



**MAHATMA PHULE RENEWABLE ENERGY & INFRASTRUCTURE TECHNOLOGY LTD
(MAHAPREIT)
(A Subsidiary of Mahatma Phule Backward Class Development Corporation Ltd.)
(A Govt. of Maharashtra Undertaking)**

Tender No. MAHAPREIT/RESCO/02/23-24

**Request For Proposal
For**

Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block

**MAHATMA PHULE RENEWABLE ENERGY & INFRASTRUCTURE TECHNOLOGY LTD
(MAHAPREIT)**

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SECTION - I

DETAILED INVITATION TO OFFER NOTICE

**MAHATMA PHULE RENEWABLE ENERGY & INFRASTRUCTURE TECHNOLOGY LTD
(MAHAPREIT)**

B-501 PINNACLE CORPORATE PARK, NEXT TO TRADE CENTER, BKC (EAST) MUMBAI 400051

RFP Notice No. MAHAPREIT/RESCO/02/23-24 for

1. Online Open E-Tenders, in 2-bid tendering system, are invited from established, experienced and reliable contractors in undertaking **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar pv power plant with 20 kW- 40 kWh battery energy storage system with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block at village Dudhani and Vape in Bhiwandi Block** Main Offer Document is available for purchase and submission from date: **01/02/2024 to 21/02/2024**. The time schedule for various bidding phases is given in the detailed RFP notice, which is also part of the bid document.

1.1. RFP DATA AT A GLANCE:

1.2.1. Website for purchase of Tender Document, Submission of EMD, Tender Fees and Submission of Technical and Financial Bids:

www.nextprocure.in/mahapreit

1.2.2. SUMMARY DETAILS

Sr. No.	Name of work	Estimated Cost	EMD AmountRs.	Period of Work months	Offer DocumentCost Rs.
1.	Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar pv power plant with 20 kW-40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block	Rs. 2,03,50,000/- + GST (approx.)	5.08 Lakh	4 Months	6000/- + 1080/- (GST)

Tender forms will be available to bidders from **date: 01/02/2024 to 21/02/2024 online on MAHAPREIT website and NEXTPROCURE website,**

All BIDDERS are hereby cautioned that the RFP containing any deviation from the contractual terms and conditions, and other requirements and CONDITIONAL RFP shall be rejected.

1. Validity Period: The offer of the Bidder shall remain valid for 120 days from the date of opening of financial Bid.
2. The post qualification process is applicable for this RFP and Rates once quoted shall be Non-Negotiable.
3. If any assistance is required regarding RFP please contact following officials: CGM REEM/ CGM (IT) at 022- 26200411 email- cgm.reem@mahapreit.in / cgm.it@mahapreit.in.
4. All requisite information required for the submission of Offer documents is available in the tender document.
5. Participation in this bid submission by bidders is subject to online submission of tender fees and Earnest Money Deposit (EMD) as detailed in the subsequent sections.
6. **In view of the conflict of Interest, the bidding Firm having relation in whatsoever manner with any Key Resource Person/ Key Resource Institution or the Member of MAHAPREIT shall be barred from applying to the said tender.**
7. All rights are reserved by the Competent Authority to reject any or all Offers in full or in part without assigning any reason or accept the offer beyond the validity period.

1.3. TIME SCHEDULE OF TENDER NOTICE

Sr. No.	Details	Start Date	End Date
1	Availability of Tender Document on MAHAPREIT and E-procurement website	01/02/2024 at 1500 hrs.	21/02/2024 at 1500 hrs.
2	Date and time of Online Pre Bid Meeting	11/02/2024 at 1500 hrs	
3	Last Date and time of Bid Submission Online		21/02/2024 up to 1500 Hours
4	Opening of Bid		
4 (a)	Date and time of opening of Technical Bid	21/02/2024 at 16.00 Hours	
4 (b)	Date and time of opening of Price Bid		Will be intimated later on.

These instructions to applicants are being issued for appointment of contractor for **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 years of 180 kW and 135 kW ground mounted grid connected solar pv power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block.** Detailed scope of the work is being provided in the Scope of Work / Terms of Reference (TOR).

**EXECUTIVE DIRECTOR
MAHAPREIT LTD**

SECTION – II

DEFINITIONS AND RFP DATA

DEFINITIONS AND E-RFP DATA

2.1. DEFINITIONS:

2.1.1. MAHAPREIT :

MAHAPREIT shall mean the “MAHATMA PHULE RENEWABLE ENERGY & INFRASTRUCTURE TECHNOLOGY LTD”, MUMBAI acting through its Managing Director.

Additional Information about **MAHAPREIT**:

The Head-quarter of the **MAHAPREIT** is Mumbai. The functions and powers of the MAHAPREIT have been provided in the Memorandum of Association & Articles of Association In general, it has been entrusted with the work of accelerating the economic upliftment of the economically weaker families belonging to the Scheduled Castes.

2.1.2. REGISTERED ADDRESS FOR COMMUNICATION

B – 501 PINNACLE CORPORATE PARK, NEXT TO TRADE CENTER, BKC (EAST)
MUMBAI 400051

2.1.3. WEBSITE:

Web Site means official web sites for all information having following web addresses: <https://mahapreit.in>

2.1.4. APPLICANT:

Eligible and Experienced entities applying for this tender - **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar pv power plant with 20 kW- 40 kWh battery energy storage system with power evacuation arrangement each at village Dudhani and Vape in Bhiwandi Block**

2.1.5. EXECUTIVE DIRECTOR

Executive Director shall mean Executive Director of MAHAPREIT Ltd.

2.1.6. COMPETENT AUTHORITY:

Competent Authority shall mean the Managing Director of **MAHAPREIT Ltd.**

2.1.7. CONTRACTOR:

Contractor shall mean the registered entity who enters contract, with the MAHAPREIT and shall include their executors, administrators, successors and submitted assignees.

2.1.8. CONTRACT:

Contract shall mean and include following documents:

Volume I - RFP Documents.

RFP Document and information / data submitted by contractor.

2.1.9. WORK:

Work shall mean the work to be executed in accordance with Scope of Work of this Contract.

2.2. RFP DATA AT A GLANCE (SUMMARY DETAILS)

Sr. No.	Particulars	Details
2.2.1.	Tender No.	<u>MAHAPREIT/RESCO/02/23-24</u>
2.2.2.	Name of work	Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block
2.2.3.	Estimated Cost	2,03,50,000.00 approx
2.2.4.	Offer Document Cost	Rs.6000/- + GST Rs. 1080/-
2.2.5.	Earnest money (EMD)	Rs.5.08 Lakhs/-
2.2.6.	Mode of payment (EMD)	RFP and E.M.D. amount shall be paid online through payment gateway
2.2.7.	Performance Bank Guarantee	@ 5% of contract value (for calculation of PBG, the contract value will be calculated considering estimated project cost)
2.2.8.	Security Payment	@5% deducted from the running bill
2.2.9.	Mode of Submission of RFP	RFP should be submitted online through Nextprocure website.
2.2.10.	Period of Work	6 Months
2.2.11.	Contact Details of MAHAPREIT OfficialAddress Email: Phone:	Shri. Satish Chaware, CGM (REEM) cgm.reem@mahapreit.in And Shri. Sunil Mahajan (CGM IT In charge) 501, 502, Pinnacle Corporate Park, B Wing,5 th floor. Next to Trade Centre BKC Mumbai 022-26200351/6202852 cgm.it@mahapreit.in
2.2.12.	Financial eligibility Criteria	The average annual total turnover / revenue from operations for the last three financial years (i. e. 2020-21, 2021-22 and 2022-2023) should be of value not less than Rs 162.8 Lacs. The information shall be supported by CA certificate (with UDIN no.) & audited Balance Sheets and Profit & Loss statements of specified last three financial years
2.2.13.	Experience with respect to similar	1. Experience of having successful completed similar works during last 05 years ending last day August 2023 should be

	nature of work	<p>either of the following:-</p> <p>a. Three similar completed works costing not less than the amount equal to 40 % of the estimated cost OR</p> <p>b. Two similar completed works costing not less than the amount equal to 50 % of the estimated cost. OR</p> <p>c. One similar completed work costing not less than the amount equal to 80 % of the estimated cost.</p>
		2. Tenderer to submit required details & documents in support.
		Note: "Similar Nature of work" means : Works of Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance of ground mounted grid connected solar PV power plant mandatory additionally installation of battery energy storage system with power evacuation arrangement preferable.
2.2.14.	Any addendum/ corrigendum /Cancellation	Any addendum/ corrigendum/ cancellation of above RFP will be informed through MAHAPREIT and nextprocure website.
2.2.15.	Bid Documents	Bid Documents consisting of, information and eligibility criteria, plans, specification and schedule of quantities of the works will be available on websites till last date of sale and receipt of RFP papers.
2.2.16.	Bid Documents acceptance period	The bid for the work shall remain open for acceptance for a period of 15 days from the last date of receipt of bids. If any Bidder withdraws his bid/ offer before the said period or makes any modification in the terms and condition of the bid, the EMD at the time of submission of RFP shall stand forfeited.
2.2.17.	Bid Selection Criteria	Technically Qualified bidder quoting lowest percentage above/below the estimated price. Non-Negotiable
2.2.18.	Other details	Other details including , Submission of bid, Resubmission, and withdrawal of bid will be provided through this bid document.
2.2.19.	Documents to be submitted	<p>As per the checklist provided in this document.</p> <p>The bids can only be opened by the pre-designated officials only after the opening time mentioned in the bid. In the event of the specified date of bid opening being declared a holiday the bid will be opened at the appointed time and transaction in the next working day.</p>

2.2.20.	RFP Acceptance Authority	Chairman and Managing Director, MAHAPREIT	
2.2.21.	Account Details.	Bank details are below.	
		Party Name	Mahatma Phule Renewable Energy and Infrastructure Technology Limited.
		Bank Name	ICICI Bank
		Bank Branch	MIDC, Andheri (East) Mumbai 400 049.
		Bank A/c No.	054405500470
		I.F.S.C. Code	ICIC0000544

SECTION – III

INSTRUCTIONS TO BIDDERS

**GENERAL INSTRUCTIONS TO BIDDER FOR MAIN BIDDING TECHNICAL / FINANCIAL BIDDING
PROCESS**

INSTRUCTIONS FOR BIDDERS IN RESPECT OF BIDDING PROCESS

3.1. INFORMATION AND INSTRUCTIONS TO APPLICANT BIDDERS:

The RFPs through online system are invited by the MAHAPREIT from Experienced EPC contractors for Survey, design, fabrication, supply, installation, testing, commissioning and 5 years operation & maintenance of two nos. ground mounted grid connected solar PV power plant of 135 kWp and 180 kWp with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement.

3.1.1. The soft copy forms of master file should be filled in completely and all questions should be answered. All information requested for in the enclosed forms should be furnished against the respective columns in the form. If any query is not relevant, it should be stated as "Not Applicable" Only 'dash' reply will be treated as incomplete information. All applicants are cautioned that incomplete information in the application or any change(s) made in the prescribed forms will render application to be treated as non-responsive.

3.1.2. Not Applicable

3.1.3. The Main RFP Document shall be typed on applicant's letterhead and submitted.

3.1.4. Any overwriting or correction shall be attested. All pages of the Main RFP Document shall be numbered and should be submitted as package with a signed letter of transmittal.

3.1.5. All the information must be filled in English language only.

3.1.6. Information and certificate(s) furnished along with the application form (the respective application that vouches to the suitability, technical know-how and capability of the applicant) should be physically signed by the applicant.

3.1.7. The applicant is encouraged to attach any additional information, photo copies of similar job orders which were already carried out, regarding his capabilities). No further information will be entertained after submission of Main RFP Document unless it is requested by **MAHAPREIT**.

3.1.8. The Main RFP Document in prescribed forms as required in this booklet duly completed and signed should be submitted along with all relevant documents. The documents submitted in connection with the pre- qualification shall be treated as confidential and will not be returned.

3.1.9. The cost incurred by applicant in preparing this offer, in providing clarification or attending discussions, conference in connection with this document, shall not be reimbursed by the MAHAPREIT under any circumstances.

3.1.10. Instructions to the Bidders:

Bidders are expected to thoroughly study this bidding documents and get themselves well versed with the scope of work, site conditions and any details thereof.

3.2. METHOD OF APPLYING

3.2.1. If the application is made by a firm in partnership, it shall be signed by all Partners of the firm giving their full names and current addresses or by a partner holding valid power of attorney on behalf of the firm by signing the application, in which case a certified copy of the power of attorney shall accompany the application. A certified copy of the partnership deed, current address of all the partners of the firm shall also accompany the application.

3.2.2. If the application is made by a company, it shall be signed by a duly authorized person holding the power of attorney for signing the application, in which case a certified copy of the power of attorney shall accompany the application. Such company may be required to furnish satisfactory evidence of its existence before the pre-qualification is awarded.

3.2.3. The application shall be signed to be legally binding on all partners.

3.3. Pre-bid Meeting:

A pre-bid meeting will be arranged by MAHAPREIT prior to last date of bid-submission. Details of this meeting will be published on <https://organizations.maharashtra.nextprocure.in>

3.4. REVISION OR AMENDMENT OF RFP DOCUMENTS:

All Rights are reserved to revise or amend the RFP document, prior to time specified in time schedule for main RFP preparation. Any further revisions or amendments or time extensions shall be communicated to all concerned by e-mail.

3.5. EARNEST MONEY DEPOSIT:

i. All Bidders shall pay entire E.M.D. and payment shall be made online through the payment gateway on the e-procurement website.

3.5.1. Exemption of EMD:

- i. Micro & Small Enterprises (MSE) units are exempted from payment of EMD.
- ii. Bidder should submit supporting documents issued by competent Govt. bodies to become eligible for the above exemption. Bidders may please note:
 - NSIC certificate/ Udyog Aadhar Memorandum/Udyam Registration Certificate should cover the items tendered to get EMD exemptions. Certificate/ Memorandum should be valid as on due date / extended due date for Bid submission.
- iii. Bidder who solely on its own, fulfils each eligibility criteria condition as per the RFP terms and conditions and those are having MSE status, can claim exemption for EMD/ tender fee.
- iv. If all these conditions are not fulfilled or supporting documents are not submitted with the technical Bid, then all those Bids without EMD will be summarily rejected and no queries will be entertained.

3.6. REFUND/CONVERSION OF EARNEST MONEY

After acceptance of the offer of successful Bidders, the E.M.D. of other Bidders will normally be returned within 15 days. In the case of successful Bidder, the earnest money will be returned to the successful bidder once he submits Performance Bank Guarantee after issue of Letter of Intent by MAHAPREIT. Earnest money amount shall not carry any interest whatsoever.

3.7. MANNER OF SUBMISSION OF RFP AND ITS ACCOMPANIMENTS:

Main RFP Documents are to be prepared and submitted online only through e-procurement website as per the steps suggested on the website. The bidder will prepare two envelopes as follows:

- a. **Technical Envelope:** Containing scanned copies of all qualification related documents along with annexures and supporting documents and other documents listed further. Bidder should also enclose Online Receipt of submission of tender fees and Earnest Money Deposit in the envelope.
- b. **Price Bid:** Containing only price bid as per Annexure 7
Both Technical and Financial Bid envelopes are to be submitted as per the respective process in the website.
- c. Please note that no part of the technical bid shall contain any information regarding the price bid or price offered or the bidder stands disqualified from the bidding process.

3.8. CONFLICT OF INTEREST

- 3.8.1. The selected Firm should provide transparent, professional, objective, impartial service and hold MAHAPREIT's interest paramount with utmost integrity.
- 3.8.2. The selected Firm shall not deploy former contractual employees who have served MAHAPREIT.
- 3.8.3. The selected Firm shall not downstream or outsource any part of the scope of work from any agency or the advisors appointed by the MAHAPREIT or sublet the work assigned.
- 3.8.4. Non-disclosure of such an association will lead to termination of Agency.
- 3.8.5. **In view of the conflict of Interest, the EPC firm having relation in whatsoever manner with any Key Resource Person / Key Resource Institution or the Member of MAHAPREIT Task Force shall be barred from applying to the said e-RFP.**

3.9. ELIGIBILITY OF BIDDER, ELIGIBILITY OF BIDS, EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS

3.9.1. ELIGIBILITY OF BIDDER

3.9.1.1. TECHNICAL CRITERIA:

Similar Experience: Completed or substantially (at least 80% payment received) completed similar works during last 3 years should be either of the following: -

One Project of order value INR 1.628 Crores

OR

Two Projects of order value INR 1.22 Crores each

OR

Three Projects of order value INR 81.4 Lakh each

Similar work shall mean EPC of ground mounted solar PV system with in working condition during last 03 years along with sufficient documentary evidences. Additionally experience with supply, installation, commissioning of BESS preferable. 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. MAHAPREIT may verify the functionality of such systems from respective authority. If any false statements are furnished by the bidder, MAHAPREIT may terminate the contract at its will and complete the work from other bidder.

- Tender Evaluation/Approval committee members may visit such installation if required. Bidders shall arrange the visit along with necessary permissions in this context.
- Bidder must quote by considering circular published by MNRE from time to time.
- The bidder shall provide sufficient documentary evidences to satisfy the following conditions.
- Provide valid registration certificate like Shop Act License (Gumastha) and IEC/BIS certificate of SPV Module, batteries, solar street lights & luminaries test report, Solar High mast and test report from authorized test centre of MNRE/, Gol.
- The bidder should have installed & commissioned solar Power Plant, 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 / supplier of solar components or System Integrator and shall supply the material (Module, Batteries, Solar High-mast etc.) only as per the standards mentioned in tender document and shall provide the test certificate of SPV Module, battery and luminaries issued by MNRE/BIS/IEC.
- Must have field service setup to provide good after sale services including necessary repair and maintenance within reach of location, to carry out repair/replacement work within 48 hours from the time of reporting the fault as and when required over the period of 1 year i.e. CMC period.. Accordingly, bidder has to submit the details thereof.
- Has proven track record of after-sales services for the works done by him during last three years.
- Bidder must submit the address, company personnel details of registered office/ service/dealership network or setup within periphery of Mumbai division which will be responsible for conducting O&M within the CMC period briskly.

3.9.1.2. FINANCIAL CRITERIA:

- Must have average annual turnover of minimum **1.628 Crore** for last three consecutive years.
- The Net Worth of bidder firm should not be negative on 'Last date of submission of Tender' and should not have eroded by more than 30% in last 3 Years.
- All above criteria shall be strictly followed.
- Bidder will have to submit a copy of engineering document with test report including system and foundation drawing and duly certified by authorized test lab and qualified structural engineer of the bided system for its safety and stability against a wind speed of minimum 180 kmph which they want to bid even if the drawing mentioned in the bid are submitted by the bidder.
- Bidder has to submit test report from authorized test lab for load capacity.

3.9.1.3. Criteria for Start-up and Micro & Small Enterprises:

- Start-up and Micro & Small Enterprises are eligible to compete on payment of tender form fee. However, they are exempted from payment of EMD or qualifying criteria.

3.10. THE BIDDER SHALL SUBMIT DOCUMENTS LISTED BELOW (ALONGWITH TECHNICAL BID)

- 3.10.1.** Scanned copies of Income Tax Return for the last 3 financial years.
- 3.10.2.** Scanned copies of Deed of Partnership duly registered or Article of Association and Memorandum of Association of Company, if applying as a Partnership Firm.
- 3.10.3.** Scanned copies of Power of Attorney authorizing representative to act on behalf of the firm.
- 3.10.4.** All documents required to be submitted shall be sealed and self- attested and if required, original copies shall be made available for verification in due course.
- 3.10.5.** Undertaking duly signed on letterhead of the firm and submitted in ANNEXURE- 9.
- 3.10.6.** Self-attested copies of all the work orders if any issued for similar work by the Government of

India/Maharashtra Public Sector Undertakings or Government Organizations/ Companies of Government of Maharashtra/India.

3.10.7. Site visit report as per format at Annexure

3.10.8. Scanned copies of duly signed RFP offer indicated both in figures and words, to be submitted separately as a Price Bid.

3.8.9. Difference in figure and word:

If the amount undertaken or ordered to be paid is stated differently in figures and in words, the amount stated in words will prevail.

3.8.10. Signed and scanned copy of all pages of RFP bid documents.

3.8.11. Scanned copies of ANNEXURES (Duly Signed and Affixed with Firm Seal).

3.8.12. Relevant Supporting documents issued by Competent Authority must be submitted for all information given in prescribed proforma.

3.11. CLARIFICATIONS:

The clarification (s), if any, may please be sought separately from either Chief General Manager REEM or, CGM (IT) MAHAPREIT, MUMBAI. Via email at cgm.reem@mahapreit.in or cgm.it@mahapreit.in.

3.12. INSTRUCTIONS TO BE CONSIDERD WHILE QUOTING RFP OFFER

The Bidder should quote the offer in the form of Total Project Value. The bidder shall quote for the work as per details given in the main RFP viz conditions, special conditions of contract, specifications, common set of conditions issued/ additional stipulations made by the MAHAPREIT which will be shared with the bidders via email.

- 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.
- 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.

3.13. GOODS AND SERVICE TAX:

The RFP rates are inclusive of all taxes, except Goods and Service Tax payable on value of the contract as applicable from time to time.

3.14. CONDITIONAL OFFER:

Conditional offers will be summarily rejected. The RFPs which do not fulfill any of the conditions of the notified requirements laid down in this detailed RFP notice, the general rules, and directions for the guidance of the Bidders as mentioned in the RFP form or are incomplete in any respect are likely to be rejected without assigning reasons there for.

3.15. VALIDITY:

The offer shall remain valid for a period of 120 (One Hundred Twenty) days from the date of the opening of RFP unless extended and there after until it is withdrawn by notice in writing by the Bidder. Such notice shall be sent by Registered Post Acknowledgment Due CGM (REEM) / CGM IT. If the acceptance of offer is not communicated within 120 days and if the offer is withdrawn by the contractor, earnest money shall be returned in full.

3.16. AMENDMENT OF BIDDING DOCUMENT

- At any time prior to the deadline for submission of bids, the Employer may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addendum (corrigendum).
- Any addendum thus issued shall be part of the bidding documents pursuant to Sub-Clause and shall be communicated through the website: - <https://mahatenders.gov.in>
- In order to afford prospective bidders reasonable time in which to take an addendum into account in preparing their bids, or for any reason deemed appropriate by the Employer, the Employer may extend the deadline for submission of bids.

3.17. 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 MAHAPREIT may, at the discretion, extend this deadline for submission of bids by issuing an addendum, in which case all rights and obligations of MAHAPREIT and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

3.18. OPENING OF COMMERCIAL OFFER AND EVALUATION

On the date specified in the time schedule tender opening authority will open the RFP.

Following procedure will be adopted for opening of the RFP.

- 3.16.1. The Competent Authority will open all the Bids received (except those received late), including modifications made pursuant to Para 3.3 & 3.4 in the presence of the Bidders or their representatives who choose to **attend opening for Technical Bid at the pre-informed time and date at MAHAPREIT, MUMBAI**. In the event of the specified date of Bid opening being declared a holiday from the Competent Authority, the Bids will be opened at the appointed time and transaction on the next working day.

3.16.2. Process to Be Confidential

Information relating to the examination, clarification, evaluation, and comparison of submitted Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of their Bid.

3.17. CLARIFICATION OF BIDS

- 3.17.1. To assist in the examination, evaluation, and comparison of Bids, the Competent Authority may, at his discretion, ask any Bidder for clarification of submitted Bid, including breakdowns of the unit rates. The request for clarification and the response shall be in writing, but no change in the price or substance of the Bid shall be sought, offered, or permitted.
- 3.17.2. No Bidder shall contact the Employer on any matter relating to its bid from the time of the bid opening

to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Employer, it should do so in writing.

3.17.3. Any effort by the Bidder to influence the Competent Authority in the Competent Authority's bid evaluation, bid comparison or contract award decisions may result in the rejection of the Bidders 'Bid.

3.17.4. The bidder shall ensure that the bid submitted

(a) has been properly signed

(b) is accompanied by the required securities and is substantially responsive to the requirements of the Bidding documents.

Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid (1) meets the eligibility criteria defined in Schedule-I of this RFP Booklet; (2) has been properly signed;(3) is accompanied by the required securities and (4) is substantially responsive to the requirements of the Bidding documents.

3.17.5. A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding documents, without material deviation or reservation. A material deviation or reservation is one

(a) which affects in any substantial way the scope, quality, or performance of the Works.

(b) which limits in any substantial way, inconsistent with the Bidding documents, the Competent Authority's rights, or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids.

3.17.6. If a Bid is not substantially responsive, it will be rejected by the Competent Authority, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

3.18. FINAL DECISION-MAKING AUTHORITY

The Competent Authority of **MAHAPREIT** reserves the right to accept or reject any or all the offers in part or full for this RFP without assigning any reasons thereof and his decision will be final.

3.19. AMENDMENT OF TENDER DOCUMENTS:

3.19.1. At any time prior to the deadline for submission of tenders, MAHAPREIT for any reason whether at their own initiative or in response to a clarification required by any prospective Bidders may modify the Tender Documents.

3.19.2. The amendment shall be part of the Tender Documents and will be notified by publication in the MAHAPREIT or through email and will be binding on the prospective Bidders.

3.19.3. All the intending Bidders are advised to keep close watch on the website of MAHAPREIT in their own interest.

3.20. ACCEPTANCE OR REJECTION OF BIDS

- MAHAPREIT 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 MAHAPREIT and will be black listed.

3.21. CRITERIA FOR BIDS EVALUATION

3.21.1 Step1: Test of Responsiveness

- Prior to evaluation of Bids, MAHAPREIT 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 MAHAPREIT 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 MAHAPREIT in respect of such Bid.

Step2: 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.

- Bidder's Information Sheet
- Annual Turnover
- Self Certification of No Barr/non failure/blacklisted
- Details of Registered Office in jurisdiction of Mumbai Division.
- Installation and Performance Credentials
- Experience for installation and commissioning of Ground Mounted Solar PV Systems.
- Experience/set-up of after sales service
- Sheet of physical technical specifications and description of actual materials which are to be used in installation of project
- Standards maintained for various components to be used in the project
- Safety consideration for system protection
- Warranty certification of equipment's/ components
- Site visit format duly signed by beneficiary and MAHAPREIT authority.

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. Rights will be reserved by MAHAPREIT.

3.21.2. 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 as per official orders.
- The bidder's names, the Bid Prices, total amount of each bid and other details as MAHAPREIT may consider appropriate, will be announced and recorded by MAHAPREIT at

the opening. Final evaluated sheet will be declared on the e-Tender website.

- 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 whoever qualifies in the complete process and quotes lowest as mentioned above.

3.22. AWARD CRITERIA AND AWARD OF CONTRACT

MAHAPREIT 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. The undertaking, annexure mentioned in tender document, document related to eligibility must be compulsorily submitted by the awarded bidder.

3.23. CORRUPT OR FRAUDULENT PRACTICES

MAHAPREIT requires that Bidders shall observe the highest standard of ethics during the execution of contracts. In pursuance of this policy, MAHAPREIT 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.

3.24. 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 which will be used in project along with 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.
- The bidder has to submit documents related to labour insurance made by him.

3.25. ACCEPTANCE OF OFFER:

Before acceptance, the successful Bidder will be called for negotiation by appropriate officers of MAHAPREIT. The documents related to such negotiations along with modified offer of the successful Bidder if any shall also form the part of contract. After such negotiations the acceptance of offer may be intimated to the contractor by email. Such intimation shall be deemed to be an intimation of acceptance of offer. Bidder whose offer is accepted will have to complete the contract signing and formalities within 15 days from the date of intimation. In the event of failure of the Bidder to sign the agreement within the stipulated time, the earnest money, paid by Bidder shall be liable to be forfeited.

The acceptance of the offer shall also be liable to be considered as withdrawn. In that event the work will be awarded to next or any other contractor to whom the MAHAPREIT considers suitable. RFP Acceptance Authority reserves the right to reject any or all offers in full or part without assigning any reasons.

3.26. SIGNING OF CONTRACT WITH MAHAPREIT:

Successful Bidder will have to sign the contract with MAHAPREIT. The documents /information submitted by the contractor during Offer Evaluation related to negotiations shall also form a part of contract.

3.27. FORFEITURE OF E.M.D. AND CANCELLATION OF LETTER OF ACCEPTANCE

Letter of acceptance given to successful Bidder shall stand cancelled and E.M.D will be forfeited in following events and under such circumstances RFP Acceptance Authority shall consider next lowest Bidder if he is found suitable and eligible.

3.27.1. Successful Bidder fails to give various undertakings and declarations given in tender document.

3.27.2. Successful Bidder fails to sign contract in PRESCRIBED PROFORMA.

3.28. OTHER GENERAL INSTRUCTIONS:

3.28.1. Completed documents shall be submitted online form only as instructed.

3.28.2. Incomplete Schedules /Forms and without necessary details and enclosures are liable to be rejected.

3.28.3. The language for submission of document shall be English

3.28.4. The enclosed Annexure shall be filled in completely and wherever not applicable it should be written as Not Applicable.

3.28.5. The person signing the document submission on behalf of the Applicant shall enclose Power of Attorney duly authorized and notarized for the same.

3.28.6. Financial data should be given in Indian Rupees only.

3.28.7. In case the Applicant intends to give additional information for which specified space in the given format is not sufficient; it can be furnished in an enclosed sheet.

3.28.8. All the pages of this document and Annexure should be signed and corrections should be counter-signed by the authorized signatory. No over writing is permitted.

3.28.9. MAHAPREIT reserves the right to cross check and confirm the information details furnished by the applicants in the document by making suitable communication with the concerned authorities.

3.28.10. MAHAPREIT reserves the right to annul the Tender Document process, or to accept or reject any or all the proposals in whole or part at any time without assigning any reasons and without incurring any liability to the affected Bidder(s) or any obligation to inform the affected Bidder(s) of the grounds for such decision.

3.28.11. The document incomplete in any respect or without supporting documents will be treated as non-responsive and is liable for rejection.

3.28.12. Bidder should note that Work order will be issued to successful / qualified bidder in the extent of amount received from State Grants / Beneficiary department towards the project.

3.28.13. Selected bidder is bound to operate and maintain the system as per the rules and regulations and modalities as prescribed by MNRE and MAHAPREIT 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.

3.28.14. **Bidder shall quote for the complete systems.** 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.

SECTION – IV

SPECIFIC INFORMATION RELATED TO SCOPE OF WORK

SCOPE OF WORK RELATED SPECIFIC INFORMATION

4.1. Background:

The Mahatma Phule Backward Class Development Corporation Ltd is set up by the Govt. of Maharashtra as on 10th July 1978 for the economic upliftment of scheduled Castes and Nav-Buddhas MPBCDC LTD is known for its pioneering & innovative welfare- oriented programs & schemes for the backward class communities. Mahatma Phule Renewable Energy and Infrastructure Technology Ltd. (MAHAPREIT) a subsidiary company of Mahatma Phule Backward Class Development Corporation Ltd is incorporated under the Company's Act 2013(18of 2013) on 12/04/2021.

MAHAPREIT aims to deal in climate change issues in accordance with Ministry of New and Renewable Energy (MNRE) schemes/policies or Ministry of Power or any such department of Govt. of India (Gol) and its PSU/companies and allied activities required for such business. The company undertake task of socio-economic and educational upliftment of the Scheduled Castes, and Backward classes in the State of Maharashtra and implement schemes and programs of any department or agency of such department of Govt. of India (Gol) and its agencies and Govt. of Maharashtra (GoM) for All entrepreneurship and skill development to achieve or fulfil any objects of this company including but not limited to forward back linkage integration, setting up of business by start-ups of weaker and schedule caste persons and making them available funding , financing and accounting systems , secretarial practices and audit supports system, legal frame work and all incubation support ecosystem to make them self-sustainable entities or groups of entrepreneurs or companies.

MAHAPREIT has been awarded work for implementation of solarization of two villages of Dudhani and Vape in Bhiwandi block by Ministry of Panchayati Raj, Government of India. The project is jointly developed by MAHAPREIT and Rural Development Department, Thane District.

- a. It is proposed to develop ground mounted solar PV project at the two villages of Dudhani and Vape of capacity 180 kW and 135 kW. The project at two sites will also have a battery energy storage system of capacity 20 kW- 40kWh each.
- b. The power generated from the project will be fed to utility through the local transformer.
- c. The project will be handed over and managed by Village Energy Committee.
- d. The power generated from the project will be sold to utility through long term PPA.
- e. The revenue earned through the sale of power will be utilized by the village Gram Panchayat for their development activities.

4.2. Site Details

The sites are located as follows:

Site Particulars	Village Dudhani	Village Vape
Site GPS Coordinates	Latt. 19.319118 Lon. 73.0002111	Latt. 19.412907 Lon 73.215721
Land Area Available (Sq. m.)	1214.4	809.36
Solar PV Capacity Proposed	150 kWp	130 kWp
Battery Energy Storage System Size	20 kW- 40 kWh	20 kW- 40 kWh
Power Evacuation at Transformer	250kVA (Existing- 100 kVA)	200 KVA (Existing- 63 kVA)

Power Evacuation Voltage Level	11kV	11kV
Solar High Mast, 9 m,	1 no.	1 no.

4.3. SCOPE OF WORK:

- 4.3.1. Survey of the sites at the above mentioned location to assess the orientation, and civil leveling work.
- 4.3.2. Design the Solar PV Ground mounted system to gain maximum output round th year at the two locations.
- 4.3.3. Supply, installation, testing and commissioning of the solar PV systems at two locations with all required protections and safety arrangements..
- 4.3.4. Design of Power Evacuation System complete with supply of suitable size transformer.
- 4.3.5. Liaison with different government entities related to permissions and approvals for installation, operation, power evacuation arrangement.
- 4.3.6. Supply, Installation, testing and commissioning of 9 m solar high masts as per the specifications, 1 no. each at two villages.
- 4.3.7. Operation and maintenance of the systems including cleaning, performance monitoring and troubleshooting to ensure maximum up time of the system as well as replacing the faulty equipment as and when issue arises.

- The Works are to be carried out at the two locations of Dudhani and Vape under above mentioned location in Thane District inthe State of Maharashtra.
- 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 all the Solar installations should be installed and commissionedat site within **120 days** from the date of receipt of work order.
- Selected bidder shall be responsible for providing 'Power Evacuation' system from respective DISCOM. Installation of Metering system and its allied infrastructure
- Selected bidder has to submit the application with all necessary documents and fees to respective DISCOM. Bidder shall provide sealed & tested energy meter at consumption side and generation side of SPV Power Plant along with bidirectional meteras per specifications of respective DISCOM. Bidder should obtain statutory permissions from statutory bodies wherever required for execution of works. Successful Bidder needs to pay demand generated (towards additional security deposit for load extension) or any statutory fees/ charges thereby by MSEDCL.
- Accordingly, bidders have to quote the price and submit the necessary documents withthe tender. Bidder must acquaint them self from actual site condition in order to discuss all issues of site.
- The "Technical Specification" is to be strictly adhered while installation of the project. Any deviation from the same if observed will lead to alteration as per norms provided in "Technical Specification" or as per siterequirement.
- Acquiring all permissions regarding installation and commissioning, power evacuation and OnM of Solar ground mounted system will be responsibility of the bidder. Locations for installation of above systems should be finalized as per BDO and Zilla Parishad/Gram panchayat authority in consultation with MAHAPREIT.
- The responsibility of electrical works, safety precautions and safety parameters of the project will be of awarded bidder, which must be as per standards specified.

- Civil Structure must be authorized by Chartered Engineer/Structural Engineer (Civil) and provide structure stability certificate. Selected Bidder shall take written consent from beneficiary about proposed location before installation of project.
- The bidder shall provide insurance coverage of Complete systems effective from date of commissioning of the project for period of 05 years covering damage by force majeure, theft, etc.
- The bidder must acknowledge that all the work of the project must be in the observance of licensed electrical contractor. The responsibility of electrical works, safety precautions and safety parameters of the project will be of licensed electrical contractor and awarded bidder, which must as per standards specified.
- The civil load bearing capacity of of structure must be approved by civil/structure/PWD engineer. Electrical drawings/SLD must be approved by Electrical Inspector/Contractor.
- Successful Bidder(s) will be responsible to apply for metering arrangement within 7 days after getting work order and if any balance due regarding energy bills or any dues is there then inform respective authority and MAHAPREIT office.
- It will be responsibility of the bidder to provide required WIFI system through any network for real time monitoring of the system using internet and downloading of data for 5-year period, later the bidder/supplier may handover the WIFI system to the beneficiary for its maintenance. Also, the RMS report generated should be synchronised with MAHAPREIT Dashboard.
- Project should be strictly complied with technical specifications mentioned in the tender. Please note that, there will be zero tolerance for confirming to technical standards, technical specifications and quality of works.

4.4. 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/BIS/IEC Guidelines and the same components shall be supplied for which the test reports/ certificates are submitted.
- The manufacturer shall provide an indicator, which will show the status of charging of the batteries.
- The manufacturer should submit test certificate of Module.

4.5. PRICE VARIATION

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

4.6. JURISDICTION

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

4.7. TIME FRAME

The time frame for the completion of work is **120 days** from the date of issue of work order.

4.8. TERMS OF PAYMENT:

4.8.1. Release of 80% of total project cost: - (As per availability of funds)

80% of the contract amount will be released after supply, installation & successful commissioning of the systems and of High-mast duly certified by Bidder, Officer of MAHAPREIT, & authorized person of Beneficiary, along with following documents:

- a. Joint Inspection Report duly signed by beneficiary, Bidder representative, MAHAPREIT official.
- b. Submission of Project Insurance policy documents effective from date of commissioning of the project for period of 01 year and undertaking from insurance provider / bidder for annual renewals during next 4 years of CMC period. Covering all eligible risks.
- c. System Photograph accompanying MAHAPREIT official taken during joint inspection.
- d. Warranty/Guaranty Certificate of materials used in project.
- e. Serial Wise Test Reports of Panel comprising I-V curve and detail parameters of each panel.
- f. Test Report of batteries, inverter and other components.
- g. 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.

4.8.2. Release of 20 % of total project cost: - (As per availability of funds)

The remaining 20% shall be released on submission of following documents:

- Three-month successful performance report in prescribed format day/date wise generated automatically through Remote Real Time Monitoring System which should be certified by Beneficiary, Bidder & MAHAPREIT Officials of Solar Power Plant and Solar High Mast. RMS report generated should be synchronised with MAHAPREIT Dashboard. If the generated units are found below expected 5 units (kWh) per KWp per day from SPV power plant then penalty of Rs.6/- per unit will be levied.
- Submission of Performance Bank Guarantee of 10% of total project cost from any Nationalized Bank in favour of MAHAPREIT valid for 5 years.

4.9. Guaranteed Generation: Before release of last payment, a guaranteed generation during this three- month operation period will be verified.

A guaranteed automatic generation report in day/date wise format of minimum 4 units (KWh)/ kW/day from SPV power project is expected for a period of 5 years, if the total generation pertaining to this period (initial Three months) observed to be less, then penalty of Rs.6/- per unit will be levied and the supplier/bidder will have to pay penalty amount in the form of D.D. Payable to MAHAPREIT.

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 calculated for 320 sunny days in a year, then, in such case, the penalty amount paid by the supplier/bidder will be refunded to the concerned by MAHAPREIT.

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)/ KW/ day. RMS report for system is the responsibility of bidder If generation in these years found to be less, then penalty will be levied as Rs.6/ unit.

4.10. Deduction: -

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

Note that if bidder does not provide insurance against Labour and Material MAHAPREIT 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.

4.11. INSURANCE

Bidder has to provide insurance against Labour and Material during execution of project to MAHAPREIT and of project after its successful commissioning.

4.12. TIME FRAME:

The time frame for the completion of work is 120 days from the date of issue of work order. 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 30 days	>50% Completion of work
2	In 75 days	> 80% Completion of work
3	In 120 days	100% Commissioning and Acceptance of Solar Systems and High Masts

4.13. EXTENSION / PENALTY CLAUSE-

4.13.1. If project not being installed or commissioned within the given time line due to any reason, then the contractor shall seek the time extension before expiry of original time limit, by mentioning the valid reasons therefore. For delay on part of the contractor for any reason, extension up to 6 weeks includes penalty @0.5% / week of the Work order cost. For further delay of next 6 weeks, penalty will be charged @1% / week, subject to max. Penalty limited to 10% of work order cost. No further extension will be granted.

4.13.2. From date of issue of work order, every 30 day's report of work progression needs to be submitted to MAHAPREIT. The review of work progression will be taken and necessary alteration can be suggested, delay in work progression or failure to fulfil required alteration may lead to cancellation of work order. The rights for decision will be reserved by MAHAPREIT.

SECTION-V

GENERAL CONDITIONS OF CONTRACT (GCC)

5.1. General Terms and Conditions:

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

- a) Contractor shall be responsible for any damage occurred, if any, to other at the site during the execution of work.
- b) The contractor 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 ARISING OUT OF THE SAME SHALL BE AT THE BIDDER'S RISK AND COST, (MAHAPREIT) 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 MAHAPREIT.
- d) The selected Bidder is bound to work on the guideline provided by MAHAPREIT from time to time. Guidelines if issued in future by MAHAPREIT, 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 MAHAPREIT with a copy to Gram Panchayat. 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 5 years 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) Bidders and User Agency shall allow MAHAPREIT officials to 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 MAHAPREIT will be final. In the event of dispute arising any time, related to this work and document, decision of the MAHAPREIT, or his nominee shall be final.
- j) MAHAPREIT 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) MAHAPREIT will not pay any interest on any amount, due to the Bidders.
- l) During the inspection, if any deviations in Technical Specifications are observed, MAHAPREIT 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, MAHAPREIT

reserves 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 their Security Deposit.

- n) At the time of inspection of MAHAPREIT, manufacturer or supplier has to submit the I.V. curves and test reports of supplied PV modules to respective officer.
- o) Also, the manufacturer has to submit the relevant IEC / IS certification (test reports) of batteries which they have installed.
- p) The Wiring must be carried out in casing-capping / conduit which are suitable as per site condition.
- q) To sustain highest wind pressure in Maharashtra and in view of safety point, SPV Panels must be fitted in 'C' type supportive structure / cross clamp bars to be fitted/welded at the corner of panels. Contractor has to get wind pattern details from respective authority.
- r) It will be responsibility of the Contractor to ensure the satisfactory performance of the system.
- s) The contractor 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.
- t) The contractor 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.
- u) In the event of dispute during installation & commissioning of the systems related to the work and documents, decision of the Competent Authority, MAHAPREIT, shall be final.
- v) MAHAPREIT reserves the rights to distribute the work among the Successful Bidders who are eligible and have submitted the offers subject to matching L1 cost.
- w) Once the Bidder submit his offer and subsequently if not interested to work, in such case MAHAPREIT will forfeit his EMD amount.
- x) At the time of placing work order and during the implementation MAHAPREIT can revise the technical terms and conditions if revised by MNRE, which will be binding on the Bidder.
- xi) MAHAPREIT reserves right to blacklist the contractor, if the contractor is not giving proper O&M services to the beneficiaries after commissioning of projects/equipment.

5.2. Communications

- i. 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.
- ii. Project review coordination meetings between the Beneficiary, MAHAPREIT's Representative and Contractor shall be conducted on a regular basis or as and when required by the MAHAPREIT, at locations decided by the MAHAPREIT, 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.

5.3. 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 / MAHAPREIT / BIS / Indian Standard Specifications, to the reasonable satisfaction of The Employer.

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

5.4. Application

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

5.5. 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 / MAHAPREIT requirements of the bid document and Annexure- A. The goods supplied under this contract shall conform 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.

5.6. Inspection:

- 5.6.1. The projects will be inspected for quality at any time during commissioning or after the completion of the project by MAHAPREIT, Divisional Office, Nagpur.
- 5.6.2. Contractor shall inform MAHAPREIT in writing when any portion of the work is ready for inspection (site wise) giving sufficient notice to enable MAHAPREIT 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 MAHAPREIT certifies in writing to that effect.
- 5.6.3. The cost of Inspection shall be borne by Bidder only.
- 5.6.4. Contractor 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 Contractor has deviated from the specifications, the contractor has to do the alteration / modification / reconstructions as per the given specifications at his own cost & risk.

5.7. Pre-dispatch inspection:

- i. MAHAPREIT representative will physically inspect sample of solar modules as per the RFID reader report of the project at the manufacturing unit of selected bidder. RFID reader

report will be collected by MAHAPREIT official after ensuring the technical specification as mentioned in Tender / work order. MAHAPREIT will permit to dispatch the material from the manufacturing unit only after ensuring the quality & adherence to technical specification mentioned in Tender / work order.

5.8. 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 specified in the contract, shall be arranged by the Contractor / Agency, and the contract price shall include transportation costs.

5.9. 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 MAHAPREIT's prior written consent.

5.10. Sub-contracts

Sub contract is strictly prohibited.

5.11. Termination for Default

MAHAPREIT 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:

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

In the event MAHAPREIT terminates the contract in whole or in part, MAHAPREIT 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 MAHAPREIT 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.

5.12. Applicable Law

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

5.13. 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.

5.14. Packing

- i. The Contractor 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.
- ii. The packing shall be sufficient to withstand, without limitation, rough handling and exposure to extreme temperatures during transit and open storage.
- iii. Packing case size and weights shall take into consideration, where appropriate, the

remoteness of the goods final destination and the absence of heavy handling facilities at all points in transit.

- iv. 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 MAHAPREIT.

5.15. Danger plates:

The bidder shall provide at least 1 Danger Notice Plate at each Grid connected SPV plant with inscription in signal red colour on front side as required. The inscription shall be in English and local language.

5.16. Insurance:

5.16.1. The contractor 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.

5.16.2. 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, theft, etc.

5.17. 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 warranty 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/ Warranties of the different components to the Owner of the project. The responsibility of operation of Warranty 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 MAHAPREIT will not be responsible in any way for any claims whatsoever on account of the above.

5.18. 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.

The awarded bidder must provide fire extinguisher and other safety equipment as asked by MAHAPREIT office

5.19. GENERAL TERM AND TERMINATION

5.19.1. This Agreement shall become effective upon signing and shall terminate upon breach of the agreement.

5.19.2. In case any information mentioned in the body of the agreement and in the attached

ANNEXURES is misleading and/or incorrect, this agreement will be terminated immediately. Party sharing the misleading/misinformation will be accountable to pay all damages occurred to the other Party as the result of mislead and/or misinformation. Any breach of terms and conditions on the part of Contractor shall be liable for termination of this contract by MAHAPREIT by serving notice of 30 days and in such case the contract shall stand terminated on the expiry of the said notice period.

5.20. FORCE MAJEURE

No Party to this Agreement is responsible to any other Party hereto for non- performance or delay in performance of the terms and conditions hereof due to acts of God, acts of governments, riots, wars, strikes, fires, floods, explosions, pandemics, quarantine periods, court orders or similar causes beyond the control of the affected Party.

SECTION-VI

TECHNICAL SPECIFICATIONS

6.1. TECHNICAL SPECIFICATION OF SPV POWER PLANT

(Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 5 years of 180 kW and 135 kW ground mounted grid connected solar pv power plant with 20 kW- 40 kWh battery energy storage system with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block)

6.1. DEFINITION

A grid Tied Solar Rooftop Photo Voltaic (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 and switches. PV Array is mounted on a suitable structure. Grid tied SPV system shall be with battery storage system and 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, batteries and BMS etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

6.1.1. General System:

1. The operating life of the plants shall be minimum 25 years.
2. The plant shall feed AC power to the Low Tension (LT) / High Tension (HT) distribution grid power supply through adjacent transformer.
3. The plants shall monitor solar generated energy using plant DC / AC energy meter/ generation meter independent of load energy monitoring. Remote monitoring facility must be made available.
4. The plant shall consist of PV array, fixed PV array support structure, String/Array combiner boxes, DC cabling, DC distribution box, Inverter, batteries, battery management system, AC cabling, AC distribution box, plant AC energy meter, load energy meter and data acquisition system.
5. The individual PV systems shall be mounted on provided ground on a **fixed PV array support structure**.
6. The individual string / array combiner boxes and DC cabling shall be installed on roof top of the building.
7. The inverter shall be installed in the control room / open space provided in the building.
8. The DC and AC distribution boxes, DC and AC cabling, energy meters and data acquisition system shall be installed in the control room / open space provided in (or near) the building.

6.1.2. PV Array:

The total solar PV array capacity should not be less than the respective individual kW capacity mentioned in the "Scope of Contract" at respective locations as per list comprise of solar crystalline modules with minimum capacity of 325Wp and above wattage. The modules shall conform to the latest ALMM list. The module type must be qualified as per IEC 61215 latest edition for crystalline silicon or IEC 61646 for other latest technology. SPV module conversion efficiency should be equal to or greater than 16% under STC. Modules must qualify to IEC 61730 Part I and II for safety qualification testing. Certificate for module qualification from IEC or

equivalent should be uploaded. Self-undertaking must be submitted from manufacturer/ supplier that the modules being supplied are as per above.

1. The PV modules used should be made in India.
2. The peak power rating of the Solar PV array under Standard Temperature Conditions (STC) shall be equal to the peak power rating of the plant.
3. The PV array shall consist of framed multi-crystalline.
4. Individual PV modules rating should be of minimum 325Wp at STC.
5. The rated maximum power rating of PV modules should have positive tolerance in range of 0 to +3%. And negative temperature co-efficient of power for PV modules should be less than or equal to 0.45% per degree C. 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 more than 3 (three) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
6. A suitable number of Solar PV modules shall be connected in a series string. A suitable number of series strings shall be connected in parallel to formulate a series parallel array.
7. The PV Array shall be designed to match the inverter input specifications.
8. The module shall be provided with junction box with provision of min. 3 Nos. of by-pass diodes and external MC4 type or equivalent plug-in connectors. The junction box should have hinged, weatherproof lid with captive screws and cable gland entry points & should be IP 67 rated.
9. The front surface of the module shall consist of impact resistant, low iron and high transmission toughened glass.
10. The module frame shall be made of corrosion resistant material electrically compatible with structural material used for mounting the modules.
11. Each PV module manufactured in India must have RF identification tag (RFID) compatible with MNRE requirements. (Traceability requirement)
12. DC negative conductor shall be bonded to the ground via Ground Fault Detector Interrupter (GFDI). The grounding point shall be as close as possible to the PV Array.
13. 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 IP67 rated.
14. Necessary I-V curves at 25^oC, 45^oC, 60^oC and at NOC are required to be furnished. Offers to provide PV module warranty of 25 years with not more than 20% degradation in performance/output over 25 years.
15. The PV module must have 10 years free replacement guarantee against material defect or craftsmanship.
16. Name of the manufacturer of PV module; name and manufacturer of the solar cell; month and year of manufacture; I-V curve, wattage, I_m, V_m, FF for the module; unique serial no & model no; date & year of obtaining IEC PV module qualification certificate are required to be furnished.

6.1.2.1. Warranties:

a. Material Warranty:

- i. Material Warranty is defined as: The manufacturer 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")
- ii. Defects and/or failures due to manufacturing
 - iii. Defects and/or failures due to quality of materials
 - iv. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solarModule(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.

b. Performance Warranty:

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.

6.1.3. Inverter (PCU)

The PCU required shall be of respective KVA 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 respected KVA must be preferred.

Common Technical Specification

Control Type: Voltage source, microprocessor assisted, output regulation.
Output voltage: 1phase,230V and 3phase,415V
AC(+12.5%,-20%V AC) **Frequency:**50 Hz (+3 Hz, -3 Hz)

Continuous rating: Respective Plant kW Capacity metering/off Import/Export meters

Normal Power:As required against particular site
Total Harmonic Distortion: less than 3%
Operating temperature Range: 0 to 55 deg C
Humidity: 95 % Non-condensing

Housing cabinet: PCU to be housed in suitable switch cabinet, IP-67(Minimum) for outdoor
PCU efficiency: 98% and above at full load.

PF:> 0.9

6.1.3.1. Other important Features/Protections of PCU:

1. Mains (Grid) over-under voltage and frequency protection.
2. Over load capacity (for 10 sec) should be 200% of continuous rating.
3. The PCU shall be self commuted and shall utilize a circuit topology and components suitable for meeting the specifications listed above at high conversion efficiency and with high reliability.
4. The PCU shall be provided with MPPT (Maximum Power Point Tracing) features, so that maximum possible power can be obtained from the PV module.
5. The PCU shall be self commuted and shall utilize a circuit topology/ DSP technology to meet the specifications listed above at high conversion efficiency and with high reliability. The PCU shall give the preference to feed the Loads from Solar Energy being produced and shall draw the additional power from mains to meet the load requirements in the case load is more than solar energy being produced. Conversely it should feed the solar power to the Grid if the load is less than the solar energy generated.

6. Foolproof protection against grid islanding which ensures that the PV power and the grid power get disconnected immediately in the event of grid failure.
7. The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.
8. The charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 67(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
9. The PCU / inverters should be tested from the MNRE approved test centres / NABL / BIS / IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.
10. The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line-to-line fault currents and line-to-ground fault currents.
11. The PCU shall be able to withstand an unbalanced output load to the extent of 50%.
12. The PCU shall go to the shut down/standby mode with its contacts open under the following conditions before attempting and automatic restart after an appropriate time delay in insufficient solar power output.
13. (a) Utility-Grid Over or Under Voltage

The PCU shall restart after an over or under voltage shutdown when the utility grid voltage has returned to within limits for a minimum of two minutes.

- (b) Utility-Grid Over or Under Frequency

The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes. The permissible level of under/over voltage and under/over grid frequency is to be specified by the tenderer.

- (c) The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.

14. Communication Modbus protocol with LAN / WAN options along with remote access facility and SCADA package with latest monitoring systems.
15. The inverter with MPPT shall be used with the power plant.
16. The sine wave output of the inverter shall be suitable for connecting to AC LT voltage grid.
17. The inverter shall incorporate transformer isolated output (transformer-less inverters shall be used with suitable external transformers), grid islanding protection disconnection of grid & PV power in case of failure of Grid supply suitable DC / AC fuses / circuit breakers and voltage surge protection. Fuses used in the DC circuit shall be DC rated.
18. The inverter shall have internal protection against any sustained faults and/or lightning in DC and mains AC grid circuits.
19. The peak inverter efficiency inclusive of built-in isolation transformer shall exceed 94%. (Typical commercial inverter efficiency normally more than 97%, and transformer efficiency is normally more than 97%)
20. The kVA ratings of inverter should be chosen as per the PV system wattage.
21. The output power factor should be of suitable range to supply or sink reactive power.
22. Inverter shall provide panel for display of PV array DC voltage, current and power, AC output voltage and current, AC power, Power Factor and AC energy and frequency. Remote

monitoring of inverter parameters should also be available.

23. The inverter shall include adequate internal cooling arrangements (exhaust fan and ducting) for operation in a non-AC environment.

6.1.4. PROTECTIONS:

LIGHTNING PROTECTION

The SPV power plants shall be provided with lightning & over voltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc 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 NFC 17-102:2011 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. The LA should be of Copper.**

6.1.5. 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

1. PV array, DC equipment, Inverter, AC equipment and distribution wiring shall be earthed as per IS: 3043 - 1987.
2. Equipment grounding (Earthing) shall connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV panel mounting structures in one long run. The grounding wire should not be switched, fused or interrupted.
3. The complete earthing system shall be electrically connected to provide return to earth from all equipment independent of mechanical connection.
4. The equipment grounding wire shall be connected to PV power plant.
5. A separate grounding electrode shall be installed using earth pit per power plant. Test point shall be provided for each pit.
6. An earth bus and a test point shall be provided inside each control room.
7. Earthing system design should be as per the standard practices.

6.1.6. CABLES & WIRES

- a. Cabling in the yard and control room: Cabling in the yard shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.
- b. Wires: Only FRLS copper wires of appropriate size and of reputed make shall have to be used.
- c. Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.
- d. Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified. Any change in cabling schedule/sizes if desired by the bidder/supplier be got approved after citing appropriate reasons, all cable schedules/layout drawings have to be got approved from the purchaser prior to installation. All

cable tests and measurement methods should confirm to IEC 60189.

6.1.7. Electrical Safety, Earthing Protection Electrical Safety

- a. Internal Faults: In built protection for internal faults including excess temperature, commutation failure and overload and cooling fan failure (if fitted) is obligatory.
- b. Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations and internal faults in the power conditioner, operational errors and switching transients.
- c. Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
- d. Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.
- e. Fast acting semiconductor type current limiting fuses at the main bus bar to protect from the grid shortcircuit contribution.
- f. The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- g. The PCU shall include ground lugs for equipment and PV array grounding.
- h. All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years design life of the unit.
- i. The PCU enclosure shall be weather-proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The INVERTER shall be located indoor and should be either wall / pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.
- j. Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.
- k. All doors, covers, panels and cable exits shall be gasket or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm. (about 3x8 inch).
- l. In the design and fabrication of the PCU the site temperature (5° to 55°C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.
- m. In AC and DC Distribution boxes individual SPD, MCB/Fuses must be used for both sides with IP67 protection of box.

6.1.8. EARTHING PROTECTION

Each array structure of the PV yard should be grounded properly. In addition, the lightning arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act. /IE Rules. Earth resistance should be tested in presence of the representative of NRHM after earthing by calibrated earth tester. PCU ACDB & DCDB should be earthed properly.

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 control room, solar array area and main entry from administrative block.

6.1.9. Balance of Systems (BoS)

1. String / Array combiner boxes shall incorporate DC string circuit breakers, DC array disconnect switch, lightning and over voltage protectors, any other protection equipment, screw type terminal strips and strain-relief cable glands.
2. All DC and AC cables shall be terminated using suitable crimped cable lugs/sockets and screw type terminal strips. No soldered cable termination shall be accepted.
3. Only terminal cable joints shall be accepted. No cable joint to join two cable ends shall be accepted.
4. Suitable Ground Fault Detector Interrupter (GFDI) shall be incorporated either with the inverter or with the array combiner box.
5. String/Array combiner boxes shall be secured onto walls or metal structures erected separately on the terrace.
6. Conduits / concealed cable trays shall be provided for all DC cabling on the Roof top. Conduits /concealed cable trays shall be adequately secured onto the roof top / wall.
7. The AC cable type shall be PVC / XLPE insulated, suitably armoured, 1100V grade multi-stranded copper conductor. Appropriate colour coding shall be used.
8. 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.
9. The DC and AC cables of adequate electrical voltage and current ratings shall be also rated for 'in conduit wet and outdoor use'.
10. The total DC cable losses shall be maximum of 2% of the plant rated DC capacity over the specified ambient temperature range.
11. The DC and AC cable size shall be selected to maintain losses within specified limits over the entire lengths of the cables.
12. DC cables from array combiner box on the rooftop to DC distribution box in the control room and DC/AC cabling between inverter and distribution boxes shall be laid inside cable duct where available or secured with conduits/concealed cable trays where duct is not available.
13. The DC and AC distribution boxes shall be wall mounted inside control room/open space.
14. DC distribution box shall incorporate DC disconnect switch, lightning surge protectors, any other protection equipment, screw type terminal strips and strain-relief cable glands.
15. AC distribution box shall incorporate AC circuit breaker, surge voltage protectors, any other protection equipment, plant energy meter, screw type terminal strips and strain-relief cable glands.
16. The total AC cable losses shall be maximum of 1% of the plant AC output over the specified ambient temperature range.
17. All cable conduits shall be GI/HDPE type.
18. All cable trays shall be powder coated steel or GI or equivalent.

6.1.10. Battery Energy Storage System (BESS):

The BESS shall conform to latest technology specifications for capacity of 20 kW- 40 kWh.

6.1.11. Civil

1. The civil foundation for modul mounting structure should be minimum 300 mm X 300 mmX1000 mm depth. For structural purpose, the panels plus support system that works as a distortion-free integral structural unit.
2. PV array shall be installed in the space free from any obstruction and / or shadow.
3. Drainage and groundf treatment should not affect by the installation.
4. PV array shall be installed utilizing maximum space to minimize effects of shadows due to adjacent PV panel rows. The gross weight of the panel assembly should at most 45 kg/sq m (W divided by the plan area).
5. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection ease of installation, replacement, cleaning of panels and electrical maintenance. There is at least 1m clear spacing all around the panel assembly (panel edge to panel edge between assemblies, and panel edge to parapet wall / room on sides).
6. The maximum column spacing should be 8.5 m c/c or less. The pedestal is placed directly on the roof, over existing roof treatment, without making any structural connection to the roof surface.
7. The panel assembly should have sufficient pedestal supports. The minimum spacing between pedestals is 2.0 m c/c in any direction. Each pedestal is made of cement concrete. Each pedestal can transmit at most 200 kg load on roof. The plan dimension of pedestal does not exceed 450mm x 450 mm, and height does not exceed 300mm.
8. Ample clearance shall be provided in the layout of the inverter and DC / AC distribution boxes for adequate cooling and ease of maintenance.
9. The Supplier will supply and install required size of Water Tank, pump, pipe etc. for cleaning the PV modules.
10. The supplier shall specify installation details of the PV Panel assembly with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;
 - a) Determination of true south at the site;
 - b) Array tilt angle to the horizontal, with permitted tolerance;
 - c) Details with drawings for fixing the modules;
 - d) Details with drawings of fixing the junction/terminal boxes;
 - e) Interconnection details inside the junction/terminal boxes;
 - f) Structure installation details and drawings;
 - g) Electrical grounding (earthing);
 - h) Inter-panel / Inter-row distances with allowed tolerances; and
 - i) Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the roof top columns properly. All nuts and bolts shall be of very good quality stainless steel. The panel support and panel-to-support connection both must be designed by vendor to withstand adequately high wind forces. Civil Works permission does not guarantee safety against flying/falling panels in the event of a storm or any other accident.

6.1.12. Mechanical

1. PV panel assembly may consist of different number of modules as per the requirement of site.
2. Each panel assembly shall incorporate one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.
3. Support structure of panel assembly shall be fabricated using corrosion resistant GI or anodized aluminium or equivalent metal sections.
4. Array support structure welded joints and fasteners shall be adequately treated to resist corrosion.
5. The support structure shall be free from corrosion when installed.
6. PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames. Module fasteners / clamps shall be adequately treated to resist corrosion.
7. The support structure shall withstand wind loading of up to 150 km/hr.
8. Adequate spacing shall be provided between any two modules secured on panel assembly for improved wind resistance.
9. The structure shall be designed to withstand operating environmental conditions for a period of minimum 30 years.
10. It is required to design the grid structure (on which PV module will be installed) in such a way that all loads are transferred to the foundation of the structure.
11. The panel assembly structure should be installed in a manner to leave sufficient space for repair and maintenance aspects.

6.1.13. ARRAY STRUCTURE

- a) **Hot dip galvanized (minimum of 100 Microns) MS mounting structures may be used for mounting the modules / panels / arrays. 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. **MS structure will not be allowed at any condition.**
- b) 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. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be complying of latest IS 4759.
- d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, and 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.
- e) 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.
- f) The bidder needs to supply suitable structures based on the quality of roof and considering the load bearing capacity of the roof / civil structures of the proposed building.

6.1.14. Electrical:

1. LT distribution grid specifications V +/- 5%, 50Hz and frequency variation as per IE rules.
2. The output of the inverter shall be transformer isolated and shall be fed into AC LT grid supplied via LT Air circuit Breaker.
3. The inverter output shall be connected to LT line prior to the LT/DG changeover switch. The mandatory islanding protection provided by inverter shall isolate the Solar PV power plant.
4. The time of day (TOD) 3 phase, digital AC load energy meter shall be installed in the Main Distribution Box to monitor energy drawn by building load and in the AC distribution box to monitor energy generated by Solar PV power plant.
5. The load energy meter operation shall be completely independent of the plant AC energy meter.
6. The energy meters shall be provided with communication interface and necessary data cables for remote monitoring.

6.1.15. Data Acquisition System

1. Data Acquisition System shall be provided for both Grid connected solar PV plants.
2. Computerized DC String / Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string.
3. 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.
4. The time interval between two sets of data shall not be more than 3 minutes. (A minimum of 20 samples of data shall be recorded per hour)
5. Data Acquisition System shall have real time clock, internal reliable battery backup and data storage capacity to record data 20 kW- 40 kWh for a period of minimum one year.
6. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
7. The date shall be recorded in a common work sheet chronologically. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
8. All instantaneous data shall be shown on the computer screen.
9. Software shall be provided for USB download and analysis of DC and AC parametric data for the plant.
10. Provision for internet monitoring and download of data shall be also incorporated.
11. Software for centralized internet monitoring system shall be also provided for download and analysis of cumulative data of the plant and the data of the solar radiation and environment monitoring system.
12. A data logging system (Hardware and Software) for plant control and monitoring shall be provided.
13. Remote Supervisory Control and data acquisition through SCADA or equivalent software at the purchaser's 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 be ensured by the supplier.
14. Disconnection and Islanding: Disconnection of the PV plant in the event of loss of the main grid supply is to be achieved by in built protection within the power conditioner; this may be achieved through rate of change of current, phase angle, unbalanced voltage or reactive load variants.
15. Operation outside the limits of power quality as described in the technical data sheet should

cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are Neutral voltage displacement Over current Earth fault and reverse power in case of the above, cases, tripping time should be less than (15 seconds Response time in case of grid failure due to switch off or failure based shut down should be well within seconds. In case of use of two PCUs capacity suitable equipment for synchronizing the AC output of both the PCUs to the ACDB/Grid should be provided. Automatic reconnection after the grid failure should restore.

16. PCU shall have the facility to reconnect the PCU automatically to the grid, following restoration of grid, subsequent to grid failure condition. And also, the facility to connect the system with load at grid failure condition for essential power supply.
17. MAHAPREIT must be provided with access to online monitoring of the system along with user authority.

6.1.16. Operating Environment

1. Temperature: 5 to 55 Deg. C.
2. Relative Humidity: 100% @ 40 Deg. C
3. Precipitation: 264 mm per day (Annual average)
4. Clearness Index: 0.62 (Annual average)
5. Wind Speed: up to 150 km/hr.
6. Corrosion: high
7. Dust: moderate
8. Bird Interference: moderate
9. Bird Droppings: moderate
10. Trees: Bushes of mid-length.

6.1.17. 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.

Voltage Level	Threshold limit of RE Generation System	Authority for Processing the application
230/240 V(1 Phase)	Less than 8 kW/40A	Concerned Sub Division office
400/415 V(3 Phase)	Up to 150 kW/187 kVA	
11 kV and above	Above 150 kW/187 kVA	Concerned Circle office

6.1.18. Testing, Certification and Approval Schedule

All components, sub-assemblies and system test parameters shall be verified on site to ensure they meet the specifications.

6.1.19. Plant Power Performance Ratio Testing

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance to qualify for release of applicable incentive. Minimum CUF of 15% should be maintained for a period of 5 years. Correction shall be applied based on available solar radiation.

6.1.20. Plant Energy Performance Ratio Testing

The overall energy performance ratio of the system shall exceed 75%. (Sum total of the system energy losses shall not exceed 30%). For global solar insolation in the Plane of Array (PoA) of 5 kWh/ m² (5 Peak Sun Hours) for the day for total 275KWp distributed PV power plant.

6.2. Operation and Maintenance (O&M)

1. Cleaning of solar PV modules with soft water, wet and dry mops: Bi-Weekly
2. DC String / Array and AC Inverter monitoring: Continuous and computerized.
3. AC Energy monitoring: Continuous and computerized.
4. Visual Inspection of the plant: Monthly
5. Functional Checks of Protection Components and Switchgear: Quarterly.
6. Spring Clean PV Array and Installation Area: Quarterly.
7. Inverter, transformer, data acquisition, energy meters and power evacuation checks: Half Yearly.
8. Support structure and terrace water-proofing checks: Yearly.
9. O & M log sheet shall be provided and maintained.
10. The repair/replacement work shall be completed within 48 hours from the time of reporting the fault.
11. A half yearly performance report of the plant inclusive of energy generation data shall be provided as per approved format.
12. All recorded data for the first 5 years shall be preserved in both manual and computer format and submitted at hand over.

6.3. COMPREHENSIVE MAINTENANCE CONTRACT (CMC)

- (i) The complete Solar PV Power Plants must be guaranteed against any manufacturing / design/ installation defects for a minimum period of 5 years.
- (ii) PV modules used in Solar PV Power Plants must be guaranteed for their output peak watt capacity, which should not be less than 90% at the end of 12 years and 80% at the end of 30 years.

- (iii) During the CMC period, MNRE / MAHAPREIT / users will have all the rights to cross check the performance of the Solar PV Power Plants. MAHAPREIT may carry out the frequent inspections of the Solar PV Power Plants installed and randomly pick up its components to get them tested at Govt. / MNRE approved any test Centre. If during such tests any part is not found as per the specified technical parameters, MAHAPREIT will take the necessary action. The decision of MAHAPREIT in this regard will be final and binding on the bidder.

6.4. Warranties and Guarantees

1. Solar Modules: Workmanship/ product replacement for 10 years.
2. Solar Modules: 90% power output for 10 years & 80% power output for 30 years.
3. Inverter: Workmanship/product replacement for 5 years, service for 30 years
4. Power Evacuation and Metering Equipment: Workmanship/product replacement for 10 years, service for 30 years
5. BoS: Parts and Workmanship for 10 years, service for 30 years.
6. Power Plant Installation: Workmanship for 10 years, service for 30 years
7. PV Array Installation: Structural for 30 years
8. Power plant power performance ratio-min 75%
9. Power plant energy performance ratio-min. 75%

6.5. Standards and Compliance

1. IEC 60364-7-712: Electrical Installations of Buildings: Requirements for Solar PV power supply systems.
2. IEC 61727 or similar: Utility Interface Standard for PV power plants > 10 kW.
3. IEC 62103, 62109 and 62040 (UL 1741): Safety of Static Inverters – Mechanical and Electrical safety aspects.
4. IEC 62116: Testing procedure of Islanding Prevention Methods for Utility-Interactive PV Inverters.
5. PV Modules: IEC 61730- Safety qualification testing, IEC 61701 – Operation in corrosive atmosphere
6. IEC 61215: Crystalline Silicon PV Modules qualification
7. String/array junction boxes: IP67, Protection Class II, IEC 60439-1, 3.
8. Surge Protection Devices: Type 2, DC 1000V rated.
9. PV module / string / string combiner box interconnects: MC4 compatible. DC 1000V rated.
10. The central inverter shall be rated for IP54.
11. The DC/AC distribution boxes shall be rated IP54.
12. The data acquisition systems shall be rated for IP54.
13. All DC and AC cables, conduits, cable trays, hardware: relevant IS.
14. Earthing System: relevant IS.
15. PV array support structure: relevant IS.

16. Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Systems/ PowerPlants should be maintained as per

6.6. TECHNICAL SPECIFICATION FOR 09 METER SOLAR LED HIGH MAST LIGHTINGSYSTEM

6.6.1. DEFINITION

A standalone Solar High Mast Lighting system (SHMLS) is an outdoor lighting unit used for illuminating a street or an open area. The Solar High Mast Lighting System consists of solar photovoltaic (SPV) module, a luminaire, storage battery, control electronics, inter-connecting wires/ cables, module mounting steel tower/ pole including hardware without battery box. The luminaire is based on White Light Emitting Diode (W-LED), a solid-state device which emits light when electric current passes through it. The luminaire is mounted on the steel tower/ pole at a suitable angle to maximize illumination on the ground.

The PV module must be placed on a separate structure placed at the top of the steel tower/ pole at an angle facing south so that it receives solar radiation throughout the day, without any shadow falling on it. A battery should be placed in the luminaire to avoid the risk of theft.

Electricity generated by the PV module charges the battery during the day time which powers the luminaires from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

PV Module	For each High mast SPV module aggregate capacity 1500Wp (min.250Wp X 6Nos Module).
Battery	Li Ferro Phosphate (LiFePo4) batteries of capacity 12.8 Volt, 100Ah for each luminaire of the High Mast, should be placed inside the luminaire / housing. Avoiding the use of external battery box which will omit the risk of theft. With appropriate overcharging, over heating deep discharge protection) without paralleling battery bank. Battery should be in IP-67 enclosure
Light Source	White Light Emitting Diode (W-LED) flood light 6*50 W (LED +Driver) DC operated confirming to IP67 or above with proper dimmer arrangement having lumen output of >200 lm/watt from a reputed company like NICHIA/Bridgelux/Philips Using LEDs which emits ultraviolet light will not be Permitted (external optic 60 to 90 degree)
Light Output	White color (color temperature 5500-6500 K). Lumen efficiency of LED- min 140 lumens/Watt. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred.

Pole (Minimum 80 Microns)	09 M Long, Polygonal Raising lowering mast shaft in Single section Suitable for basic wind speed 50 m/sec (180 Km/Hr) complete with head frame, Luminaries carriage suitable to install 6 nos. Luminaries, Solar Panels. There should be provision to install the type tested Winch inside the mast for raising & lowering of complete solar lighting system along with compact unit of modules through a mounting structure around the pole including hardware. The mast must be hot dip galvanized 20-sided Polygonal structure having Bottom A/F minimum Dia 330 mm and top A/ F Dia 150 mm of 3 mm thick. The high mast should have a designed life of 25 years.
Stainless Steel Wire Rope	Wire rope of Grade AISI 316 grade, 7/19 construction, with two ropes continuous min. 6 mm diameter and breaking load capacity min. 2000 kg or more. The breaking load test report obtained from Govt. laboratory of the wire rope should justify the desired breaking load capacity.
Raising and Lowering lighting mast	Manual pulley system
Electronics Efficiency	Minimum 85% total
Duty Cycle	Dusk to dawn with full power.
Autonomy	Minimum 36 operating hours as per permissible Discharge

6.6.2. MINIMUM TECHNICAL REQUIREMENTS / STANDARDS DUTY CYCLE

The Solar PV White- LED High Mast Light system should be designed to operate from dusk to dawn.

6.6.3. MODULES

Modules with IEC Test certificate shall be used in the project. Crystalline high power/efficiency cells shall be used in the Solar Photovoltaic module. The power output of each module shall not be less than 250Wp at load minimum voltage minimum 5 Volt under standard test conditions (STC). * Not applicable for MPPT charge controller.

Crystalline high power/efficiency cell shall be used in the Solar Photovoltaic module. The cell efficiency should not be less than 18%.

PV module must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

The terminal box on the module shall be IP 67 and designed for long life outdoor operation in a harsh environment should have a provision of opening for replacing the cable, if required.

Latest edition of IEC 61215 or IS 14286 for Crystalline and the bidder shall submit appropriate certificates from national or international test labs

PV modules must qualify to IEC 61730 Part 1- requirements for construction & Part 2 – requirements for testing, for safety qualification from national or international labs.

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

Name of the manufacturer of PV Module
Name of the Manufacturer of Solar cells
Month and year of the manufacture (separately for solar cells and module)
Country of origin (separately for solar cells and module)

I-V curve for the module

Peak Wattage, I_m , V_m and FF for the module
Unique Serial No and Model No of the module

Date and year of obtaining IEC PV module qualification certificate
Name of the test lab issuing IEC certificate

Other relevant information on traceability of solar cells and module as per ISO 9000 series. The RFID should be inside the module laminate

6.6.4. BATTERY

Battery shall be Li Ferro Phosphate (LiFePo_4) with maximum Depth of Discharge 90%, the batteries should conform to the latest BIS /International standards. The battery shall be of Li ion phosphate storage batteries as per MNRE/BIS/IEC standards with control electronics, BMS, interconnecting wire/cables properly sealed. Should have designed battery management system (appropriate over charging, over heating deep discharge protection). Should be placed inside the luminary housing to omit the risk of theft.

Capacity of each battery must be 12.8V, 100Ah.

DOD shall be 90% i.e., at least 90% of the rated capacity of the battery should be between fully charged & load cut off conditions.

Battery terminal shall be provided with covers. Suitable carrying handle shall be provided.

Bidder shall mention the design cycle life of batteries at 75%, 50% and 25% depth of discharge at ambient temperature up to 45-degree C.

The batteries shall be designed for operating in ambient temperature of site upto 55-degree C. The self-discharge of batteries shall be less than 2 % per month of rated capacity at 27-degree.

6.6.5. LIGHT SOURCE:

The light source will be of white LED type the color temperature of white LEDs used in the systems should be in the range of 5500-degree K – 6500-degree K. Use of LEDs which emits ultraviolet light will not be permitted.

The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred. The light output from the white LED light sources should be almost constant.

The lamps should be housed in an assembly suitable for outdoor use and shall comply with IP67. The LED housing should be made of pressure die cast aluminium having sufficient area for heat dissipation and heat resistant poly carbonate fitted with pressurized die cast aluminium frame with SS screws. The temperature of heat sink should not increase more than 30-degree C above ambient temperature even after 48 hrs of continuous operation. This condition should be complied for the dusk to dawn operation of the lamps while battery operating at any voltage between the loads disconnect and charge regulation set point.

High power LED of minimum capacity 1 watt each capable to withstand maximum 1 amp driving current having lens angle greater than 120 degree shall be used. The LED LM 80 test report shall only be used.

The LED efficiency having minimum 140 lumen /watt.

All LED in circuit must be connected in series only. It must incorporate fail short mechanism in all LEDs

The LEDs used in the luminary should have life time more than 50,000hrs.

The lumen depreciation of LED shall not be more than 20% even after 50,000 burning hours. Power consumption of each LED Luminary / Lighting unit shall not be more than 50 W (including LED Driver power loss).

The LED efficacy should be more than 200 lumen /watt. Other Parameters :

LED DC current regulation – better than 3%. Input – 5 VDC

Driver Type- DC-DC (as per IEC62384) CRI - 70 % Typical

Lighting quality- Free from glare and flickering and UV Ambient temp– up to 50 deg.

DC to DC convertor efficiency > =90%

The connecting wires used inside the luminaries, shall be low smoke halogen free, fire retardant -beam cable and fuse protection shall be provided at input side.

Auto resettable reverse polarity protection shall be provided

LED lighting unit shall comply with LM 80 and certificate should be submitted.

The make, model number, country of origin and technical characteristics of white LEDs used in the lighting system must be furnished.

The luminaries must have light distribution polar curve as per LM 79 test specifications.

6.6.6. ELECTRONICS

MPPT charge controller to maximize energy drawn from the Solar PV array. The MPPT charger shall be microcontroller based. The MPPT should have four stage charging facilities

i.e. Bulk, Absorption, Float and Equalization. The auto equalization facilities for every (30+_3days) and provision to verify it during testing. The PV charging efficiency shall not be less than 90% and

shall be suitably designed to meet array capacity. The charge controller shall conform to IEC62093,

IEC 60068 as per specifications

- a) Protection against polarity reversal of PV array and battery, Over Current, Short Circuit, Deep Discharge, Input Surge Voltage, Blocking diode protection against battery night time leakage through PV Module.
- b) Electronics should operate 5 volt and its Euro efficiency should be at least 90%
- c) The system should have protection against battery overcharge and deep discharge conditions.

The numerical values of the cut off limits of lower voltage should not be less than 5 Volt

- d) The system should have protection against Microwave radar sensor auto Dimming system.
- e) Full protection against open circuit, accidental short circuit and reverse polarity should be provided.
- f) Charge controller shall have automatic dusk-dawn circuit based on SPV module as sensor for switching on/off the high mast light without manual intervention. The sensor must not get triggered by impulse lighting like lightning flashes and firecrackers.
- g) The self-consumption of the charge controller shall not be more than 20 mA at rated voltage and rated current. Adequate protection shall also be incorporated under no-load conditions (i.e. when the system is ON & the load (LED Lamp is removed)
- h) The system should be provided with 2 LED indicators: a green light to indicate charging in progress and a red LED to indicate deep discharge condition of the battery. The green LED should glow only when the battery is actually being charged.
- i) All capacitors shall be rated for max. temp. of 105°C.
- j) Resistances shall preferably be made of metal film of adequate rating.
- k) Device shall have adequate thermal margin should be at least 25 degree below the allowable junction temperature while operating at an ambient temperature of 55-degree C and full load.
- l) Fibre glass epoxy of grade FR 4 or superior shall be used for PCB boards.

6.6.7. MECHANICAL HARDWARE

A galvanized metallic frame structure to be fixed on the pole to hold the SPV module(s). The frame structure should be fixed at 30 ° from horizontal facing true south.

The pole should be hot dip Galvanized (The material of pole shall be as per specification of BSEN 100025, ISO1461). Iron Octagonal pole of 09 Mtr. Height as per specification as under: 09 M Long, Octagonal Raising/lowering mast shaft in Single section Suitable for basic wind speed 50 m/sec (180 Km/Hr) complete with head frame, Luminaries carriage suitable to install 6 nos. Luminaries, Solar Panels. There should be provision to install the type tested Winch inside the mast for raising & lowering of complete solar lighting system along with compact unit of modules through a mounting structure around the pole including hardware. The mast must be hot dip galvanized 20-sided octagonal structure having Bottom A/F minimum Dia 330mm and top A/F Dia 150 mm of 3 mm thick. The high mast should have a designed life of 25 years.

INSTALLATION OF SYSTEM

The system should be properly installed at site. The SPV module mounting structure along with telescopic octagonal pole should be properly grouted depending upon the location and requirement of the site. The grouting should be such that it should withstand the maximum wind speed /storm of 180 kmph. The pole should rest on a suitable RCC foundation. of (RCC Foundation minimum size of 900 mm x 900 mm x 1500mm deep and 600 mm above the ground level. must have min 6 nos. foundation bolts of min 1000 mm & 24mm dia.) Adequate space should be provided behind the PV module/array for allowing un-obstructed air flow for

passive cooling. Cables of appropriate size should be used to keep electrical losses to a bare minimum. Care should be taken to ensure that the battery is placed with appropriate levelling on a structurally sound surface. The control electronics should not be installed directly above the battery. All wiring should be in a proper conduit or capping case. Wire should not be hanging loose. Any minor items which are not specifically included in the scope of supply but required for proper installation and efficient operation of the SPV systems is to be provided by the manufacturer as per standards.

6.6.8. Warranties and Guarantees

Solar Modules: Workmanship/ product replacement for 10 years.

Solar Modules: 90% power output for 10 years & 80% power output for 25 years. BoS: Parts and Workmanship for 10 years, service for 25 years.

Power Plant Installation: Workmanship for 10 years, service for 25 years PV Array Installation: Structural for 25 years

Note:

1. MNRE/BIS approved SOLAR HIGH MAST LIGHT shall only be acceptable.
2. The bidders must submit the test certificates as provided by the approved MNRE/BIS testlabs.

APENDIX- I

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. **XXXXXXXX** **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block -**

I have read all the terms & conditions mentioned in the Tender document of the MAHAPREIT. 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:

APENDIX- II

**Format: Undertaking for Guaranteed Generation From
Solar System**

(To be submitted separately on agency letterhead)

We here by confirm that the from proposed of 130 kW and 180 kW capacity of ground mounted grid connected Solar PV power plant with 20 kW- 40 kWh Battery energy storage system each at Dudhani and Vape village in Bhiwandi.

We hereby state that we shall provide the assured generation of **4 units * 300 days *Per kW for each System** at energy meter in control cabin/ room as certified by joint meter reading in presence of our representative and end user's representative.

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

Date :

Place :

Signature of the Tenderer

Seal

ANNEXURE-I

Bidder's Information Sheet

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

Sr. No.	Particular s	
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.	GST Registration No.	
10.	Turnover 2020-21,2021-22 & 2022-23 (in Crores 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 -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 MAHAPREIT.

Date:

Signature of Bidder

Name:

Designation:

ANNEXURE-II

Annual Turnover

(On C.A.'s letter head)

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

Annual Turnover Data for last 3 Years(FY 2020-21,2021-22 & 2022-23)	
Year	Rs in Lac
2020-21	
2021-22	
2022-23	
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 with UDIN no.)

ANNEXURE- II

FORM OF PERFORMANCE BANK GUARANTEE

(To be submitted on 500 Rs. Non-judicial stamp paper)

To SECURITY CUM PERFORMANCE GUARANTEE BOND

In consideration of the Chief Finance Officer, **Mahatma Phule Renewable Energy and Infrastructure Technology Limited** having its registered office at B-501 Pinnacle Corporate Park, Next to Trade Center, BKC Bandra (East), Mumbai - 400051 (hereinafter called **MAHAPREIT** having agreed to exempt **M/s xxxxxxxxxxxx** [hereinafter called the said „Contractor/ Agency“] from the demand under the terms and conditions of an agreement/Advance/Lol **xxxxxxxxxxxxxxxxxxxx** made between **MAHAPREIT** and **xxxxxxxxxxxxxxxxxxxx** for the supply of(hereinafter called „the said agreement“), of security deposit for the due fulfilment by the said Contractor/Agency of the terms and conditions contained in the said Agreement, on the production of the bank guarantee for xxxxxxxx only. We,(hereinafter refer to as „the bank“) at the request of **xxxxxxxxxxxxxxxx** do hereby undertake to pay to the **MAHAPREIT** an amount not exceeding **xxxxxxxxxxxx** against any loss or damage caused to or suffered or would be caused to or suffered by **MAHAPREIT** by reason of any breach by the said Contractor/Agency of any of the terms or conditions contained in the said Agreement.

2. We **xxxxxxxxxxxx** do hereby undertake to pay the amounts due and payable under this guarantee without any demure, merely on a demand from the **MAHAPREIT** by reason of breach by the said contractor/agency of any of the terms or conditions contained in the said Agreement or by reason of the contractor/agency failure to perform the said Agreement. Any such demand made on the bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee where the decision of **MAHAPREIT** in these counts shall be final and binding on the bank. However, our liability under this guarantee shall be restricted to an amount not exceeding **xxxxxxxxxxxxxxxx**

3. We undertake to pay to the **MAHAPREIT** any money so demanded notwithstanding any dispute or disputes raised by the contractor(s)/agency(s) in any sit or proceeding pending before any court or tribunal relating thereto our liability under this present being absolute and unequivocal. The payment so made by us under this bond shall be valid discharge of our liability for payment there under and the contractor/agency shall have no claim against us for making such payment.

4. We **xxxxxxxxxxxx** further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement and that it shall continue to be enforceable till all the dues of the **MAHAPREIT** under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till **xxxxxxx** (Office/ Department) **MAHAPREIT** certifies that the terms and conditions of the said Agreement have been fully or properly carried out by the said contractor/agency and accordingly discharges this guarantee. Unless a demand or claim under this guarantee

is made on us in writing on or before the expiry of 9 years from the date hereof, we shall be discharged from all liabilities under this guarantee thereafter.

5. We **XXXXXXXXXX** further agree with the **MAHAPREIT** that the **MAHAPREIT** shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the **MAHAPREIT** against the said Contractor(s) and to forbear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor/Agency or for any forbearance, act or omission on the part of the **MAHAPREIT** or any indulgence by the **MAHAPREIT** to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s)/agency(s).

7. We **XXXXXXXXXXXXXXXXXX** lastly undertake not to revoke this guarantee during its currency except with the previous consent of the **MAHAPREIT** in writing.

8. Notwithstanding anything contained herein above.

- A. Our Liability under this Bank Guarantee is restricted to an amount of Rs **XXXXXXXXXXXXXX**
- B. This Bank Guarantee is valid up to xxxxxx along with Claim Period of one year extendable up to xxxxxxxx.
- C. We are Liable under this Bank Guarantee to pay the guaranteed amount or any part thereof only and only if a written claim or demand is made to us on or before xxxxxx
- D. At the end of the Claim period that is on or after xxxxxx all your right under this Guarantee shall stand extinguished and we shall be discharged from all our liabilities under this guarantee irrespective of receipt of original bank guarantee duly discharged by the bank.

Dated the _____ day of

For _____
(Indicate the name of bank)

B) Experience for Supply and Commissioning of Solar LED High Mast

Sr. No.	Site Detail	Type	Client's certificate attached at page No. ...	Contact Details for Verification

Self attested copy of work order attached
herewith
Signature of Bidder
Name
Designation
Company
Date

Annexure V

SITE VISIT REPORT LETTER

(To be submitted separately for each location on letterhead of
bidder)

To,

Date: _____

MAHAPREIT

Sub.: Site Visit Report for

Ref.: MAHAPREIT's Tender No.

Sir,

This has reference to above referred tender **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement and SITC of 2 nos. 9m Solar High Masts at village Dudhani and Vape in Bhiwandi Block.**

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 the Gram Panchayat/ ZP Authority,

(Signature of Bidder)

Name of Bidder -----

-

Designation

Seal:

.....

ANNEXURE- VI

DECLARATION

UNDERTAKING

(To be given by the Bidder on the Letter head)

I/We of M/s

Bidder for **Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement and SITC of 2 nos. 9m Solar High Masts at village Dudhani and Vape in Bhiwandi Block** with the Executive Director MAHAPREIT, B-501, Pinacple Corporate Business Park BKC(East), Mumbai 400051 do hereby undertake that I/we agree to unconditionally accept all the terms and conditions mentioned in the tender documents.

Further we have noted that after unconditionally accepting the tender conditions in its entirety, it is not permissible to put any remarks/conditions in the Price Bid and the same has been followed in the present case. In case this provision of the tender is found violated at any time after opening of Envelope, I/we agree that the tender shall be summarily rejected and /MAHAPREIT LTD shall, without prejudice to any other right or remedy, be at liberty to forfeit the full said earnest money absolutely.

Signatures of the
Authorized Person
(Name of Firm with seal)

ANNEXURE VII
FORMAT OF COVERING LETTER
(On Letterhead of Firm)

Date:

To
The Managing Director,
B – 501 PINNACLE CORPORATE PARK,
NEXT TO TRADE CENTER,
BKC (EAST) MUMBAI 400051

Sub: E-Tender for -----

Dear Sir,

We enclose herewith the Particulars and Details of the Firm, Techno-Commercial bid and price bids in connection with the above assignment.

We also state as follows:

- a. We hereby declare that all the information and statements made in this Proposal are true and accept that any misinterpretation contained in it may lead to our disqualification.
- b. The prices quoted by us in the price bid are valid for 120 days from the date of opening of price bid. We confirm that this proposal will remain binding upon us.
- c. Prices have been arrived independently without consultation, communication, agreement or understanding (for the purpose of restricting competition) with any competitor.
- d. We agree to bear all costs incurred by us in connection with the preparation and submission of the offer and to bear any further pre-contract costs.
- e. We understand that MAHAPREIT is not bound to accept the lowest or any proposal or to give any reason for award, or for the rejection of any proposal.
- f. I confirm that I have authority of (name of the firm) to submit the proposal and to negotiate on its behalf.

Thank you,
Signature

(Name of Authorized Signatory)

ANNEXURE VIII
PRICE SCHEDULE (PRICE BID):
 (To be submitted online Only)

Name of the project: Appointment of Contractor for Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW-40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block.

Bid Specification No. -----

Name of Bidder: __

S. No.	Description	Fixed fees project value in INR
1	Survey, design, fabrication, supply, installation, testing, commissioning and operation & maintenance for a period of 1 year of 180 kW and 135 kW ground mounted grid connected solar PV power plant with 20 kW- 40 kWh battery energy storage system each with power evacuation arrangement at village Dudhani and Vape in Bhiwandi Block	
	Total	

Total Amount in words:.....

Goods and Service Tax:- (inclusive / Exclusive) _____
Percentage of GST _____

We confirm that

1. The above prices will be firm in all respects throughout the period of contract and the price is inclusive all of taxes except GST.

2. All Indian applicable Taxes & Duties including Income Tax shall be borne by us.
3. The Prices will remain valid for a period of 120 days from the date of opening of the price bid.
4. The offer submitted is irrevocable and unconditional without any deviations.
5. I/We agree to all the Terms and conditions and accept Scope of Work & terms & conditions as mentioned in the Bid Document and undertake to perform the duties to the satisfaction of the MAHAPREIT.

Date:.....

Place:.....

(Signature of the Authorized Representative of Bidder)

..... Name
 (Official Address) Designation

Seal of

Company.....