions including High temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall be solar grade copper (Cu) with XLPO insulation and rated for 1.1kV as per relevant standards only.

p. The ratings given are approximate. Project developer to indicate size and length as per system design requirement. All the cables required for the plant shall be provided by the Project developer. Any change in cabling sizes if desired by the Project developer shall be approved after citing appropriate reasons. All cable schedules/ layout drawings shall be approved prior to installation.

q. Multi Strand, Annealed high conductivity copper conductor PVC type ‘A’ pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.

r. The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%.

s. The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%.

- **CONNECTIVITY:-**

  - The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference of the solar suppliers.

Plant Capacity	Connecting voltage
Up to 10 kW	240V-single phase or 415V-three phase at the option of the consumer
Above 10kW and up to 100 kW	415V – three phases
Above 100kW	At HT/EHT level (11kV/33kV/66kV) as per DISCOM rules

a. The maximum permissible capacity for rooftop shall be 1 MW for a single net metering point.
b. Utilities may have voltage levels other than above, DISCOMS may be consulted before finalization of the voltage level and specification be made accordingly.

- **TOOLS & TACKLES AND SPARES:-**

  - After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the Project developer for maintenance purpose. List of tools and tackles to be supplied by the Project developer for approval of specifications and make from MEDA/ owner.
  - A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs / arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished.

- **DANGER BOARDS AND SIGNAGES :-**

  - Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery- cum-control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with owner.

- **FIRE EXTINGUISHERS:-**

  - The firefighting system for the proposed power plant for fire protection shall be consisting of:
    a. Portable fire extinguishers in the control room for fire caused by electrical short circuits.
    b. Sand buckets in the control room.

c. The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

- **DRAWINGS & MANUALS :-**

  - Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Project developer shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
  - Approved ISI and reputed makes for equipment be used.
  - For complete electro-mechanical works, Project developer shall supply complete design, details and drawings for approval to owners before progressing with the installation work.

- **PLANNING AND DESIGNING:**

  - The Project developer should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labour. The Project developer should submit the array layout drawings along with Shadow Analysis Report to owner for approval.

- **DRAWINGS TO BE FURNISHED BY PROJECT DEVELOPER AFTER AWARD OF CONTRACT FROM BENEFICIARY: -**
  - The Project developer shall furnish the following drawings Award/Intent and obtain approval
  - General arrangement and dimensioned layout.
  - Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
  - Structural drawing along with foundation details for the structure.
  - Itemized bill of material for complete SV plant covering all the components and associated accessories.
  - Layout of solar Power Array
  - Shadow analysis of the roof

- **SOLAR PV SYSTEM ON THE ROOFTOP FOR MEETING THE ANNUAL ENERGY REQUIREMENT:-**

  - The Solar PV system on the rooftop of the selected buildings will be installed for meeting upto 90% of the annual energy requirements depending upon the area of rooftop available and the remaining energy requirement of the buildings will be met by drawing power

from grid at commercial tariff of DISCOMs.

- **SAFETY MEASURES :-**

  - The Project developer shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

- **DISPLAY BOARD :-**

  - The Project developer has to display a board at the project site (above 10 kWp) mentioning the following:

    a. Plant Name,
    b. Capacity,
    c. Location,
    d. Type of Renewable Energy plant (Like solar wind etc.),
    e. Date of commissioning,
    f. details of tie-up with transmission and distribution companies,
    g. Power generation and Export FY wise.

The size and type of board and display shall be appropriate.

APPENDIX- I (A)

Bidder's Information Sheet

Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Sr. No.	Particulars	
1.	Name & Mailing Address of firm	
2.	Contact Person Name, Designation & Contact No.	
3.	E-mail Address for correspondence	
4.	Firm Website Address	
5.	Firm Status (Private / PSU / Incorporate / Proprietor)	
6.	Establish Year of firm	
7.	PAN/ TAN No.	
8.	Firm Registration No / ROC	
9.	STR/ VAT / TIN No	
10.	Turnover 2017-18, 2018-19 and 2019-20 (in Crore Rs.)	
11.	Company Profile (<100 words)	
12.	Skilled manpower	
13.	Experience in SPV Power Plant (<100 words)	
14.	Experience in other solar projects (<100 words)	
15.	Solar related Product Range	
16.	Experience in Guarantee, Maintenance & After Sales Services (Years)	
17.	Accreditation	
18.	List of ISI, ISO, Other cert.	
19.	Technical specification for solar photovoltaic cell / panel / module- make	
20.	Technical specification for Battery- optional – quantity and make	
21.	Technical specification for Junction boxes- quantity and make	
22.	Technical specification for Inverter / Controller	

Sr. No.	**Particulars**	
	-quantity and make	
23.	Technical specification for Cables- quantity and make	
24.	Other Technical specification, if any	
25.	Has any Govt. / Under - taking ever debarred the company / firm from executing any work?	
26.	Special Remarks, if any	
27.	Attached are copies of the necessary original documents.	
I.		
II.		
III.		

It is certified that the information provided above is true to the best of my knowledge and belief. If any information found to be concealed, suppressed or incorrect at later date, our tender shall be liable to be rejected and our company may be debarred from executing any business with MEDA.

Date:

Signature of Bidder

Name:

Designation:

Company:

APPENDIX- I (B)

Annual Turnover

Each Bidder must fill in this form including private/public limited company.

Annual Turnover Data for last 3 Years (FY 2017-18, 2018-19 & 2019-20)	
Year	**Rs in Lac**
2017-18	
2018-19	
2019-20	
Total	

The information supplied should be the Annual Turnover of the Bidder in terms of the amounts billed to clients for each year for work in progress or completed.

Signature of Applicant

Certified by Applicant's Auditor
(Affix Stamp)

APPENDIX- II

- FORM OF PERFORMANCE BANK GUARANTEE

To: Maharashtra Energy Development Agency

Represented by

Director General

Maharashtra Energy Development Agency

_____,

_____, _____ Pin:– 411 006

WHEREAS _____ *[name and address of Contractor]* (hereinafter called "the **Contractor**") has undertaken, in pursuance of **Work Order No.** _____ **Tender No. _____ for works _____,** dated _____ 2019 to Design, fabrication, supply, installation, testing, commissioning, operation and maintenance for a period of 5 years of 175 kw distributed capacity grid-connected solar pv power plant with battery backup under roof-top net metering at Samaj Kalyan Office and various Hostels/Residential School under Samaj Kalyan, Nagpur district in the state of Maharashtra. (hereinafter referred to as the contract of works) and as described in the Bidding Data in Maharashtra State for works under single point responsibility **"Turnkey Contracts"** basis (hereinafter called "the **Contract**");

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with his obligation in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor such a Bank Guarantee;

NOW THEREFORE we hereby affirm that we are the Guarantor and responsible to you, on behalf of the Contractor, up to a total of _____ *[amount of Guarantee]* _____ *[in words]*, and we undertake to pay you, through our branch office at _____ upon your first written demand and without cavil or argument, any sum or sums within the limits of _____ *[amount of Guarantee]* as aforesaid without your needing to prove or to show grounds or reasons for your demand for the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the Contract or of the Works to be performed there under or of any of the Contract documents which may be made between you and the Contractor shall in any way release us from any liability under this guarantee, and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the date of completion of the defects liability period, with a claim period of further one month.

Yours truly,	_____
Signature and seal of the Guarantor:	_____
Name of Bank/Financial Institution:	_____
Address:	_____
Date:	_____

APPENDIX- III

Experience for supply and Commissioning of Solar Power Plants

Sr. No.	Name of Project	Plant Capacity	Year of Work	Current Status of Project / Client's Certificate

*Self attested copy of work order attached herewith

Signature of Bidder

Name

Designation

Company

Date

APPENDIX- IV

SITE VISIT REPORT LETTER

(To be submitted on letterhead of bidder)

Date: _____

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

Sub. : Site Visit Report for installation of_____(Mention kW respective project Capacity) at_____(Mention name of respective Site Location).

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

Sir,

This has reference to above referred tender of electrification of ----------

(**Mention respective site name)** to be electrified through Solar Power. I / We hereby declare that we have visited site.

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 Bidder)

Signature of Beneficiary authorities

Name of Bidder _____

Seal-

Designation _____

Seal:

Signature of MEDA Official
Seal

Annexure- A

QUALITY CERTIFICATION, STANDARDS AND TESTING FOR GRID- CONNECTED ROOFTOP SOLAR PV SYSTEMS / POWER PLANTS WITHOUT AND WITH BATTERY BACKUP

Quality certification and standards for grid-connected rooftop solar PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected rooftop solar PV system/ plant must conform to the relevant standards and certifications given below:

Solar PV Modules/Panels	
IEC 61215/ IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IEC 61701	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- Part 1 /IS 16170: Part 1	Photovoltaic (PV) module performance testing and energy rating –: Irradiance and temperature performance measurements, and power rating
IEC 62716	Photovoltaic (PV) Modules – Ammonia (NH3) Corrosion Testing (As per the site condition like dairies, toilets)
IEC 61730-1,2	Photovoltaic (PV) Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing
Solar PV Inverters	
IEC 62109-1, IEC 62109-2	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
IEC/IS 61683 (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC 62116/ UL1741/ IEEE 1547 (as applicable)	Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures
IEC 60255-27	Measuring relays and protection equipment – Part 27: Product safety requirements

IEC 60068- 2 /IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters
Fuses	
IS/IEC 60947(Part 1, 2 & 3), EN50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): a) Low-voltage Switchgear and Control-gear, Part 1: General rules b) Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers c) Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units d) EN 50521: Connectors for photovoltaic systems – Safety requirements and tests
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
Surge Arrestors	
BFC 17 -102: 2011	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD)	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control
IEC 61643- 11: 2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
Cables	
IEC 60227 /IS694, IEC 60502 /IS1554 (Part 1 & 2) / IEC 69947 (as applicable)	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing /Lightning	
IEC 62561 Series (Chemical earthing) (as applicable)	IEC 62561-1 Lightning protection system components (LPSC) - Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2:

	Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use
Energy Meter	
IS 16444 or as specified by the DISCOMs	A.C. Static direct connected watt-hour Smart Meter Class 1 and 2 — Specification (with Import & Export/Net energy measurements)
Solar PV Roof Mounting Structure	
IS 2062/ IS 4759	Material for the structure mounting
Lithium Ferro Phosphate Battery	
IEC 62619:2017	- Secondary cells and batteries containing alkaline or other non-acid electrolytes – Safety requirements for secondary lithium cells and batteries, for use in industrial applications

Note- Equivalent standards may be used for different system components of the plants.

ANNEXURE - B

Check List

All the necessary Documents / Certificates should be uploaded in proper sequence as mentioned below:

1. Original tender document duly signed and stamped on each page or Undertaking (Rs.100 stamp paper) and declaration that all the terms & conditions mentioned in each and every page of the said tender document with further clarifications released if any are acceptable.
2. EMD and Tender document fee (It is compulsory to pay tender document fee, EMD through E-payment SBI Net Banking, RTGS and NEFT only).
3. Name of authorized person (power of attorney) for submitting the document for submitting the document on Rs. 100/- stamp paper.
4. Name of the Banker.
5. Copy of the recently paid Income Tax Challan / Return, Latest CA certified balance sheet of past three years, PAN number, registration certificates of VAT, service tax, professional tax, GST Registration Certificate etc. (Self-Attested)
6. Information on Infrastructure for maintenance work.
7. Registration Certificate of the firm.
8. Information of Licensed Electrical Contractor along valid license under supervision of electrical contractor.
9. Bidder's Information Sheet Appendix**-I (A)**.
10. Annual Turnover **Appendix-I (B)**.
11. Experience for supply and commissioning of Solar Power Plants **APPENDIX-III** (along with the self-attested copies of work order).
12. Site visit Report for the location, Letter **Appendix-IV**.
13. IEC 61215 (revised) certificate for SPV module, IEC 61683 / IS 61683 for Inverter and IEC 62619 / IEC 62133 batteries if required as per **Annexure - A**.
14. Commitment in respect of generation separate for grid connected solar power plants in the prescribed format given the tender.
15. Undertaking for Material Provided mentioning make of Material
16. Certificate Mentioning that bidder company is not blacklisted in any case/nor got any failure in the project completed by the company.
17. Self-certification about set up of after sales service by company.

If any of the documents is not uploaded the tender will be rejected.