

Tender No: PEDA/2024-25/10

E-BIDDING DOCUMENT

For

Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State.



by



PUNJAB ENERGY DEVELOPMENT AGENCY
PLOT NO. 1 & 2, SECTOR 33-D, CHANDIGARH 160034, INDIA
TELEPHONES: (91) 0172 - 2663382, 2663328
Email: mpsingh@peda.gov.in

CONTENTS

Sr. No.	Description	Page no.
1.	E-TENDER INFORMATION	1
2.	CONTENTS	2
3.	SECTION-I INVITATION FOR BIDS	3
4.	NIT	4
5.	SCOPE OF WORK	5
6.	SECTION-II INSTRUCTIONS TO BIDDER	6-8
7.	SUBMISSION OF BIDS	9
8.	BID OPENING AND EVALUATION	9
9.	AWARD OF CONTRACT	10-11
10.	SECTION-III GENERAL CONDITION OF CONTRACT	12-20
11.	SECTION-IV SCHEDULE OF REQUIREMENTS AND SPECIFICATION FOR SPV SOLAR TREE	21-22
12.	TECHNICAL SPECIFICATIONS	23-34
13.	SECTION-V TECHNICAL BID TO BE SUBMITTED ON LINE BID FORM, AND OTHER FORMATS	35-47
14.	SECTION – VI COMPLETION SCHEDULE	48-49
15.	SECTION-VII FORMATS & ANNEXURES	50-57

SECTION - I

INVITATION FOR BIDS



Punjab Energy Development Agency

Ph.: 0172-2663328, 2663382

E-TENDER NOTICE NO. PEDA/2024-25/10

Punjab Energy Development Agency (PEDA), invites e-tender for Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State as under:

i) System Cost - To be quoted by the bidder	i) Sale of Tender Document (online) -	15.07.2024
ii) Earnest Money - Rs. 35,000/-	ii) Prebid meeting	22.07.2024 at 12:00PM
iii) Processing fee - Rs. 2,247/-	iii) Receipt of E-tender –	30.07.2024 up to 5:00PM
iv) Tender Form - Rs. 3,000/-	iv) Date & Time of opening of E-Tender -	31.07.2024 at 11:30 AM

For participating in the e-tendering process, the Bidders shall have to get themselves registered with eproc.punjab.gov.in and get user ID and Password. Class- 2/3 Digital Signature are mandatory to participate in the e-tendering process. For any clarification on the tender document clauses, please contact at 0172-2663328, 0172-2663382. For any clarification/difficulty regarding e-tendering process flow, please contact at 0172-2791326, 2791226.

CONDITIONS:

1. Eligibility criteria and other terms & conditions for the works are given in the Tender Document which can be downloaded from website www.eproc.punjab.gov.in.
2. Corrigendum / Addendum / Corrections, if any will be published on the e-tender website only and no separate notices shall be issued.
3. PEDA reserves the right to accept or reject any or all the tenders without assigning any reason thereof.

Director

SCOPE OF WORK

Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance Contract (AMC) of Photo Voltaic Solar Trees (fixed) at PEDDA Head Office and anywhere in Punjab. Photo Voltaic Solar Tree Power Systems, having capacity Minimum 3 kW with tree shaped module mounting structure with minimum 09 feet ground clearance at the lowest point from the ground and having 6 leaves/panels depending upon the space availability/feasibility, at said sites, including total Cable/wiring, cable conduits, required array junction boxes, DC distribution box, AC distribution box, various connectors, nut-bolts, civil and mechanical works, Protection-Earthing, lightning, surges, drawling & manual and other miscellaneous works up to completion in all respect. Proposed quantity is five Solar trees, however this quantity may be increased or decreased as per requirement of PEDDA. If PEDDA shall not procure any solar tree under this E-tender there shall be no any financial liability to PEDDA.

A complete set of bidding documents in English may be purchased from www.eproc.punjab.gov.in through payment of a non-refundable fee of Rs. 3000/- through IPG Mode.

1. Pre-bid meeting will be held on 22.07.2024 at 12:00 PM at PEDDA Head Office, Sector 33-D, Chandigarh. The participants are required to be physically present in the meeting. No inquiry or any correspondence shall be entrained after pre-bid meeting.
2. Bids must be submitted through e-tender by uploading on www.eproc.punjab.gov.in portal on or before by 30.07.2024 up to 5:00PM. All bids must be accompanied with Earnest Money Deposit of Rs. 35,000/-. Conditional bids will be rejected. E-bids will be opened through E-portal on dtd. 31.07.2024 at 11:30 AM. The details are given below:

(a)	Name of office	:	Punjab Energy Development Agency
(b)	Name of person	:	Director, PEDDA
(c)	Address	:	Plot no. 1 & 2, Sector-33D, Chandigarh 160 034, India
(d)	Telephone nos.	:	(91) 0172 , 2663328, 2663382
(e)	Validity of Bid	:	60 days
(f)	Time and date of opening of price bid	:	To be informed to technically qualified bidders through e-mail after evaluation of Techno-Commercial E-Bids

3. **The bidding shall be in pattern of two parts: Technical Bid and Financial Bid:**

Technical bid will contain the qualifying requirement and the financial offer will contain the offered prices.

SECTION - II

INSTRUCTIONS TO BIDDERS

FOR SPV SOLAR TREE

A. COMPLETE INTRODUCTION

1. **Source of Funds**

- 1.1 The proposed trees shall be funded by PEDDA.
- 1.2 Executing Agency, PEDDA.
- 1.3 The general scope under this contract is Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance Contract (AMC) of Photo Voltaic Solar Trees (fixed) at PEDDA Head Office and anywhere in Punjab. Photo Voltaic Solar Tree Power Systems, having capacity Minimum 3 kW with tree shaped module mounting structure with minimum 09 feet ground clearance at the lowest point from the ground and having 6 leaves/panels depending upon the space availability/feasibility, at said sites, including total Cable/wiring, cable conduits, required array junction boxes, DC distribution box, AC distribution box, various connectors, nut-bolts, civil and mechanical works, Protection-Earthing, lightning, surges, drawling & manual and other miscellaneous works up to completion in all respect.

2. **Eligible Bidders**

- 2.1 The bidder should be registered company/ proprietary/firm. This invitation for bids is open to all eligible Manufacturers, EPC companies, suppliers & *system integrator* who otherwise have not been debarred/blacklisted by any Govt. Deptt.'s / organization/ PSU's / institutions/ agencies/ autonomous Organizations. In this connection the bidders shall be required to submit a self authorized certificate on non judicial stamp paper of Rs.100/- as per Annexure 1. *If the bidder will be provided the false information regarding debarred / blacklisted, thus the contract will be cancelled and EMD/ Performance Bank Guarantee or both shall be forfeited.*
- 2.2 Bidders should have sufficient experience of design, manufacturing, supplying, installing, commissioning and maintaining at least SPV Power Plants of aggregate capacity 100 KWp in last three years upto the last date of bidding and is in successful operation in India. Bidder is required to submit the proof of their eligibility in the shape of work order, commissioning certificate from the client, satisfactory operation reports copies and establishment details along with the tender bid in its technical bid. The bidder is required to submit the details as per Form 3.
- 2.3 If bidder is authorized supplier, submit the certificate as per Annexure 5 from their principal.
- 2.4 Average Annual Turnover of the bidder should be Rs. 50.00 Lakh for any three financial years out of last four financial years F.Y. 2020-21, 2021-22, 2022-23 & 2023-24 (Form 2, 2A, 2B).
- 2.5 The bidder must be in profit for any two financial years from the last four financial years F.Y. 2020-21, 2021-22, 2022-23 & 2023-24 and the Net worth should have also positive.

3. **Bid Form**

- 3.1 The Bidder shall complete the Bid Form and the appropriate Price Schedule furnished in the Bidding Documents, indicating the goods to be supplied, a brief description of the goods, quantity and quality standards.

3.2 The rate of the Solar tree should be quoted inclusive of design, supply, installation, commissioning, testing, all taxes / duties, transportation, insurance and any other charges required to complete the projects as per scope of work.

4. Documents Establishing Bidder's Eligibility and Qualifications

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

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

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

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

- (a) a detailed description of the essential technical and performance characteristics of the goods;
- (b) a list giving full particulars, including available sources of all spare parts, special tools, etc., necessary for the proper and continued functioning of the goods for a period to be specified in the Bid; and
- (c) a item-by-item commentary on the Purchaser's Technical Specifications demonstrating the goods and services to those specification, or a statement of deviations and exceptions to the provisions of the Technical Specifications.

7. Earnest Money Deposit

7.1 The earnest money deposited (EMD) is Rs. 35,000/- is to be paid through online mode.

7.2 Unsuccessful Bidder's EMD will be discharged/ returned by the E-procurement system automatically.

7.3 The successful Bidder's EMD will be discharged after signing the Contract agreement and furnishing the performance security.

The EMD may be forfeited:

- a) if a Bidder:
 - (i) withdraws its bid during the period of bid validity specified by the Bidder on the Bid Form
- b) in case of a successful Bidder, if the Bidder fails:
 - (i) to sign the Contract within the specified period.

(ii) to furnish required performance security.

7.4 No Interest shall be payable on the amount of earnest money and the same will be released, after the tenders have been decided, to those Bidders who fail to get the contract.

8. Period of Validity of Bids

8.1 Bids shall remain valid for the period of 60 days from the date of opening of bids.

9. Format and Signing of Bid

9.1 The Bidder shall submit complete bid through e-tender at website **eproc.punjab.gov**.

10. Submission of Bids

10.1 Preparation of Bids:

a. The bidder shall upload the bids as per formats on or before the date and time notified in this document/ NIT.

b. single Bid System shall be followed and Bids shall be prepared in two parts.

Part – I Technical Bid

Part – II Price Bid.

c. It should be clearly noted that Part –I should not contain any price bid.

d. Part-I containing technical bid will be opened at the time & date notified for opening. If any bidder indicates the price in Part-I, the bid would stand rejected. Bids not accompanied by Earnest Money Deposit will be rejected.

Part II containing Prices will not be opened at the time of opening Part-I. Price bid of only technically qualified bidders will be opened on that date and time. Date and time of Price bid opening will be uploaded on web site and will also be intimated to qualified bidders.

10.2 Submission of Bid

The Bidder shall submit complete bid through e-tender at website **eproc.punjab.gov.in**

11. Deadline for Submission of Bids

11.1 Bids must be submitted through e-tendering process on time and date as mentioned in NIT

12. Late Bids

12.1 The E-tendering system will not be accepted any bid after the deadline for submission of bids as mentioned in NIT.

13. BID OPENING AND EVALUATION

13.1 The Purchaser will open the technical E-bids in the presence of Bidders representatives who choose to attend, at the time, on the date, and at the place specified in DNIT. The bidder's representative who will be present shall sign a register evidencing their attendance.

- 13.2 The technical bids shall be evaluated by the purchaser for assessing bid responsiveness in line with the requirements mentioned in the DNIT
- 13.3 The bidders whose technical bids are declared as technically qualified shall be informed accordingly and their Price Bids shall be opened.

14. Clarification of Bids

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

15. Evaluation and Comparison of Bids

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

16. Contacting the Purchaser

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

AWARD OF CONTRACT

17. Award Criteria

- 17.1 The Purchaser will award the Contract to the successful Bidder whose bid has been determined to be the lowest (L-1) evaluated bid.

18. Purchaser's Right to Accept Any Bid and to Reject Any or All Bids

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

19. Signing of Contract

- 19.1 At the time as the Purchaser notifies the successful Bidder that its bid has been accepted, the Purchaser will send to the Bidder the work order and the Contract Form provided in the Bidding Documents, incorporating all agreements between the parties.
- 19.2 Within ten (10) days from the date of issue of work order, the successful Bidder shall sign the Contract and return it to the Purchaser. The signing of the work order cum contract agreement shall evidence the final acceptance of all terms and conditions and their due compliance by the successful bidder.

20. Performance Security

- 20.1 Within ten (10) days from the issue of work order, the successful bidder shall furnish to the Purchaser the performance security amounting to 10% value of the contract valid throughout the execution of the contract and further up to three months from the date of commissioning of the projects specified in DNIT. The Performance Security Form is attached at Annexure 2.
- 20.2 Failure of the successful Bidder to comply with the requirement of Clause 20.1 within the stated time periods shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security, in which event the Purchaser may make the award to the next lowest evaluated bidder or call for new bids.
- 20.3. The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
- 20.4 The Performance Security shall be denominated in the currency of the Country, and shall be in one of the following forms:
- a. A Bank guarantee, issued by a Nationalized/ Commercial bank located in the purchaser's country, acceptable to the Purchaser, in the form provided in the Bidding Documents or another form acceptable to the Purchaser; or
 - b. Demand Draft favoring PEDDA, payable at Chandigarh

21. Amendment of Bidding Documents:

- 21.1 At any time prior to the deadline for submission of bids, the purchaser may, for any reason, whether at its own initiative or in response to a clarification required by a prospective Bidder, modify the Bidding Documents by amendment.
- 21.2 The amendment will be notified in writing or fax to all prospective Bidders who have purchased and received the Bidding Documents and will be binding on them.
- 21.3 In order to afford prospective Bidders reasonable time in which to take the amendment into account in preparing their bids, the purchaser may, at its discretion, extend the deadline for the submission of bids
22. PEDDA reserves the right at the time of awarding the contract to increase or decrease the quantity of goods and locations of supply without any change in price or other terms and conditions.
23. Material shall be strictly as per the DNIT specifications, terms and conditions. If there is any left-out specifications, in the DNIT the same shall be considered as per the latest MNRE specifications, guidelines and terms & conditions.
24. The offers shall be accompanied by the sample of the product with latest valid test certificates and reports from approved testing centers of the MNRE, Government of India. Offer received without sample and valid test certificates and reports shall not be accepted

SECTION - III

GENERAL CONDITIONS OF CONTRACT

1. Packing

- 1.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. 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.

2. Incidental Services

- 2.1 The supplier may be required to provide any or all of the following compulsory services
- (a) Performance or supervision of the on-site assembly and/or start-up of the supplied Goods;
 - (b) Furnishing of tools required for assembly and/or maintenance of the supplied Goods;
 - (c) Furnishing of detailed operations and maintenance manual for each appropriate unit of supplied Goods;
 - (d) Performance or supervision or maintenance and/or repair of the supplied Goods, for a period of time agreed by the parties, provided that this service shall not relieve the Supplier of any warranty obligations under this Contract; and
 - (e) Training of the Purchaser's Personnel, at the Supplier's plant and/or on site, in assembly, start-up, operation, maintenance and/or repair of the supplied Goods.

3. PAYMENT

Payment Terms:

Payment shall be made in Indian currency in the following manner:

- (i) Mobilization Advance Payment: Ten (10) percent of the contract price shall be paid within thirty (30) days of signing of the contract and upon submission of claim and a bank guarantee of 110% amount valid for six months or till the time the mobilization advance is adjusted (Form at Annexure-3).
- (ii) On delivery of complete Material: Seventy (70) percent of the contract price shall be paid within 30 days of the receipt of the goods at project sites and upon submission of the joint verification report and technically & commercial clear bills (complete assignment for each site will be considered for payment release). The 10% mobilization advance released will be adjusted in this payment released and relevant bank guarantee will be released on completion of adjustment of entire advance released.
- (iii) On commissioning: Twenty (20) percent of the contract price on successful commissioning and upon submission of Joint Commissioning reports of the systems.
- (iv) Balance Ten (10) percent of the contract price shall be released after satisfactory working of the systems under warranty period of 5 years from the actual date of commissioning of the project. However, this amount can be released against bank

guarantee of equal amount valid for five years from the date of completion of the project (Form at Annexure-4).

All due amounts under above payment terms shall be released within 30 days of the submission of technically & commercially clear bills

4. Subcontracts

4.1 The Supplier shall notify the Purchaser in writing of all subcontracts awarded under the Contract if not already specified in his bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

5. Delays in the Supplier's Performance

5.1 Delivery of the Goods and performance of Services shall be made by the Supplier in accordance with the time schedule prescribed by the Purchaser in its Schedule of Requirements.

5.2 The firm shall carry out the supply order and carry out its obligations under the contract with due diligence, efficiency and economy in accordance with generally accepted norms techniques and practices used in the industry through qualified/licensed manpower. The Bidder shall also adhere to professional implementation and support services during the execution of the project. The PEDAs may carry out benchmarking of sample equipments to be provided by the short-listed Firm before and / or immediately after the delivery of equipment.

It shall employ appropriate advanced technology and safe and effective equipment, machinery, material and methods. Bidder shall always act in respect of any matter relating to this contract, as faithful advisors to the PEDAs and shall, at all times, support and safeguard the PEDAs legitimate interests in any dealings with the third party.

6. Penalty for delayed Performance (Goods and services)

6.1 Failure to complete work order in time shall attract penalty @0.5% of the delayed goods for every week of delay or part thereof subject to a maximum of 10% value of delayed goods and services including project commissioning. However, on reaching of Maximum penalty the work order cum contract agreement may be cancelled and performance security may also be forfeited by PEDAs.

6.2 Relaxation in completion period for the purpose of penalty can be allowed if the delay is beyond the control of contractor or due to force majeure conditions. The proper documentation establishing the reasons for delay in this regard will be required to be given by the supplier to PEDAs. The decision in this regard shall be given by Chief Executive, PEDAs.

7. Inspection and tests and approval: -

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

7.1 The inspection of the Goods shall be carried out to check whether the goods are in conformity with the technical specifications mentioned in the DNIT and specified in the

purchase order and shall be in the line with the inspection/test procedures laid down in the schedule of specifications and the contract conditions.

- 7.2 Manufacturer will provide suitable facilities at their works/ inspection site for carrying out various performance tests on the equipment
- 7.3 The purchaser shall have the right at all reasonable time to inspect the stage manufacturing at the manufacturer's premises.
- 7.4 Supplier's drawings shall be duly approved by the purchaser and deviation from these drawings will not be allowed
- 7.5 The supplier shall provide, within the time stated in the contract or in the programme, drawings showing details of the plant designing and any other information required for
 - (a) Preparing suitable foundations or other means of support.
 - (b) Providing suitable access on the site for the plant and any necessary equipment.
 - (c) Making necessary electrical connections for the plant
- 7.6 Before the goods and equipment are taken over by the purchaser, the supplier shall supply operation and maintenance manuals along with each system together with drawings of the goods and equipment as built. These shall be in such details as will enable the purchaser to operate, maintain, adjust and repair all parts of the works as stated in the specifications. The manuals and drawings shall be in the ruling language (English) and in such form and numbers as stated in the contract. Unless and otherwise agreed, the goods and equipment shall not be considered to be completed for the purposes of taking over until such manuals and drawings have been supplied to the purchaser.
- 7.7 In case of the Supplier, supplying critical equipment which is being manufactured by a Foreign sub-contractor or vendor, mandatory inspection at works of Foreign sub-contractor or vendor shall be carried out by purchaser's minimum two representatives. The complete charges for such inspection & tests including equipment simulation at the works of the sub-contractors including to & fro airfare, stay, boarding & lodging for purchaser's engineers shall be borne by the supplier.
- 7.8 In case of indigenous equipment/goods inspection shall be carried out at the work of the supplier by the purchasers engineer and the costs including to & fro airfare, stay, boarding & lodging for such inspection have to be borne by the PEDDA.
- 7.9 If the goods/services or any section fails to pass the Tests. The supplier may require such tests to be repeated on the same terms and conditions. All costs to which the purchaser may be put to by the repetition of the tests under this sub-clause shall be deducted from the contract price.
- 7.10 If the purchaser and the supplier disagree on the interpretation of the test results each shall give a statement of his views to the other within 14 days after such disagreement arises. The statement shall be accompanied by all relevant evidence. The purchaser will review both the statements and render a final decision within a further period of fourteen days which shall be binding on the supplier.

For the System & Other Software, the following will apply:

The Supplier shall provide complete and legal documentation of hardware, all subsystems, operating systems, compiler, system software and the other software. The Supplier shall

also provide licensed software for all software products, along with the software manuals whether developed by it or acquired from others. The supplier shall also indemnify the purchaser against any levies/penalties on account of any default in this regard.

8. Acceptance Certificates:

- 8.1 On successful completion of acceptability test, receipt of deliverables etc, and after the purchaser is satisfied with the working on the plant, the acceptance certificate signed by the supplier and the representative of the purchaser will be issued. The date on which such certificate is signed shall be deemed to be the date of successful commissioning of the systems.
- 8.2 The training shall be conducted on the dates mutually agreed upon and within two months from the date of acceptance of supply.

9. Completion:

The supplier shall complete the work within the 70 days time period as per the scheduled provided in the section VI - Completion Schedule.

10. Maintenance Service

- 10.1 Maintenance services shall be the part of Maintenance (AMC) activity and shall be provided by the supplier during the five-year period of warranty and maintenance. The repairs of the entire system including supply of spares etc. for 60 months will be done by the supplier.
- 10.2 During the maintenance period of five years of the power plants, if there is any loss or non functional of any component/ equipments of the power plants due to miss management/ mishandling or due to any other reasons (relate with the maintenance), what so ever, the supplier/ firm shall be responsible for immediately replacement/ rectification. The default component/ components shall have to be replaced by the supplier with new one without any extra cost.
- 10.3 The maximum response time for a maintenance complaint from any of the destination specified in the schedule of requirements (i.e. time required for supplier maintenance engineers to report after a request call/e-mail is made or letter is written) shall not exceed 72 hours.
- 10.4 It is expected that the average downtime of an item will be less than half the maximum downtime (i.e. defined as number of days for which an item of equipment is not usable because of inability of the supplier to repair it) as mentioned by the bidder in the form of technical details. In case an item is not usable beyond the stipulated maximum downtime the supplier will be required to arrange for an immediate replacement of the same till it is repaired. Detailed cost of items will be provided by the manufacturer.
- 10.5 Penalty for non-performance and maintenance services:**

During the maintenance period of five years of the power plants, if they become non-operational due to any fault in the systems including SPV Panels, PCU & BOS it shall be attended & rectified at site within three days from the date of receipt of complaint. Failure to rectify the non-functional power plants within five days from the receipt of complaint, PEDDA reserves the right to levy penalty for non-performance @5% of value from 10%

security amount for every week, till 2 weeks. This penalty shall be deducted from balance 10% payment of security amount. After 2 weeks the defective / non functional power plant shall be rectified on the risk and cost of the supplier without any further notice. If the supplier received the balance 10% payment against equal amount of bank guarantee, the PEDDA has right to forfeit the entire amount of bank guarantee, after deduction of penalty, the balance payment shall be released after completion of 5 years period.

11. **Right to use defective equipment**

If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the equipment proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such equipment until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.

12. **Standards:**

The Goods supplied under this contract shall conform to the standards mentioned in the technical specifications and other sections of DNIT and when no applicable standard is mentioned then to the latest authoritative standard issued by the concerned institution appropriate to the goods, country of origin, MNRE as applicable.

13. **Insurance:**

The goods supplied under the contract shall be fully insured against loss or damage incidental to manufacture of acquisition, transportation, storage at site and delivery to site during the construction period by the supplier at his own cost.

14. **Transportation:**

Supplier shall be responsible for delivering all the equipment at site under his own arrangement within the stipulated time frame.

15. **Warranty:**

- The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models and incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that the goods supplied under this contract shall have no defect arising from design, materials or workmanship (except in so far as from design or materials is required by the purchaser specifications) or from any act or omission of the supplier, that may develop under normal use of the supplied goods in these conditions obtaining in the country of final destination. The supplier shall guarantee that the goods supplied shall perform satisfactorily as pre design rated/ installed capacity as provided for in the contract.

- This warranty shall remain valid for 5 years after the goods have been delivered and commissioned at the final destination. The actual commissioning date will be taken from the issuance of acceptance certificate as mentioned in DNIT.
- During the warranty period of five years of the power plants, if there is any loss or defect arising due to warranty obligation of any components/ equipments of the power plants or due to any other reasons, what so ever, (relate with maintenance) the supplier/ firm shall be responsible for immediately replacement/ rectification of the damaged/ defective component/ equipments. The default or damaged components/ equipments shall have to be replaced by the supplier with new one without any extra cost.

16. Suspension:

- a. PEDDA may by a written notice of suspension to the Firm, suspend all payments to the Firm under the contract, if the Firm fails to perform any of its obligations under this contract provided that such notice of suspension:
 - i. Shall specify the nature of the failure.
 - ii. Shall request the bidder to remedy such failure within a specified period from the date of receipt of such notice of suspension by the bidder.

17. Compliance to regulations and bye laws:

The contractor shall conform to the provisions of any statute relating to his workers and the work and regulations and bye-laws of any local authority and or any Central/State Deptt. or undertaking in whose jurisdiction the work connected.

18. Compensation under Workmen's Compensation Act:

The contractor shall be responsible for and shall pay any compensation to his workmen payable under the Workmen's Compensation Act, 1923 (VIII of 1923) or any other act applicable hereinafter called the said Act for injuries caused to the workmen. The contractor will take a policy with an Insurance Company to cover all his workers against injuries fatal/non-fatal during course of duty against Workmen's Compensation Act. The contractor shall submit a copy of the same before start of the work so that PGL is kept free from any liability.

19. Other Conditions:

- a. Risk purchase at the cost of bidder will be made on the failure of the bidder to make supply as per Terms and Conditions. The difference of excess in cost thus incurred will be received from the bidder in a suitable manner and even from his pending bills, earnest money or security whichever is available.

- b. If the contractor or his work people, or servants shall break, deface, injure or destroy any part of a building or existing equipments, the contractor shall make the same good at his own expense

20 Taxes and Duties:

- 20.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, licence fees, and other such levies imposed inside or / and outside the purchaser's country.
- 20.2 A local supplier shall be entirely responsible for all taxes, duties licence fees etc. incurred until delivery and commissioning of the contracted goods to the purchaser. **All taxes payable as per Government Income tax & service tax norms will be payable by the bidder. TDS will be deducted from the payment of the Bidder as per the prevalent Laws and rules of Government of India and the State Government.**

21 Income/ Corporate Taxes in India:

- 21.1 The supplier shall be liable to pay all corporate taxes and income tax that shall be levied according to the laws and regulations applicable from time to time in India and the price bid by the supplier shall include all such taxes in the contract price.
- 21.2 Wherever the laws and regulations require deduction of such taxes at the source of payment, the purchaser shall effect such deductions from the payments due to the supplier. The remittance of amounts so deduction and issuance of certificate for such deductions shall be made by the purchaser as per the laws and regulations in force. Nothing in the contract, shall relieve the supplier from his responsibility to pay any tax that may be levied in India on income and profits made by the supplier in respect of this contract.
- 21.3 The suppliers staff, personnel and labour will be liable to pay personal income taxes in India in respect of such of their salaries and wages as are chargeable/ in force, and the supplier shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations.

22. Completeness:

The execution of the project is on turnkey basis and the contractor shall be responsible for providing all the necessary civil works, equipments, materials which is not indicated in the DNIT but required and essential for completeness and successful testing & commissioning of the project within the contract price.

23 Consignee:

The contract (self) shall consignee Joint inspection/ Verification will be made by representatives of the contractor and PEDDA after receipt of material and commissioned before release of payment under clause 3 of section III.

24 Delivery and Commissioning Schedule

The engineering, design, supply order and commissioning along with associated civil works would be completed indicated at completion schedule of Section –VI.

- 25.** The quantity of Solar tree shall be specified in the work order/ orders. The PEDDA reserve the rights to increase or decrease the quantum of work and shall be no financially liability in any case if the quantum of work is less than the tentative quantities given in the bid.

26. Jurisdiction:

All legal proceedings in connection with this purchase order/contract shall be subject to the territorial jurisdiction of the local civil courts at Chandigarh only.

27. Resolution of Disputes

- i. The parties shall attempt to resolve any dispute, arising out of or in connection with this Agreement (herein after referred as the dispute), by mutual discussions. In the event that any dispute cannot be resolved between the Parties within a period of 30 (thirty) days of the commencement of the discussions, then such dispute shall be settled under the Arbitration and Reconciliation Act, 1996. The arbitration shall be conducted at Chandigarh, in English language. Any award given by the arbitrators shall be final and binding on the Parties and shall be in lieu of any other remedy within the meaning of Arbitration and Reconciliation Act, 1996.
- ii. All disputes relating to this working shall be subject to the jurisdiction of courts in Chandigarh and Chief Executive PEDDA shall be the sole arbitrator.
- iii. Neither Party shall resort to any proceedings in the court except for the enforcement of award in respect of a dispute having first exhausted the remedy under this clause.
- iv. During the subsistence of the arbitration proceedings both parties shall continue to perform their respective obligations under this agreement provided that the right of either party to terminate this Agreement is in accordance with the provisions thereof shall not be affected by the subsistence of arbitration proceedings.

SECTION – IV

SCHEDULE OF REQUIREMENTS AND SPECIFICATIONS FOR SPV SOLAR TREE

The illustrative Schedule of requirements in accordance with the specifications contained in this document for 3 KW grid interactive SPV tree (Fixed)

Sr. No.	Brief Description	Units	Make
1	SPV Bifacial Mono Perc Modules for each system (Each Module not less than 500 wp)	1 Set totaling 3000 Wp each for 3KWp SPV tree.	Indigenous PV Module as per latest specifications/guidelines of MNRE, GOI
2	Solar Tree module mounting structure (Leaves suitable for accommodating SPV modules) including foundation as per specifications.	1 Set	Hot-dipped galvanized Mild Steel.
3	Grid interactive PCU of 3 Kw capacity	1 No.	As per bid document specification and certificate issued by the of MNRE's approved test centers
4	Terminal Box with 32 Amp. MCB	1 No.	TYCO/ HENSEL
5	Cable	As per site requirement	Finolex/ CCI/ Havells/ KEI
6	Any other equipment required to complete the installation	As per sites	
7	All civil works related to grouting of the structures.		Lumpsum for each site

Scope of Work also Includes following Services:

9	Warranty and AMC of the SPV Power plant for a period of 5 years from date of commissioning of the power plant as per scope		
10	Engineering, electrical drawings and installations and O&M manuals		1 set
11	Maintenance of Power plant for 5 years from the date of Commissioning		

Note:

- The requirements for the plant and machinery are indicated in the schedule of requirements. The items mentioned in the schedules are only indicative and the suppliers are required to include any other item left out in the schedule in this scope. Complete details and quantity of mandatory spare parts shall be furnished by the supplier in their bid. Suppliers shall offer their complete design along with drawings for the plant in their bids. The make of the equipment/items offered should be got approved from the purchaser, during detailed engineering.
- All items mentioned above must be conforming to latest MNRE specifications.

TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below.

1. DEFINITION

A Photo Voltaic (PV) Solar Tree system shall consist of following equipment/components:

1. Solar Photo Voltaic (SPV) modules consisting of required number of mono perc bifacial-Crystalline PV modules
2. Inverter/PCU
3. Tree shaped Module Mounting structures
4. Energy Meter
5. Array Junction Boxes
6. DC Distribution Box
7. AC Distribution Box
8. Protections – Earthing, Lightning, Surge
9. Cables
10. Drawing & Manuals
11. Miscellaneous

1. Solar PV modules

- 1.1. The PV modules used must qualify to the latest edition of IEC standards or equivalent BIS standards, i.e., IEC 61215/IS14286, IEC 61853-Part I/IS 16170-Part I, IEC 61730 Part-1 & Part 2 and IEC 62804 (PID). For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701.
- 1.2. The rated power of solar PV module shall have maximum tolerance up to +3%.
- 1.3. The peak-power point current of any supplied module string (series connected modules) shall not vary by +1% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.
- 1.4. The peak-power point voltage of any supplied module string (series connected modules) shall not vary by + 2% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.
- 1.5. The temperature co-efficient power of the PV module shall be equal to or better than -0.45%/°C.
- 1.6. Mono Perc Bifacial-crystalline Solar PV modules of capacity 500 Wp or above to be used.
- 1.7. The PV Module efficiency should be minimum 21%.
- 1.8. Solar PV modules of minimum fill factor 75%, to be used.

- 1.9. All electrical parameters at STC shall have to be provided
- 1.10. The PV modules shall be equipped with IP 65 or better protection level junction box with required numbers of bypass diodes of appropriate rating and appropriately sized output power cable of symmetric length with MC4 or equivalent solar connectors. The IP level for protection may be chosen based on following conditions:
 - i. An IP 65 rated enclosure is suitable for most outdoor enclosures that won't encounter extreme weather such as flooding.
 - ii. An IP 67 rated enclosure is suitable at locations which may encounter temporary submersion at depths of up to one meter.
 - iii. An IP 68 enclosure is recommended if there may exist situations of submergence for extended periods of time and at substantial depths.
- 1.11. All PV modules should carry a performance warranty of >90% during the first 10 years, and >80% during the next 15 years. Further, module shall have performance warranty of >97% during the first year of installation—degradation of the module below 1 % per annum.
- 1.12. 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 commissioning:
- 1.13. Defects and/or failures due to manufacturing.
- 1.14. Defects and/or failures due to quality of materials.
- 1.15. Nonconformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.
- 1.16. PV modules must be tested and approved by one of the NABL accredited and BIS approved test centers.
- 1.17. Modules deployed must use a RF identification tag laminated inside the glass. The following information must be mentioned in the RFID used on each module:
 - i. Name of the manufacturer of the PV module
 - ii. Name of the manufacturer of Solar Cells.
 - iii. Month & year of the manufacture (separate for solar cells and modules)
 - iv. Country of origin (separately for solar cells and module)
 - v. I-V curve for the module Wattage, I_m , V_m and FF for the module
 - vi. Unique Serial No and Model No of the module
 - vii. Date and year of obtaining IEC PV module qualification certificate.
 - viii. Name of the test lab issuing IEC certificate.
 - ix. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.
 - x. Nominal wattage +3%.

- xi. Brand Name, if applicable.
- 1.18. Other details as per IS/IEC 61730-1 clause 11 should be provided at appropriate place. In addition to the above, the following information should also be provided:
- i. The actual Power Output Pmax shall be mentioned on the label pasted on the back side of PV Module.
 - ii. The Maximum system voltage for which the module is suitable to be provided on the back sheet of the module.
 - iii. Polarity of terminals or leads (colour coding is permissible) on junction Box housing near cable entry or cable and connector.
- 1.19. Unique Serial No, Model No, Name of Manufacturer, Manufacturing year, Make in India logo and module wattage details should be displayed inside the laminated glass.

2. Inverter/PCU

- 2.1. Inverters/PCU should comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683, IS 16221 (Part 2), IS 16169 and IEC 60068-2(1,2,14,30) /Equivalent BIS Std.
- 2.2. Maximum Power Point Tracker (MPPT) shall be integrated in the inverter/PCU to maximize energy drawn from the array. Charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS standard. The junction boxes/enclosures should be IP 65 or better (for outdoor)/ IP 54 or better (indoor) and as per IEC 529 Specifications.
- 2.3. All inverters/PCUs shall be IEC 61000 compliant for electromagnetic compatibility, harmonics, Surge, etc.
- 2.4. The PCU/ inverter shall have overloading capacity of minimum 10%.
- 2.5. Typical technical features of the inverter shall be as follows-
- i. Switching devices: IGBT/MOSFET
 - ii. Control: Microprocessor/DSP
 - iii. Nominal AC output voltage and frequency: as per CEA/State regulations
 - iv. Output frequency: 50 Hz
 - v. Grid Frequency Synchronization range: as per CEA/State Regulations
 - vi. Ambient temperature considered: -20°C to 60°C
 - vii. Humidity: 95 % Non-condensing
 - viii. Protection of Enclosure: IP-54 (Minimum) for indoor and IP-65(Minimum) for outdoor.
 - ix. Grid Frequency Tolerance range: as per CEA/State regulations
 - x. Grid Voltage tolerance: as per CEA/State Regulations
 - xi. No-load losses: Less than 1% of rated power

- xii. Inverter efficiency (Min.): >93%
 - xiii. THD: < 3%
 - xiv. PF: > 0.9 (lag or lead)
 - xv. Should not inject DC power more than 0.5% of full rated output at the interconnection point and comply to IEEE 519.
- 2.6. The output power factor of inverter should be suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustain fault in feeder line and against the lightning on feeder.
- 2.7. All the Inverters should contain the following clear and indelible Marking Label & Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:
- i. The name or trademark of the manufacturer or supplier;
 - ii. A model number, name or other means to identify the equipment,
 - iii. A serial number, code or other marking allowing identification of manufacturing location and the manufacturing batch or date within a twelve-month time period.
 - iv. Input voltage, type of voltage (a.c. or d.c.), frequency, and maximum continuous current for each input.
 - v. Output voltage, type of voltage (a.c. or d.c.), frequency, maximum continuous current, and for a.c. outputs, either the power or power factor for each output.
 - vi. The Ingress Protection (IP) rating
- 2.8. Marking shall be located adjacent to each fuse or fuse holder, or on the fuse holder, or in another location provided that it is obvious to which fuse the marking applies, giving the fuse current rating and voltage rating for fuses that may be changed at the installed site.
- 2.9. In case the consumer is having a 3- ϕ connection, then suitable provision for 3- ϕ connections shall be provided by the vendor as per the consumer's requirement and regulations of the State.
- 2.10. Inverter/PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- 2.11. Integration of PV Power with Grid & Grid Islanding:
- i. The output power from SPV would be fed to the inverters/PCU which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization.
 - ii. In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing

to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The PV solar system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided, if not available in inverter.

- iii. MCB/MCCB or a manual isolation switch, besides automatic disconnection to grid, would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

3. Solar Tree Structure (Module Mounting Structure):

- 3.1. Supply, installation, erection, and acceptance of Solar Tree Structure (without tracking) with all necessary accessories, auxiliaries and spare part shall be in the scope of the work.
- 3.2. The Solar Tree Structure shall be designed as per the diagram given in the tender document (Annexure-7) and the structure must be approved by the certified Architect/ Structure Engineer for its strength and also from PEDA for its aesthetic looks.
- 3.3. The foundation for Solar Tree structure shall be preferably 1:2:4 PCC constructions or any other combination based on the local site condition requirement for which design details shall be submitted and approved before start of work.
- 3.4. The support structure design and foundation shall be designed to withstand wind speed for the zone of the location where a PV system is proposed to be installed for which design details and drawings shall be approved.
- 3.5. Solar Tree structures should be made from Hot Dip Galvanized Mild Steel (MS).
- 3.6. MMS Steel shall be as per latest IS 2062:2011 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- 3.7. All bolts, nuts, fasteners shall be of stainless steel of grade SS 304 or hot dip galvanized, panel mounting clamps shall be of aluminum and must sustain the adverse climatic conditions. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.
- 3.8. The module mounting structures should have angle of inclination as per the site conditions to take maximum insolation and complete shadow-free operation during generation hours. However, to accommodate more capacity the angle of inclination may be reduced until the plant meets the specified performance ratio requirements.
- 3.9. The upper edge of the module must be covered with wind shield so as to avoid build air ingress below the module. Slight clearance must be provided on both edges (upper & lower) to allow air for cooling.
- 3.10. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed. The bidder shall be fully

responsible for any damages to SPV System caused due to high wind velocity within guarantee period as per technical specification.

- 3.11. The structures shall be designed to allow easy replacement, repairing and cleaning of any module. The structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels. Necessary testing provision for MMS to be made available at site.
- 3.12. Adequate spacing shall be provided between two panel frames to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.
- 3.13. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

3.14. Material standards:

- i. Design of foundation for mounting the structure should be as per defined standards which clearly states the Load Bearing Capacity & other relevant parameters for foundation design (As per IS 6403 / 456 / 4091 / 875).
- ii. Grade of raw material to be used for mounting the structures so that it complies the defined wind loading conditions (As per IS 875 - III) should be referred as follows (IS 2062 – for angles and channels, IS 1079 – for sheet, IS 1161 & 1239 for round pipes, IS 4923 for rectangular and square hollow section)
- iii. Test reports for the raw material should be as per IS 1852 / 808 / 2062 / 1079 / 811.
- iv. In process inspection report as per approved drawing & tolerance should be as per IS 7215.
- v. For ascertaining proper welding of structure part following should be referred:
 - a. D.P. Test (Pin Hole / Crack) (IS 822)
 - b. Weld wire grade should be of grade (ER 70 S - 6)
- vi. For ascertaining hot dip galvanizing of fabricated structure following should be referred: -
 - a. Min coating required should be as per IS 4759 & EN 1461.
 - b. Testing of galvanized material
 - Pierce Test (IS 2633)
 - Mass of Zinc (IS 6745)
 - Adhesion Test (IS 2629)
 - CuSO₄ Test (IS 2633)
 - Superior High-Grade Zinc Ingot should be of 99.999% purity (IS 209) (Preferably Hindustan Zinc Limited or Equivalent).
- vii. Foundation Hardware – If using foundation bolt in foundation then it should be as per IS 5624.

4. Metering

- 4.1. A Solar Tree Photo Voltaic (PV) system shall consist of following energy meters:
 - i. Net meter: To record import and export units

- ii. Generation meter: To keep record for total generation of the plant.

5. Array Junction Boxes:

- 1.1 The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction Boxes (JBs) shall be made of GRP/FRP/Powder Coated aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.
- 1.2 Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP 65 or better standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry, Single /double compression cable glands should be provided.
- 1.3 Polyamide glands and MC4 Connectors may also be provided. The rating of the junction box shall be suitable with adequate safety factor to interconnect the Solar PV array.
- 1.4 Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- 1.5 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

2. DC Distribution Box (DCDB):

- 2.1 May not be required for small plants, if suitable arrangement is available in the inverter.
- 2.2 DC Distribution Box are to be provided to receive the DC output from the PV array field.
- 2.3 DCDBs shall be dust & vermin proof conform having IP 65 or better protection, as per site conditions.
- 2.4 The bus bars are made of EC grade copper of required size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors. MCB shall be used for currents up to 63 Amperes, and MCCB shall be used for currents greater than 63 Amperes.

3. AC Distribution Box (ACDB):

- 3.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter, and should have necessary surge arrestors, if required. There is interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- 3.2 All switches and the circuit breakers, connectors should conform to IEC 60947:2019, part I, II and III/ IS 60947 part I, II and III.
- 3.3 The isolators, cabling work should be undertaken as part of the project.
- 3.4 All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on $1-\phi/3-\phi$, 415 or 230 volts, 50 Hz (or voltage levels as per CEA/State regulations).

- 3.5 The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- 3.6 All indoor panels will have protection of IP 54 or better, as per site conditions. All outdoor panels will have protection of IP 65 or better, as per site conditions.
- 3.7 Should conform to Indian Electricity Act and CEA safety regulations (till last amendment).
- 3.8 All the 415 or 230 volts (or voltage levels as per CEA/State regulations) AC devices / Equipment like bus support insulators, circuit breakers, SPDs, Voltage Transformers (VTs) etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.
 - i. Variation in supply voltage: as per CEA/State regulations
 - ii. Variation in supply frequency: as per CEA/State regulations
- 3.9 The inverter output shall have the necessary rated AC surge arrestors, if required and MCB/ MCCB. RCCB shall be used for successful operation of the PV system, if inverter does not have required earth fault/residual current protection.

4. Protections

The system should be provided with all necessary protections like earthing, Lightning, and Surge Protection, as described below:

4.1 Earthing Protection

- i. The earthing shall be done in accordance with latest Standards.
- ii. Each array structure of the PV yard, Low Tension (LT) power system, earthing grid for switchyard, all electrical equipment, inverter, all junction boxes, etc. shall be grounded properly as per IS 3043-2018.
- iii. All metal casing/ shielding of the plant shall be thoroughly grounded in accordance with CEA Safety Regulation 2010. In addition, the lightning arrester/masts should also be earthed inside the array field.
- iv. Earth resistance should be as low as possible and shall never be higher than 5 ohms.
- v. For 10 KW and above systems, separate three earth pits shall be provided for individual three earthing viz.: DC side earthing, AC side earthing and lightning arrester earthing.

4.2 Lightning Protection

- i. The SPV power plants shall be provided with lightning & over voltage protection, if required. The main aim in this protection shall be to reduce the overvoltage 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. Lightning arrester shall not be installed on the mounting structure.

- ii. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors (LAs). Lightning protection should be provided as per NFC17-102:2011/IEC 62305 standard.
- iii. The protection against induced high-voltages shall be provided using Metal Oxide Varistors (MOVs)/Franklin Rod type LA/Early streamer type LA.
- iv. The current carrying cable from lightning arrestor to the earth pit should have sufficient current carrying capacity according to IEC 62305. According to standard, the minimum requirement for a lightning protection system designed for class of LPS III is a 6 mm² copper/ 16 mm² aluminum or GI strip bearing size 25*3 mm thick). Separate pipe for running earth wires of Lightning Arrestor shall be used.

4.3 Surge Protection

- i. Internal surge protection, wherever required, shall be provided.
- ii. It will consist of three SPD type-II/MOV type surge arrestors connected from +ve and –ve terminals to earth.

5. CABLES

- 5.1 All cables should conform to latest edition of IEC/equivalent BIS Standards along with IEC 60227/IS 694, IEC 60502/IS 1554 standards.
- 5.2 Cables should be flexible and should have good resistance to heat, cold, water, oil, abrasion etc.
- 5.3 Armoured cable should be used and overall PVC type 'A' pressure extruded insulation or XLPE insulation should be there for UV protection.
- 5.4 Cables should have Multi Strand, annealed high conductivity copper conductor on DC side and copper/FRLS type Aluminum conductor on AC side. For DC cabling, multi-core cables shall not be used.
- 5.5 Cables should have operating temperature range of -10°C to +80°C and voltage rating of 660/1000 V.
- 5.6 Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop less than 2% (DC Cable losses).
- 5.7 The size of each type of AC cable selected shall be based on minimum voltage drop. However; the maximum drop shall be limited to 2%.
- 5.8 The electric cables for DC systems for rated voltage of 1500 V shall conform to BIS 17293:2020.
- 5.9 All cable/wires are to be routed in a RPVC pipe/ GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable is easily identified.
- 5.10 All cable trays including covers to be provided.
- 5.11 Thermo-plastic clamps to be used to clamp the cables and conduits, at intervals not exceeding 50 cm.
- 5.12 Size of neutral wire shall be equal to the size of phase wires, in a three-phase system.

5.13 The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e., 25 years.

6. DRAWINGS & MANUALS:

6.1 Operation & Maintenance manual/user manual, Engineering and Electrical Drawings shall be supplied along with the power plant.

6.2 The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc.

6.3 The Manual should also include all the Dos & Don'ts of Power Plant along with Graphical Representation with indication of proper methodology for cleaning, Operation and Maintenance etc.

6.4 Step by step maintenance and troubleshooting procedures shall also be given in the manuals.

6.5 Vendors should also educate the consumers during their AMC period.

7. Miscellaneous:

7.1 Connectivity: The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the SERC regulation for Grid connectivity and norms of DISCOM and amended from time to time.

7.2 Safety measures: Electrical safety of the installation(s) including connectivity with the grid must be taken into account and all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA Safety Regulation 2010 etc. must be followed.

7.3 Shadow analysis: The shadow analysis report with the instrument such as Solar Pathfinder or professional shadow analysis software of each site should be provided and the consumer should be educated to install the system only in shadow free space. Lower performance of the system due to shadow effect shall be liable for lower performance.

Quality Certification, Standards and Testing for Grid-Connected Solar PV Systems/Power Plants:

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

Solar PV Modules/ Panels	
IEC61215 and IS14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV)Modules
IEC 61701:2011	Salt Mist Corrosion Testing of Photovoltaic (PV)Modules
IEC 61853-1:2011/ IS16170-1:2014	Photovoltaic (PV)module performance testing and energy rating–: Irradiance and temperature performance measurements, and power Rating.
IEC 62716	Photovoltaic (PV)Modules–Ammonia (NH3) Corrosion Testing (as per the site condition like dairies, toilets etc)
IEC61730-1,2	Photovoltaic (PV)Module Safety Qualification–Part1: Requirements for Construction, Part2: Requirements for Testing
IEC 62804	Photovoltaic (PV) modules – Test method for detection of potential-induced degradation. IEC 62804-1: Part 1: Crystalline Silicon
Solar PV Inverters	
IEC62109 or IS: 16221	Safety of power converters for use in photovoltaic power systems –Part1: General requirements, and Safety of power converters for use in photovoltaic power systems Part2: Particular requirements for inverters. Safety compliance (Protection degreeIP65 or better for outdoor mounting,IP54 or better for indoor mounting)
IS/IEC61683latest (As applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%,25%,50%,75%&90-100%LoadingConditions)
IEC 60068-2 /IEC62093 (As applicable)	Environmental Testing of PV System–Power Conditioners and Inverters
IEC 62116:2014/ IS16169	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
Fuses	
IS/IEC60947(Part 1, 2 &3), EN50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): 1)Low-voltage Switchgear and Control-gear, Part1: General

	<p>rules</p> <p>2)Low-Voltage Switchgear and Control-gear, Part2:Circuit Breakers</p> <p>3)Low-voltage switchgear and Control-gear, Part3: Switches, disconnectors switch disconnectors and fuse-combination units</p> <p>4) EN50521: Connectors for photovoltaic system-Safety requirements and tests.</p>
IEC60269-6:2010	Low-voltagefuses-Part6: Supplementary requirements for fuse- links for the protection of solar photovoltaic energy systems
Solar PV Mounting Structure	
IS2062/IS4759/ AA6063 T6	Material for the structure mounting
Surge Arrestors	
BFC17-102:2011/ NFC 102:2011/ IEC 62305	Lightening Protection Standard
IEC 60364-5-53/ IS15086-5(SPD) IEC 61643- 11:2011	Electrical installations of buildings-Part5-53: Selection and erection of electrical equipment-Isolation, switching and control Low-voltage surge protective devices-Part11: Surge protective devices connected to low-voltage power systems- Requirements and test methods
Cables	
IEC 60227/IS 694, IEC60502/IS 1554 (Part 1&2)/IEC69947(as applicable)	General test and measuring method for PVC (Polyvinylchloride) insulated cables (for working voltages up to and including 1100V, and UV resistant for outdoor installation)
BSEN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing/Lightning	
IEC 62561/IEC 60634 Series (Chemical earthing) (As applicable)	<p>IEC 62561-1: Lightning protection system components (LPSC) - Part: Requirements for connection components</p> <p>IEC 62561-2: Lightning protection system components (LPSC) – Part 2: Requirements for conductors and earth electrodes</p> <p>IEC 62561-7: Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds</p>
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 or better protection for outdoor use, and IP54 or better protection for indoor use

SECTION-V

TECHNICAL BID TO BE SUBMITTED ON LINE Bid Form, and other Formats

(All forms/schedules and
formats to be filled, signed,
stamped scanned and
uploaded)

BID FORM
(To be submitted on letter head of Bidder)

Place:

Reference No:

Date:

To

Director,
Punjab Energy Development Agency,
Solar Passive Complex,
Plot No.1 & 2, Sector 33-D,
Chandigarh

Subject: Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State.

Dear Sir,

1. We have read and examined the tender documents relating to the subject cited works (hereinafter referred to as "Works") as issued by you:
2. Having examined the Tender Documents and being duly authorized we, hereby, bid for the execution, and completion of the Works referred to in the Tender Documents upon the terms and conditions contained or referred to therein and in accordance to all respects with the specifications, designs, drawings and other details given therein.
3. Attached to this letter are copies of original documents defining
 - (a) Our legal status;
 - (b) The principal place of business; and
 - (c) The place of incorporation (for bidders that are corporations), or the place of registration and the nationality of the owners (for Bidders that are member ships or individually owned firms).
4. 'PURCHASER' and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this Bid, and to seek clarifications from our bankers and employers regarding any financial and technical aspects. This Bid shall also serve as authorization to any

individual or authorized representative of any institution referred to in the supporting information to provide such information deemed necessary and as requested by you to verify statements and information provided in this application, such as the resources, experience, and competence of the Bidder.

5. We agree to keep this Bid open for acceptance for 60 days, or such other extended period as may be required by you and agreed by us, from the date of opening of the Bid, and also agree not to make any modifications in its terms and conditions of our own accord.
6. A sum of Rs..... Lacs/- (Rs. lacs only) is hereby forwarded in form----- Bank as earnest money (hereinafter "Earnest Money Deposit"). We agree if we fail to keep the validity of Bid open, as aforesaid, or we make any modification in the terms and conditions of our Bid of our own accord or after the acceptance of our Bid if we fail to execute an Agreement as prescribed in the Tender Documents or commence the execution of the works as provided in the Tender Documents, we shall become liable for forfeiture of the Earnest Money Deposit. In such an event you shall, without prejudice to any other right or remedy, be at liberty to forfeit the said Earnest Money Deposit absolutely.
7. We certify that the Bid submitted by us is strictly in accordance with the terms, conditions, specifications etc. as contained in the Tender Documents, and it is further certified that it does not contain any deviations to the aforesaid documents and that deviations or variations if any are duly disclosed by us in the Compliance Statement.
8. The bid is made with the full understanding that:-
 - a) Bids by qualified bidders will be subject to verification of all information submitted for qualification at the time of bidding
 - b) PURCHASER reserves the right to:
 - (i) Amend the scope and value of any work bid under this tender.
 - (ii) Reject or accept any application, cancel the tender process and reject all bidders by giving a written notice.

- c) PURCHASER shall not be liable for any actions taken under (b) I and ii above.
9. We confirm that the bid as well as any resulting agreement, will be signed so as to legally bind all principal manufacturers, jointly and severally.
 10. We undertake, if our bid is accepted, and on receipt of the Letter of Award to commence the works and to complete and deliver the whole of works comprised in the contract within the period stated and in compliance with the tender documents.
 11. If our bid is accepted, we will furnish Performance Security Deposit as per terms & conditions mentioned in DNIT.
 12. We understand that you are not bound to accept the lowest or any bid you may receive.
 13. The undersigned declare that the statements made and the information provided in the Bid including the completed applications and formats are complete, true, and correct in all aspects.

We have gone through carefully all the Bid conditions and solemnly declare that we will abide by any penal action such as disqualification or black listing or termination of contract or any other action deemed fit, taken by, the Department against us, if it is found that the statements, documents, certificates produced by us are false / fabricated.

We hereby declare that I/We are eligible in term of Clause No.2 of Section II

List of Enclosures:

Date of Submission:

**(Signature of the Bidder)
(Seal)**

CHECK LIST

The following documents enclosed with the offers (Please tick Yes or No):-

1.	Audit balance sheets for the three F.Y.	:	Yes/ No
2.	Average Annual Turnover of the bidder should be Rs. 50.00 Lakh per each financial year for any three financial years out of last four financial years F.Y. 2020-21, 2021-22, 2022-23 & 2023-24.	:	Yes/ No
3.	Sufficient experience for supply and installation of SPV systems i.e. Power Plants, Street Lighting and Power Plant. (Documentary proof like work order and completion certificate)	:	Yes/ No
4.	IEC 61215: 2005 submitted with Model, Make and Type.	:	Yes/ No
5.	Manufacture authorized certificate for PV Modules submitted	:	Yes/ No
6.	Manufacture authorized certificate for PCU submitted	:	Yes/ No
7.	Test Reports of PCU/ Inverter issued by the MNRE, GOI.	:	Yes/ No
8.	Sufficient well trained man power is available for the maintenance of the system if yes, mentioned detail separately.	:	Yes/ No
9.	If any Service center for maintenance of SPV Power Plants is available in Punjab, please mention place with complete contact No. and address.	:	Yes/ No

(Signature & Stamp)

FORM 1**GENERAL INFORMATION**

1.	Name of Bidder:	
2.	Head office address:	Local office address (if any):
3.	Contact name: Telephone: Mobile No.	Contact name: Telephone: Mobile No.
4.	Fax: E-mail ID:	Fax: E-mail ID:
5.	Place of incorporation/registration:	Year of incorporation/registration:
6.	Main lines of business:	

Nationality of Owners		
	Name	Nationality
1.		
2.		
3.		
4.		
5.		

Signature with seal of bidder/**Note :**

-
1. Use a separate sheet for manufacturer/s who authorized the supplier.

FORM 1 A

STRUCTURE AND ORGANIZATION

1. The Bidder is
 - a) a proprietary firm
 - b) a firm in member ship
 - c) a Limited Company or Corporation / Government undertaking
 - d) a voluntarily formed consortium by firms/companies
(Please give complete information
in respect of each member, indicate also the name of lead member)
2. Number of years of experience
 - a) as a contractor shouldering major responsibility
 - (i) in own Country
 - (ii) other Countries (specify Country)
 - b) as sub-contractor (specify main Contractor)
 - (i) in own Country
 - (ii) other Countries (specify Country)
2. For how many years has your Organization been in business of similar work under its present name?
3. Were you ever required to suspend construction for a period of more than six months continuously after you started? If so, give the name of project(s) and reasons thereof.
4. Have you ever left the work awarded to you incomplete? (If so, give name of project and reasons for not completing work.)
5. Attach an Organization Chart showing the structure of the company/association, including the names of the Directors and position of officers.

Signature with seal of bidder

FORM 2**TURNOVER RECORD****(Refer Clause 2.4 of Section II)**

Name of Bidder:

Annual turnover data for last three years (in all class of engineering works only)					Profit	Loss
Sr. No.	F.Y.	Turnover (Rs. In lacs)		Ref. to Page No. ____ to ____ of Bid		
1	2	3		4	5	6
1.						
2.						
3.						

Signature with seal of bidder**Note:**

- Bidder must complete the information in this form.
- The information provided shall be certified by **Chartered Accountant and supported by Audited Balance Sheets**. Page marking of supported documents to be done & mentioned in column 4.*

FORM 2A

FINANCIAL CAPABILITY

Name of Bidder

Banker	Name of Banker		
	Address of Banker		
	Telephone	Contact Name and Title	
	Fax	Tel fax	E-mail ID

Financial information in Rs. Crores	Actual: Previous three financial years			
1. Total assets				
2. Current assets				
3. Total liabilities				
4. Current liabilities				
5. Profits before taxes				
6. Profits after taxes				

Signature with seal of bidder

1. Bidder must fill in the form.
2. **Copies of the Audited Financial Statements, including Balance Sheets (stating that the above statement is true – signature of Chartered Accountant), for the three years along with certified copy of Income Tax return submitted in the Income Tax Office are to be attached. Firms owned by individuals or member ships may submit their balance sheets certified by a Chartered Accountant, along with certified copy of income tax return.**

FORM 2B**FINANCIAL SOURCES**

Name of Bidder:

Specify the sources of credit limit from Nationalized or Scheduled Bank (Other than a **Co-operative Bank**) to meet the cash flow demands of the Project

Sr. No.	Source of financing	Amount (Rs. in lacs)
1.		
2.		
3.		
4.		
	Total	

Signature with seal of bidder

1. Bidder must fill the form. If necessary, use separate sheets to provide complete banker information. The letter from the bidder's bankers should be dated not earlier than **start date of issue of this tender**.

FORM 3

SPV POWER PLANTS AND SPV DEVICES/ SPV POWER PLANTS EXECUTED IN THE LAST THREE YEARS

Name of Bidder

Sl. No	Name of Work and Name of Client	Contract Value (Rs in Cr.)	% Share holding if work done in JV (if any)/ Consortium	Date of Award	Completion Date/ probable completion date	Value of Work done	Copy of Work Certificate at Page No.
Total				Total			

Signature with seal of bidder

Note:

1. Provide copies of Completion/ Work Certificates for each project certified by an officer not below the rank of Incharge/Executing Engineer. Work orders/testimonials may be verified if required for last 3 years.

FORM 4

**PERSONNEL REQUIREMENT FOR
THE PROJECT***

Name of Bidder

Section-I

Sr. No.	Post	Number of Persons proposed	Must Be Deployed		
			Qualification	Total Years of Experience	Years of Relevant Experience
1.	Project Manager – cum – Resident Engineer				

Section-II

Sr. No.	Post	Number of Persons proposed	Proposed to be Deployed		
			Qualification	Total Years of Experience	Years of Relevant Experience
2.	Construction Engineer (Civil)				
3.	Construction Engineer (Mechanical/Electrical)				
4.	Site Supervisor				
5.	ETC Manpower				

Section-III – Proposed for Warranty obligations & O&M for 5 years

Sr. No.	Post	Number of Persons proposed	Proposed to be Deployed		
			Qualification	Total Years of Experience	Years of Relevant Experience
6.	Heads O&M				
7.	Electrical Technicians				
8.	Other Staff Please Indicate as per the O&M strategy of the bidder				

* The above Personnel requirement in Section-I is compulsory. Bidder will fill Personal requirement in Section-II which is indicative and can be increased/decreased as per project requirement with the approval of PEDDA. Personnel requirement in Section-III will be approved by PEDDA after award of contracts. The manpower indicated may be increased without any financial consideration.

Signature with seal of bidder

1. The C.V. of each Personnel mentioned in the above table (Sr. No. 1 to 8) must be provided separately at the time of Agreement.

FORM 5**TECHNICAL DETAIL FORM**

S.No.	ITEM	PARTICULARS
	SOLAR PHOTOVOLTAIC MODULES	
1.1	MANUFACTURER	
1.2	SIZE	
1.3	Availability of RFID Tag	
1.4	TESTING AND QUALIFYING STANDARDS	
1.5	P _{nom}	
1.6	P _{max}	
1.7	I _{mp}	
1.8	V _{mp}	
1.9	V _{oc}	
1.10	I _{sc}	
1.11	CELL EFFICIENCY	
1.12	No. of cells in a module	
1.13	Module efficiency	
1.14	Fill factor	
2	POWER CONDITIONING UNITS	
2.1	TYPE	
2.2	Manufacturer Name	
2.3	AC Output Voltage	
2.4	DC input voltage range	
2.5	DC operating voltage	
2.6	Continuous rating	
2.7	Efficiency	
2.8	Operating temperature range	
2.9	Power control	
2.10	Protection features	
2.11	Overload capacity	
2.12	Total harmonic distortion	
2.13	Ingress protection	
2.14	Hardware platform	
2.15	DC input overload capacity	
2.16	Electronic metering accuracy	
2.17	Data logger accuracy	
3	Mounting structure (MMS)	
3.1	Any other item	
3.2		
4.	Connecting cables/ wire	
4.1	AC cable size and make	
4.2	DC cable size and make	
	Any other item details	

SECTION - VI

COMPLETION SCHEDULE

Supply Schedule from the contractor will submit the pert chart showing activities to be performed, time period, etc. for approval of PEDDA.

Sr.No.	Description	Time Required
1.	Award of contract	Say X date
2.	Signing of Contract Agreement & submission of Performance Guarantee	X + 10 days
3.	Submission of Bank Guarantee for release of Advance amount and submission of PERT Chart	X + 20 days
4.	Submission of all documents related to procurement of all Bought-out items delivery schedule, etc.	X + 30 days
5.	Submission of engineering & design documents for approval of PEDDA	X + 30 days
6.	Inspection, by PEDDA	X + 40 days
7.	Progressive deliveries of complete material, complete modules, erection, testings, and Commissioning etc.	X + 70 days

Activities shown above are guiding factor for preparing time pert.

SECTION-VII

FORMATS & ANNEXURES

CONTRACT FORM ON STAMP PAPER OF Rs.100/-

THIS AGREEMENT made theday of....., 20... Between (*Name of purchaser*) of (*Country of Purchaser*) (hereinafter "the Purchaser") of the one part and (*Name of Supplier*) of (*City and Country of Supplier*) (hereinafter called "the Supplier") of the other part :

WHEREAS the Purchaser invited bids for certain Goods and ancillary services viz., (*Brief Description of Goods and Services*) and has accepted a bid by the Supplier for the supply of those goods and services in the sum of (*Contract Price in Words and Figures*) (hereinafter called "the Contract Price").

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
 - (a) the Bid Form and the Price Schedule submitted by the Bidder;
 - (b) the Schedule of Requirements;
 - (c) the Technical Specifications;
 - (d) the General Conditions of Contract;
 - (e) the Purchaser's Notification of Award.
3. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the goods and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the goods and services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

Brief particulars of the goods and services which shall be supplied/provided by the Supplier are as under:

SL. NO.	BRIEF DESCRIPTION- OF GOODS & SERVICES	QUANTITY TO BE SUPPLIED	UNIT PRICE	Total Price
---------	--	-------------------------	------------	-------------

TOTAL VALUE:

DELIVERY SCHEDULE:

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.
Signed, Sealed and Delivered by the

said (For the Supplier)
in the presence of:.....
Signed, Sealed and Received by the
*said (For the Supplier)
in the presence of:.....

PERFORMANCE SECURITY FORM

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

To: _____ (Name of Purchaser)

WHEREAS (Name of Supplier)
(hereinafter called "the Supplier") has undertaken , in pursuance of Contract No..... dated,..... 20... to supply.....
.....(Description of Goods and Services) (hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier a Guarantee:

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

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

Signature and Seal of bank

.....
Date.....20.....

.....
Address:.....
.....
.....

BANK GUARANTEE FOR ADVANCE PAYMENT

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

To: _____ (*name of Purchaser*)
 _____ (*address of Purchaser*)
 _____ (*name of Contract*)

Gentlemen:

In accordance with the provisions of the Special Conditions of Contract, which amends Clause no. 3(i) of the General Conditions of Contract to provide for advance payment, _____ (*name and address of Supplier*) (hereinafter called "the supplier") shall deposit with the Purchaser a bank guarantee to guarantee his proper and faithful performance under the said Clause of the Contract in an amount of _____ (*amount of guarantee*(in figures and words)*).

We, the _____ (*bank or financial institution*), as instructed by the Supplier, agree unconditionally and irrevocably to guarantee as primary obligator and not as Surety merely, the payment to the Purchaser on his first demand without whatsoever right of objection on our part and without his first claim to the Supplier, in the amount not exceeding (*amount of guarantee*in figures and words*).

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

This guarantee shall remain valid and in full effect from the date of the advance payment received by the Supplier under the contract until _____ (date).

Yours truly,

Signature and seal :
 Name of bank/
 financial institution :
 Address :
 Date :

 * An amount is to be inserted by the bank or financial institution representing the amount of the Advance Payment.

FORMAT FOR BANK GUARANTEE AGAINST 5 YEARS WARRANTY OF THE SYSTEM

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

Bank Guarantee No. : Date:.....

To (Name of the Purchaser)

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

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

AND WHEREAS we have agreed to give the Supplier a Guarantee

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

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

Signature and Seal of Guarantors

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

Note :

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

MANUFACTURERS' AUTHORIZATION FORM

No. _____ dated

Tender No. **PEDA/2024-25/10**

To

Dear Sir:

We _____ who are established and reputable manufacturer of _____ (*name & descriptions of goods offered*) having factory at (*address of factory*) do hereby authorize M/s _____ (*Name and address of Bidder*) to submit a bid, and sign the contract with you for the goods manufactured by us against the above Tender.

We hereby extend our full guarantee and warranty for the goods and services offered for supply by the above firm against Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State.

Yours faithfully,

(Name)
(Name of manufacturers)

Note: i) This letter of authorization should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to legally bind the manufacturer. It should be included by the Bidder in its technical bid. (Copy of Power of attorney enclosed with this undertaking)

ii) This letter of authorization to be issued separately by each manufacturer of different items to be supplied by the bidder.

TECHNICAL DEVIATIONS

Subject: Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State

Dear Sir,

Following is the technical deviations & variations from the exceptions to the specifications of commissioning the Site Survey, Design, Supply, Installation, Testing and Commissioning including Warranty and 5 years of Annual Maintenance contract (AMC) of Photo Voltaic Solar Trees (fixed) in the State. These deviations and variations are exhaustive. Except these deviations and variations, the entire work shall be provided as per your specifications and documents. The directions and variation are pointed at as per specification of MNRE, GOI specification reason.

Sr. No.	Clause No.	Page No.	Statement of deviations and variations	Reason
----------------	-------------------	-----------------	---	---------------

Date

Signature

Name

Place

Seal

Tree shaped schematic Structure Diagram

