E-TENDER NO.: PEDA/2019-20/13

TENDER DOCUMENT

FOR

Design, Manufacture, Supply, Erection, Testing & Commissioning of centralized On-Grid & Off-Grid Solar Power Plants along with 50 nos. LED based Street Lights each three villages of Punjab.

1. Village Mehtot, Block Chamkaur Sahib, Distt. Ropar
2. Village Soonk, Block Majri, Distt. SAS Nagar.
3. Village Swara, Block Mohali, Distt. SAS Nagar

PUNJAB ENERGY DEVELOPMENT AGENCY
PLOT NO. 1&2 SECTOR 33-D CHANDIGARH 160034, PUNJAB, INDIA
TELEPHONES: (91) 0172-2663382, 2667007,
FAX: (91) 0172-2664402 Website: http://peda.gov.in

e-Tender Notice No. PEDA/2019-20/13

Punjab Energy Development Agency
Solar Passive Complex
Plot No. 1 & 2, Sector 33-D, Chandigarh
Ph.: 0172-2663328, 2663382 Fax: 0172-2662865
www.peda.gov.in

Promoting Clean Energy through Solar Power Plant

E- TENDER NOTICE

Name of work	EMD (Rs.)	Tender document fees (Rs.)	Date of start of downloading E-tender document	Last Date & time for submission of E-bids	Date & time of opening of Techno-commercial bids
Design, Manufacture, Supply, Erection, Testing & Commissioning of centralized On-Grid & Off-Grid Solar Power Plants along with LED based 7watt 220AC Street Lights.	Rs. 2 Lac	Rs. 5,000/-	15.10.2019	30.10.2019 upto 5.00 PM	31.10.2019 at 11.30 AM

Cost of Tender Document	Non-refundable Tender Document fee Rs. 5,000/- through online Mode only.
Earnest Money Deposit	Earnest Money as mentioned above shall be deposited through online mode or through Bank Guarantee.

1. Eligibility criteria and other terms & conditions for the works are given in the Tender Document which can be downloaded from www.eproc.punjab.gov.in .
2. Bidders shall have to get themselves registered with eproc.punjab.gov.in and get user ID and Password. Class- 2/3 Digital Signature, mandatory to participate in the e-tendering process. For any clarification/difficulty regarding e-tendering process flow, please contact at 0172-2663328, 2663382 or 0172-2970263, 2970284.
3. Corrigendum / Addendum / Corrections, if any will be published on the e-tender website and no separate notices shall be issued
4. PEDA reserve the right to accept or reject any or all the tenders without assigning any reason thereof.

GENERAL MANAGER

SECTION-I:
INVITATION FOR BIDS

SCOPE OF WORK: Pilot Project for Design, Manufacture, Supply, Erection, Testing & Commissioning of centralized On-Grid & Off-Grid Solar Power Plant along with 50 nos. LED based Solar Street Lights each three villages of Punjab.

1. A complete set of bidding documents in English may be purchased from www.eproc.punjab.gov.in through Mode payment of a non-refundable fee of Rs. 5,000/-.
2. Bids must be submitted through e-tender before 05.30 PM on 30.10.2019. All bids must be accompanied by Earnest Money Deposit of **Rs. 2 Lacs** through **IPG/RTGS/BG**. Bids will be opened in the presence of bidder's representative who choose to attend at the address below on 31.10.2019 at 11.30AM. No physical bid will be accepted. The details are given below:

a)	Name of office	Punjab Energy Development Agency (PEDA)
b)	Name of Officer	Executive Director
c)	Postal Address	Plot no. 1 & 2, Sector 33-D, Chandigarh-160034
d)	Telephone nos.	(91) 0172-2663382, 2667007
e)	Fax no.	(91) 0172-2662865
f)	Date of commencement of sale of bidding document	15.10.2019
g)	Last date & time for submission of E-bids	30.10.2019 upto 05.00 PM
h)	Time and date of opening of technical bids	31.10.2019 at 11.30 AM

The bidding shall be in two parts patterns: Technical Bid and Financial Bid: Technical bid will contain the qualifying requirement and the financial bid will contain the offered prices.

SECTION – II: INSTRUCTIONS TO BIDDERS
FOR SPV POWER PLANT

A: COMPLETE INTRODUCTION

1. SOURCE OF FUNDS:

1.1 The Pilot Project should be funded by Punjab Energy Development Agency.

1.2 Executing Agency, PEDA.

1.3 The general scope under this contract concept to commissioning of **Pilot Project for Design, Manufacture, Supply, Erection, Testing & Commissioning 150 nos. LED based Solar Street Lights powered by centralized On-Grid & Off-Grid Solar Power Plant along with in three villages of state of Punjab (ANNEXURE-A),** covering site survey, engineering design, manufacture, shop testing, inspection, packing & forwarding, transportation upto project site loading & unloading, storage in safe custody, erection, carrying out preliminary tests at site, commissioning, performance testing & handing over to the purchaser all the equipment installed including the insurance coverage for the concept to commissioning period including five years Annual maintenance charge for 05 years from the date of commissioning.

2. **FORMAT AND SIGNING OF THE BID:**

The Bidder shall upload complete bid as per the specified formats and duly signed and stamped as provided in this RFP document through e-tender at website **www.eproc.punjab.gov.in**.

2.1 **SUBMISSION OF BIDS:**

2.2.1 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) 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 of those bidders who satisfy the requirement of earnest money deposit will only be opened at the time & date notified for opening. If any bidder indicates the price in Part-I, the bid will not be read out and bid would stand rejected. Part II containing price bid will not be opened at the time of opening Part-I. The bidders who do not qualify in Part –I, their bid of Part –II (Price Bid) shall not be opened.

2.2.2 Submission of Bid
The Bidder shall submit complete bid through e-tender at website **www.eproc.punjab.gov.in**.

2.2.3 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 requested by a prospective bidder, modify the Bidding Documents by amendment.

1.3

i) Deadline for Submission of Bids
Bids must be submitted through e-tendering process in time and date as mentioned in NIT.

ii) Late Bids
After the deadline for submission of bids as mentioned in NIT, no bid shall be received by the e-tender system and no physical bid will be required/accepted by PEDA.

iii) Modification and Withdrawal of Bids

- No bid can be modified subsequent to the deadline for submission of bids.
- No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the Bidder on the Bid Form. Withdrawal of a bid during this interval may result in the forfeiture of its bid security i.e. EMD.

1.4 BID OPENING AND EVALUATION:

Opening of Technical Bids by Purchaser

a) The Purchaser will open the technical E-bids, in the presence of Bidder's representatives who choose to attend, at the time, on the date, and at the place specified in DNIT.

b) The Bidder's names, the submission or non-submission of the requisite EMD and such other details as considered appropriate by the Purchaser, at its discretion, may be announced at the bid opening.

c) The technical bids shall be evaluated by the purchaser for assessing bid responsiveness in line with the requirements mentioned in the DNIT.

d) The bidders whose technical bids are declared as technically qualified shall be informed accordingly and their Price Bids shall be opened.

e) The bidders whose technical bids do not qualify; their Price Bids shall not be opened.

f) Price E-Bids opening date shall be conveyed subsequently.

g) During evaluation of the bids, the Purchaser may, at its discretion, ask the Bidder for 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.

1.5 ELIGIBILITY OF BIDDERS:

A) EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects who have not been debarred/black listed by any Govt. organization for design, manufacture, supply, installation and commissioning of different capacity Roof Top Solar Power Projects are eligible for this tender. The bidder must have satisfactorily designed ,installed, commissioned and operated during last three years aggregate capacity of rooftop SPV Power Plant (s) 20 KWp (But not less than 10 KWp single solar power plant capacity) and minimum 100 Solar Street lights should have installed in any Govt. agencies/ State Nodal Agencies/ Public Sector shall be submitted along with bid. The plant and solar street light should be in successful operation on the date of bid opening.

i) Government-owned enterprises may participate only if they are legally and financially autonomous, if they operate under commercial law, and if they are not a dependent agency of the Purchaser.

ii) Minimum Turnover of the bidder should be Rs. 25 lacs for each financial year for the last three financial years i.e. 2016-17, 2017-18 and 2018-19.

iii) The Bidder should have profit in last F.Y i.e 2018-19.

iv) Bidder should also have sufficient experience for maintenance of SPV Power Plant and solar applications. Bidder is required to submit the proof of their eligibility.

B. The supporting documents to be submitted as proof with the bid should be in sequence order and page marked. The bids found not in order and conditional bids with addition/ omission to original DNIT are liable to be rejected. The earnest money submitted by the successful bidder at the time of bid submission shall be forfeited if performance bank guarantee is not submitted within 15 days of acceptance of tender.

C. No additional documents will be accepted after opening of the technical bid on due date. The sole criteria of qualification / disqualification will depend on the documents uploaded by the bidders.

D. The bidder should furnish the information on the past supplies (maximum three supplies) and satisfactory performance in Performa Form.

E. PEDA reserves the right to accept or reject any or all the tenders without assigning any reason in the interest of user and Punjab Energy Development Agency.

1.6 EARNEST MONEY DEPOSIT:

1.6.1 Earnest Money Deposit (EMD) of Rs. 2,00,000/- (Rs. Two Lacs Only) shall be deposited through IPG mode (Internet Payment Gateway)/ RTGS/ Bank Guarantee (BG). If the bidder shall submit the E-

Bid along with BG, then the original BG submitted in PEDA office upto _____ and the validity of BG is required for six months from the date of closing of E-Bid.

1.6.2 Unsuccessful Bidder's EMD will be discharged/ returned as promptly as possible within thirty (30) days after the acceptance of work order by the successful bidder.

1.6.3 The successful Bidder's EMD will be discharged upon the Bidder's executing the Contract and furnishing the performance security.

1.6.4 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.

1.6.5 No Interest shall be payable on the amount of earnest money.

1.7 EVALUATION OF E BIDS:

The detailed technical evaluation of the bids shall be carried out by the purchaser. The bidders whose technical bids are declared as technically responsive and qualified shall be informed accordingly and their Price E Bids shall be opened. Price Bids opening date shall be conveyed subsequently on E-tendering website.

1.8 PRICES:

i) The rates should be quoted inclusive of all applicable taxes/ GST/ duties F.O.R destination and delivery at Plant site. The prices shall be quoted strictly in price E-bid format.

ii) The price for the equipment's to be supplied under this contract for commissioning of plant must be filled in price bid **Format-A, B & C**.

iii) The bidder shall also quote the price breakup as per price breakup **Format-D**.

1.9 AWARD OF CONTRACT:

The Purchaser will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the lowest evaluated bid, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

1.10 SIGNING OF CONTRACT:

At the same time as the Purchaser notifies the successful Bidder that its bid has been accepted, the successful Bidder shall sign and return the copy of work order along with Performance security within seven days as per clause 1.11 to the Purchaser. The signing of the work order shall evidence the final acceptance of all terms and conditions and their due compliance by the successful bidder. The sites shall be handed over after submission of above said documents.

1.11 PERFORMANCE SECURITY:

i) Within (7) days from the issue of work order from the purchaser, the successful bidder shall furnish to the Purchaser the performance security **(ANNEXURE-C)** amounting to 10% value of the contract valid throughout the execution of the contract and further up to six months from the actual date of completion. The performance security will be released after the satisfaction of PEDA.

ii) Failure of the successful Bidder to comply with the requirement of Clause 1.11(i) 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.

iii) 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.

iv) The Performance Security shall be denominated in the currency of the Contract, 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 PEDA, payable at Chandigarh.

1.12 RIGHT TO REJECT ALL OR ANY TENDER:

The office inviting tenders (herein-after referred to as Purchaser) reserves the right to reject any or all the E tender received without assigning any reasons. He will not be responsible for and will not pay for expenses or losses that may be incurred by the tender in the preparation of the tenders.

1.13 PERIOD OF VALIDITY OF BID:

The offer should be kept valid for at least 60 days from the date of opening of tender and any withdrawal or modification of the offer shall not be permitted.

1.14 SITE VISIT UNDER TAKING:

Party must visit the sites before quoting the rates. The undertaking regarding the site visit be submitted as **ANNEXURE-B**.

1.15 TERMS OF PAYMENT:

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

Payment for Goods and services

(i) ***Advance Payment*****:** Ten (10) percent of the contract price (except maintenance charges) 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 till the commissioning of goods as per scope of work.

(ii) ***On delivery*****:** Sixty (60) percent of the contract price (except maintenance charges) 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.

(iii) ***On Commissioning****: Twenty (20)* percent of the contract price (except maintenance charges) shall be paid within 30 days from the date of commissioning of the project and upon submission of Joint Commissioning Report in the Performa and after technically and commercial clear bills.

(iv) Balance Ten (10) percent of the contract price (except maintenance charges) shall be released after trouble free working of the system under warranty period of 5 years from the date of commissioning of the project. This amount will be released on 2% yearly on the basis of satisfactory performance report from the user agency/ PEDA. However, this amount can be released against bank guarantee of equal amount valid for 5 years from the date of completion of the project

(v) **Annual Maintenance Charge:** Annual Maintenance charges shall be released on yearly basis after submission of working status Report duly signed by user agency and DM PEDA.

1.16 LIQUIDATE DAMAGES:

If Bidder fails to complete the work to make the plant functional as per schedule i.e. within 90 days after handing over the site, the purchaser shall levy liquidated damages at the rate of 0.5% per week up to maximum 10% of contract price. However, under force majeure condition, the time extension may be granted by the competent authority of PEDA. On reaching maximum penalty, the work order may be cancelled and performance security would also be forfeited.

1.17 SCHEDULE OF WORK:

The successful bidder shall supply the complete consignment expeditiously within 90 days after handing over of the site and will complete the whole work.

1.18 ANNUAL AND MAINTENANCE SERVICES:

- During maintenance period of five years of the power plant, if any portion of the plant becomes

non-operational due to any fault or damage then it shall be attended & rectified at site within five days from the date of receipt of complaint.

- Failure to rectify the non-functional plant including street lights within five days from the receipt of complaint, PEDA reserves the right to levy penalty for non-performance @2% of total work order value amount for every week, till 2 weeks. This penalty shall be deducted from the due payment.
- After 2 weeks the defective / non-functional power plant shall be rectified on the risk and cost of the supplier without any further notice or their performance bank guarantee may be evoked.
- The supplier shall ensure replacement of worn out parts and components during the AMC period for which purpose the supplier shall carry and maintain minimum inventory levels of spares at the plant and at its works.

1.19 TAXES AND DUTIES:

A)

i) Bidder will be entirely responsible for all taxes, stamp duties, GST, license fees, etc and other such levies imposed outside India, custom duties, as well as for taxes and levies to be charged in connection with supplies made from India and services performed in India, and the Purchaser shall pay all the customs duties and import taxes in consequence of the importation of the goods.

ii) Bidders will be entirely responsible for all taxes, GST, duties, license fees, octroi, road permits, etc in connection with delivery of goods at site including incidental services and commissioning. Price bid submitted by the bidder shall include all taxes in the contract price.

B) Income / Corporate Taxes in India:

i) 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.

ii) Wherever the laws and regulations require deduction of such taxes at the source of payment, the Purchaser shall effect such deductions from the payment due to the supplier. The remittance of amounts so deducted 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.

iii) The Supplier's 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 under the laws and regulations for the time being 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.

1.20 CONTRACTOR LIABLE FOR DAMAGE DONE:

If the contractor or his work people, or servants shall break, deface, injure or destroy any part of a building they may be working on or any building, road, fence, enclosures or grass land or cultivated ground continuous to the premises on which the work or any part of it is being executed, or if any damage shall happen to the work, while in progress, from any cause whatsoever, the contractor shall make the same good at his own expense or in default, the Engineer may cause the same to be made good by other workman, and deduct the expense for which the certificate of the Engineer shall be final, from any sums that may be at any time thereafter become due to the contractor or from his security deposit or the proceeds of the sale thereof. The contractor shall not be entitled for any loss or damage in case the contract is to be suspended for some time or to be closed due to any equipment breakdown or shutdown of the unit for one reason or the other and for that he shall not be entitled for any compensation.

1.21 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.

1.24 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 Conciliation 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 Conciliation Act, 1996.

ii) The matter would be referred to a arbitral tribunal of three arbitrators. Each party shall appoint one arbitrator and two arbitrators shall appoint the third arbitrator who shall act as the Chairman of the arbitral tribunal. In the event either Party failing to appoint the arbitrator or the two arbitrators failing to appoint, the chairman of the arbitral tribunal, the appointment of the arbitrators or the chairman as the case may shall be done in accordance with Arbitration and Conciliation Act, 1996. The tribunal shall give a speaking award. The cost and expenses of this arbitration shall be allocated as determined by the arbitrators.

iii) Neither Party shall resort to any proceeding 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 in accordance with the provisions thereof shall not be effected by the subsistence of arbitration proceedings.

GENERAL CONDITIONS OF CONTRACT

1. PACKING:

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. SUBCONTRACTS

3.1 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.

4. DELAYS IN THE SUPPLIER'S PERFORMANCE

4.1 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.

4.2 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's. The Bidder shall also adhere to professional implementation and support services during the execution of the project. The PEDA may carry out benchmarking of sample equipment's 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 PEDA and shall, at all times, support and safeguard the PEDAs legitimate interests in any dealings with the third party.

5. PENALTY FOR DELAYED PERFORMANCE (GOODS AND SERVICES)

5.1 Failure to complete work order in time shall attract penalty @1% 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 PEDA.

5.2 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 PEDA. The decision in this regard shall be given by Chief Executive, PEDA.

6. INSPECTION AND TESTS AND APPROVAL:

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

6.1 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.

6.2 Manufacturer will provide suitable facilities at their works/ inspection site for carrying out various performance tests on the equipment

6.3 The purchaser shall have the right at all reasonable time to inspect the stage manufacturing at the supplier's premises.

6.4 Supplier's drawings shall be duly approved by the purchaser and deviation from these drawings will not be allowed.

6.5 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.

6.6 Before the goods and equipment are taken over by the purchaser, the supplier shall supply operation and maintenance manuals 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.

6.7 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 purchasers minimum two engineers. 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.

6.8 In case of indigenous equipment/goods inspection shall be carried out at the works of manufacturer by the purchasers engineer and the costs for such inspection including to & fro airfare, stay, boarding & lodging shall be borne by the supplier.

6.9 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.

6.10 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.

7. ACCEPTANCE CERTIFICATES:

7.1 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 **(ANNEXURE-H)** 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.

7.2 The training shall be conducted on the dates mutually agreed upon and within two months from the date of acceptance of supply.

8. SPARE PARTS:

Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares such as Cable lugs, Nut & bolts, Screws, Switches, fuses, indicating lamps & blocking diodes lights/bulbs, spare modules, etc. Other mandatory spare parts & components shall be supplied as promptly as possible but, in any case within two months of the draw down on the spares inventories at the plant site during O&M period. One set of critical spares like PLC cards, IGBT driver cards, surge protective devices etc. shall be kept as minimum inventory level for the PCUs.

9. MAINTENANCE SERVICE

9.1 The SPV Power Plants will be maintained for five years and the supplier shall provide the AMC during the 5 years maintenance period and the supplier shall train the manpower of user agency to operate the plants themselves. The repairs of the entire system including supply of spares etc. for 60 months will be done by the supplier during the AMC period at its own cost.

9.2 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's maintenance engineers to report to the installations after a request call/telegram/fax is made or letter is written) shall not exceed 48 hours

9.3 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.

9.4 During maintenance period of five years of the power plant, if there is any loss or damage or non-functional of any component/ equipment's of the power plant due to miss management/ mishandling or due to any other reasons (relates with maintenance) what so ever, the supplier/ firm shall be responsible for immediately replacement/ rectification. The default or damaged component/ components shall have to be replaced by the supplier with new one without any extra cost.

9.5 The company will also be responsible to maintain the charge level/ VPC of battery bank upto the required level to fed the load as shown in schematic diagram. An emergency AC input for battery charging facility in worst weather conditions has been provided in the design of Power Conditioning Unit.

9.6 Cleaning of the SPV Modules is also part of the maintenance.

9.7 In case of battery bank during the applicable warranty of 5 years, in case of battery bank becomes defective due to any reason or improper charging, discharging, poor Maintenance services, battery bank will be required to be replaced by the supplier free of cost with new battery bank of the same capacity and make

9.8 **Penalty for non-performance maintenance services:**

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

10. 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.

11. 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.

12. 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.

13. TRANSPORTATION:

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

14. 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 commissioning date will be taken from the issuance of acceptance certificate as mentioned in clause 8 of section III. The faulty / defective / non-functional SPV Panels, PCU, battery and other components/ equipment's shall have to be repaired by the supplier with new one without any extra cost during the warranty period.

15. TAXES AND DUTIES:

15.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed inside or / and outside the purchaser's country.

15.2 A local supplier shall be entirely responsible for all taxes, duties license fees etc. incurred until delivery and commissioning of the contracted goods to the purchaser. All taxes payable as per Government Income tax and 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.

16. INCOME/ CORPORATE TAXES IN INDIA:

16.1 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.

16.2 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 inforce. 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.

16.3 The supplier's 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/ inforce, and the supplier shall perform such duties in regard to such deductions thereof as may be imposed on him by such laws and regulations.

17. COMPLETENESS:

The execution of the project is on turnkey basis and the contractor shall be responsible for providing all the necessary civil works, equipment's, 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.

18. CONSIGNEE:

The contract (self) shall consignee Joint inspection/ Verification will be made by representatives of the contractor and PEDA after receipt of material before payment under clause 3 of section-II is released.

19. DELIVERY AND COMMISSIONING SCHEDULE:

The site survey, engineering, design, supply order and commissioning along with associated civil works would be completed as indicated below:

Sr. No.	**Description**	**Time Required**
1.	Award of contract	Say X date
2.	Signing of Contract Agreement & submission of Performance Guarantee	X + 7 days
3.	Submission of Bank Guarantee for release of Advance amount and submission of PERT Chart	X + 10 days
4.	Submission of site survey, engineering & design documents for approval of PEDA	X + 40 days
5.	Activities like inspection by PEDA, supply of material and commencement of civil works at site and other activities	X + 60 days
6.	Installation and Complete commissioning	X+ 90 days

NAME OF THE SITES/ VILLAGES

Sr No.	Name of the Site/Village	Capacity of the Plant	No. of SPV Power Plants	No. of Solar Street Lights
1	Village Mehtot, Block Chamkaur Sahib, Distt. Ropar	5 KWp (On Grid Solar Power Plant under Net Metering)	01	50
2	Village Soonk, Block Majri, Distt. SAS Nagar	5 KWp (Off-Grid Solar Power Plant)	01	50
3	Village Swara, Block Mohali, Distt. SAS Nagar	1 KWp (Off- Grid Solar Power Plant)	05	50

BIDDERS MUST VISIT THE SITE BEFORE QUOTING THE RATES OTHERWISE IT WILL BE ASSUMED THAT THE PARTY HAS ALEADY VISITED THE SITE BEFORE QUOTING THE TENDER. AN UNDERTAKING BE FURNISHED IN ACCORDANCE WITH ANNEXURE-I.

General Description

The power plant shall provide a reliable and independent power supply to the critical AC loads for street lights.

1. SOLAR PHOTOVOLTAIC MODULES (MULTI CRYSTALLINE)

1.1 The total Solar PV minimum array capacity should not be less than 5 KWp of 250 Wp or above capacity. Module capacity less than minimum 250 Wp should not be supplied. The Photovoltaic modules must be tested and certified by an independent testing laboratory that is accredited in accordance with ISO Guide 25. **The module type must be qualified as per IEC 61215 (Second edition) or IEEE 1262 or CEC 503 for Multi Crystalline silicon**. Make of SPV Module shall be freezed during technical evaluation based on the offer of bidder. "**only indigenously manufactured PV modules will be used in projects."**

1.2 The PV module shall perform satisfactorily in humidity up to 100% with temperature between-1 deg. C to +55 deg C and with stand wind dust upto 200 km/h from back side of the panel. Photo / electrical conversion efficiency of SPV module shall be greater than 14%. Since the modules would be used in a high voltage circuit, the high voltage insulation test shall be carried out on each module and a test certificate to that effect provided.

1.3 The module efficiency should not be less than 14 %.

1.4 Other general requirement for the PV modules and subsystems shall be the following:

(a) Raw materials and technology employed in the module production processes shall not be considered relevant so long as the given specifications are satisfied.

(b) The rated output power of any supplied module shall not vary more than 3(three) percent from the average power rating of all modules.

(c) The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary more than 3 (three) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

(d) Except where specified, the front module surface shall consist of impact resistant, low-iron and high-transmission toughened glass.

(e) The module frame, if any, shall be made of a corrosion-resistant material which shall be electrolytically compatible with the structural material used for mounting the modules.

(f) The module shall be provided with a junction box with provision of external screw terminal connection and with arrangement for provision for by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points.

1.5 Identification and Traceability

Each PV module used in any solar power project must use a RF identification tag. The following

information must be mentioned in the RFID used on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.)

a) Name of the Manufacturer of PV module
b) Name of the manufacturer of Solar Cells.
c) Month and year of the manufacture (separately for solar cells and module).
d) Country of origin (separately for solar cells and module).
e) I-V curve for the module.
f) Peak wattage, Im, Vm and FF for the module.
g) Unique serial no and model no of the module.
h) Date and year of obtaining IEC PV module qualification certificate.
i) Name of test lab issuing IEC certificate

Other relevant information on traceability of solar cells and module as per ISO 9000 series.

2. ARRAY STRUCTURE

The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to the following:

- Determination of true south at the site;
- Array tilt angle to the horizontal, with permitted tolerance;
- Details with drawings for fixing the modules;
- Details with drawings of fixing the junction/terminal boxes;
- Interconnection details inside the junction/terminal boxes;
- Structure installation details and drawings;
- Electrical grounding (earthing);
- Inter-panel/Inter-row distances with allowed tolerances; and
- Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof properly. The portion of array structure if any lying within the column shall be of Hot dip galvanized mild steel extruded section of superior quality. All nuts and bolts shall be of very good quality stainless steel. Detailed design and Drawing of the module mounting structures shall have to submit to PEDA for acceptance before execution of work. Self-drilling fasteners with SS and rubber washers should be provided to fix SPV panels. Silicon sealant around the screw should also be provided. Strict care should be taken during execution to avoid any damage to the roof surface of building and to ensure no leakage should occur.

i) Hot dip galvanized MS extruded frame structures with adequate strength and in accordance with relevant BIS standards shall be used with proof that the design of the structure can withstand the wind speed of minimum 200 km per hour.
ii) Structures shall be supplied complete with all members to be compatible for allowing easy installation at the rooftop site.
iii) Each structure should have angle of inclination as per the site conditions to take maximum insolation.
iv) Each panel frame structure be so fabricated as to be fixed on the rooftop column/wall structures. The structure should be capable of withstanding a wind load of 200 km/ hr after grouting & installation.
v) The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. If prior civil work or support platform is absolutely essential to install the structures, the supplier shall clearly and unambiguously communicate such requirements along with their specifications in the bid. Detailed engineering d drawings and instructions for such prior civil work shall be carried out prior to the supply of Goods.
vi) The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop columns properly.

vii) **No damage in any way should be caused to the roof of the building while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder. To avoid any problem the system of fixing of panel structure shall be got approved.**

3. POWER CONDITIONING UNIT

The power conditioner unit should convert DC power produced by SPV modules, in to AC power.

- 5 KW On Gird Single Phase Output, Efficiency- minimum 92%
- 5 KW Off Grid Hybrid Single Phase output, Efficiency- minimum 88%
- 1 KW X 5 Nos. Off Grid Hybrid Single Phase output, Efficiency- minimum 86%
- Frequency - 50 Hz
- Waveform and regulation - Pure sinewave, 220V ± 2%

SALIENT FEATURES & BRIEF TECHNICAL SPECIFICATIONS:

- PCU should operate in both modes standalone/ grid interactive & should have provision for taking DC input energy from Solar PV & charging of battery bank & also import of AC power from Grid during less energy from Solar PV with supply of power from meeting dedicated loads.
- High Efficiency Bi-Directional inverter systems for optimized power conversion at all times.
- Fully Automatic Operation with no break in supply during the transitions from one mode to another mode.
- LCD Display and keypad for system control, monitoring, instantaneous data, event logs, data logs and changing set points.
- **LCD display should provide voltage, current, load Kwh, KVA, Grid Kwh consumption, instant load, total battery voltage, charging & discharging current, solar insulation in W/sq.mtr.**
- Automatic starting, transfer and no-break transfer to an optional Generator for extended grid failure/ SPV source failure.
- Integrated MPPT Solar Charge Controller.
- Over current, battery over charge protection, PV Reverse polarity, reverse current flow, High temperature protection should be provided.
- Built for harsh working environment.
- For ease of installation Maintenance, safety the Power Condition Unit and DC distribution unit (if required) AC distribution unit, change over unit, AC energy meter for PCU Output to be integrated into a single self-standing/ wall mounting enclosure having AC & DC measuring, control & protection system. The supplier will submit the design details of this enclosure to PEDA for approval.
- The Power Condition Unit/ inverters should comply with applicable IEC 61683/ IS 61683 for efficiency measurement and environmental tests as IEC 60068-2 (1,2,14,30)/ equivalent BIS std.
- The charge controller/ MPPT Units should qualify IEC 62093 and IEC 60068-2 (1,2,14,30)/ equivalent BIS std. The junction boxes/ enclosures should IP 65 (for outdoor)/ IP54 (indoor) are as per IEC 529 standard.
- Automatically restart after overload triggered shutdown.
- Surge Protection Device (SPD) on AC and DC side.
- Energy source: SPV and Grid power.
- The PCU's should be tested from the MNRE approved test centers/ NABL/ BIS accredited testing-calibration laboratories. In case of imported power conditioning units, these should be approved by international test laboratories.

3.1 Electrical safety, earthing and protection.

a) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.

b) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

c) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and store its data in its inbuilt system. Also, an indicate in this regard is to be provided on front panel.

d) Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

e) Fast acting semiconductor type current limiting fuses at the main bus-bar to protect from the load side short circuiting.

3.2 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

3.2 The PCU shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with WEC 69042.

3.3 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years design life of the unit.

3.4 The PCU enclosure shall be weatherproof and capable of surviving ***climatic changes and should keep the PCU*** intact under all conditions in the room where it will be housed. ***The PCU shall be located indoor and should be floor mounted***. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.

3.5 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

3.6 All doors, covers, panels and cable exist shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm.

3.7 The design and fabrication of the PCU the site temperature (0^{O} to 55^{O} C), incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.

3.8 FACTORY TESTING:

a) Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.

b) Operation of startup, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.

c) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.

d) A factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested qualified and warranted.

Factory testing of the PCU should be carried out and witnessed by the Purchaser's Engineers at the manufacturer's premises.

4. CODES AND STANDARDS

The quality of equipment supplied shall be controlled to meet the guidelines for engineering design included in the standards and codes listed in the relevant ISI and other standards, such as:

IEEE 928 Recommended Criteria for Terrestrial PV Power Systems.

IEEE 929 Recommended Practice for Utility Interface of Residential and Intermediate PV Systems.

IEEE 519 Guide for Harmonic Control and Reactive Compensation of Static Power Controllers.

National Electrical NEPA 70-(USA) or equivalent national standard.

National Electrical Safety Code ANSI C2- (USA) or equivalent national standard.
JRC Specification 503 (Version 2.2 March 1991) or JPL Block V standard for PV modules.
The PCU should confirm to IEC 61683 for efficiency measurement and IEC 600682 for environmental testing MPPT should confirm to design qualification, IEC 62093.

5. METERING

i) Energy Output: Digital Energy Meters to log the actual value of Energy supplied to load shall have to be provided.

ii) One common portable data manager system to be provided for SPV Power Plants for day to day data management to be used by service engineer. All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values. The following parameters should be accessible via the operating interface display.
AC Voltage
AC Output current
Output Power
DC Input Voltage
DC Input Current
Time Active
Time disabled
Time Idle
Temperatures I
Inverter Status
Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage, Over voltage delay, Under voltage delay over frequency, Ground fault delay, PV starting delay, PV stopping delay).

NET METERING: As specified by PSPCL**.**

6. LIGHTNING PROTECTION

There shall be the required number of suitable lightning arrestors installed in the array area. Lightning protection shall be provided by the use of metal oxide varistors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act

7. EARTHING PROTECTION

Each array structure of the PV yard should be grounded properly as per IS:3043-1987. In addition, the lighting arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be 19thoroughly grounded in accordance with Indian electricity Act. / IE Rules. Earth Resistance should be tested in presence of the representative of PEDA after earthing by calibrated earth tester. PCU ACDB and DCDB should also be earthed properly.

8. DANGER BOARDS

Danger boards should be provided as and where necessary as per IE Act. / IE rules as amended up to date.

9. DC Distribution Board

DC Distribution panel to receive the DC output from the array field with analog measurement panel for voltage, current from different MJBs so as to check any failure in the array field. It shall have MCCBs of suitable rating for connection and disconnection of array sections. DCDB shall have sheet from enclosure of dust & vermin proof.

10. COMMON AC DISTRIBUTION PANEL BOARD

10.1 AC Distribution Section in PCU

This section is to be housed in PCU for cabinet duly separated from the PCU section. Both the AC outputs inverters to be fed to this section. These feeders also have auto functioning in coordination with auto functioning of inverter for a pre specific period of time through timer etc.

Local indication for on/ Off status and trip status through LEDs as approved by PEDA are required to be incorporated in it. Complete schematic & GA drawings of PCU cabinet will be approved by PEDA.

10.2 AC Distribution System for Utility Building: Local Distribution Panel:

For output, a localized power control panels are required to be provided. It will consist of mains on/ off through MCB/ MCCB connectors of suitable capacity, system for overloading alarm for preset time and then tripping. Distribution sockets for computer and switches for other loads required to be provided. Arranging for power distribution for lights and fans is also required to be incorporated in it. These panels will operate on mains inverter AC. Auto change over from main to inverter if inverter power available or vice versa is required to be incorporated in this panel. Design including GA will be approved by PEDA.

Local indication for inverter power, mains AC Power, overloading etc. as per company's standards/ as approved by PEDA to be provided.

Scope of work includes modification in Utility building wiring for putting fan & light loads on inverter supply.

11. CABLES:

11.1 Cabling in the yard and control room: Cabling in the yard shall be carried out as per IE Rules. Cabling inside control room and array area should be in cable pipes with proper water/moisture protection sealing. All other cabling above ground should be suitably mounted on cable trays with proper covers. For underground cables, cable trenches should be provided covered with RCC slabs.

11.2 Wires: Only copper wires of appropriate size and of reputed make shall have to be used.

11.3 Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.

11.4 Cable Marking: All cable/wires are to be marked with proper manner by good quality ferule or by other means so that the cable can be easily identified.

11.5 Cable requirement:

a) 2C * 2.5 Sq. mm PVC insulated Cu cable

b) 2C * 4 Sq. mm PVC insulated Cu cable

c) 2C * 10 Sq. mm PVC insulated Cu cable

d) 2C* 25 Sq. mm PVC insulated Cu cable

Distribution Cable

(i) 2C * 10 sq. mm. Armoured cable (Underground) or 2C * 10 Sq.mm PVC insulated cable with GI 10 Gauge supporting wire.

All the cables required for the plant will be provided by the manufacturer. Any change in cabling sizes if desired by the bidder/supplier be got approved after citing appropriate reasons. All cable schedules/layout drawings have to be got approved from the purchaser prior to installation.

11.6

Multi Strand, Annealed high conductivity copper conductor

PVC type 'A' pressure extruded insulation

Overall PVC insulation for UV protection

Armoured cable for underground laying

All cables shall conform to (IS 1554) Part 1 of 1988 and shall be of 650V/1.1KV grade as per requirement.

12. Array Junction Box, Main Junction Boxes

- The junction boxes are to be provided in the PV yard for termination of connecting cables from array to Main JB & Main JB to Sequential Energy controller. The Junction Boxes shall be made of FRP/ aluminum with full dust, water & vermin proof arrangement of make TYCO/ HENSEL. All wires/cables must be terminated through cable lugs. The J. Bs shall be such that input & output termination can be made through suitable cable glands.
- Made of GFRP or cast aluminum.
- Copper bus bars/terminal blocks housed in the junction box with suitable termination threads
- Conforming to IP65 standards
- Hinged door with EPDM rubber gasket to prevent water entry.
- Single compression cable glands.
- Provision of earthing
- SPDs provided within the box to protect against lightning
- Suitably rated DC MCB provided to protect against overload, short-circuit.

13. BATTERY BANK:

The battery bank will provide the backup/regular power as per design engineering and as per IEC 61427/ IS 1651/ IS 13369/ IS 15549 standard/ codes.

Storage capacity:

For 5 KWp Off Grid Power Plant: 96V, 300Ah or 120V, 250Ah at C/10

For 1 KWp Off Grid Power Plant: 24V, 200Ah at C/10

Type: **Tubular Lead Acid Battery (Make Exide/ Amara raja)**

The batteries shall be designed for operating in ambient temperature of Site. The batteries shall consist of individual cells, which can be carried separately with ease while transporting and Battery Bank Stand, standard tools & tackles as per manufacture's recommendations.

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

14. GI POLE & CIVIL WORK AND LAYING OF DISTRIBUTION CABLE

The pole should be made of Hot Dipped (70 Micron) GI (B Class) with a height of 4 meters above the ground level**,** after one-meter grouting and final installed (As per PWD B&R specifications). The pole should have the provision to hold the weather proof lamp housing. Total length of pole will be 5 meters with 65 mm outer dia. The laying of distribution cable should be as per PWD B&R specifications.

15. LED LIGHTS:

White light Emitting Diode (W-LED) make CREE, NACHIA, PHILIPS. White colour (Colour temperature 5500^0-6500^0 K) minimum 15 LUX when measured at the periphery of 4-meter diameter from a height of 4 meter. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred. The lamp housing should be water proof and should be painted with a corrosion resistant paint (IP-65). The metallic arm for holding the light assembly should be extended at least 1.5 meters from the pole and set at a suitable angle to maximize uniform illumination of desired level over the specified area.

16. TOOLS & TACKLES AND SPARES:

After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the contractor for maintenance purpose. List of tools and tackles to be supplied by the contractor for approval of specifications and make from PEDA.

A list of requisite spares in case of PCU comprising of a set of control logic cards, IGBT driver cards etc, Junction Boxes, Fuses, MCCBs etc. along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the

plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished**.**

Insulation mat in front of plant controlling unit, Inverter are to be provided. Suitable cooling arrangement in the control room for cooling of the PCU are to be arranged.

17. DRAWINGS & MANUALS:

3 copies of Engineering, electrical drawings, layout details of distribution line and installation and O&M manuals are to be supplied.

Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment. Approved ISI and reputed makes of equipment be used.

For complete electro-mechanical works, distribution line bidders shall supply complete design, details and drawings for approval to PEDA before progressing with the installation work.

SCOPE OF WARRANTY OF POWER PLANT

Scope of warranty for SPV power plant for a period of 5 years from date of commissioning

Warranty of the SPV Power Plant for a period of 5 years after actual date of commissioning along with supply of spare and consumable items if any and when necessary. The warranty of SPV Power Plant should have 5 years and SPV Module 25 years.

The break down maintenance of the entire system including supply of necessary spare parts, if any, are already under the coverage of warranty clause of the General Terms & condition and special terms & condition from date of commissioning of power plant.

1. As the company is required to provide spares and consumables items under O&M period for 5 years.

2. MAINTENANCE INSTRUCTIONS:

The successful bidder shall furnish 4 copies of operating and maintenance instructions in English for approval and supply 5 sets of the approved manuals of instructions at the time of inspection and taking over of the equipment. These manuals shall properly bound in book form and contain all information, description of equipment, diagram etc., necessary to enable the customer to operate and maintain the whole scheme.

- Replacement & repair of damaged parts shall be carried out immediately during the warranted period so as to ensure at least 95% uptime.
- The supplier shall ensure replacement of worn out parts and components including battery bank during the warranty period for which purpose the supplier shall carry and maintain minimum inventory levels of spares at the plant and at its works.
- In case of delay in repair & maintenance and non-observance of purchaser's warranty schedules, the purchaser shall have the right to impose any penalties including forfeiture of performance security.
- Round the clock maintenance (routine, preventive, breakdown and capital maintenance) of complete plant and equipment's including Battery banks, SPV Array, PCU, shall be carried out by the supplier in accordance with manufacturer's instructions, manufacturers procedures, relevant safety codes, Indian Electricity Act, Indian Electricity Rules, purchaser's instructions, prudent utility practices etc.

3. ROUTINE, PREVENTIVE, BREAKDOWN:

- **Routine and preventive maintenance** shall include such checks and maintenance activities round the clock on hourly, shift wise, daily, weekly, fortnightly, monthly, quarterly, half yearly, and yearly basis which are required to be carried out on all the components of the power plant to minimize breakdowns and to ensure smooth and trouble free running of the power plant. The supplier shall be responsible to carry out routine and preventive maintenance and replacement of each and every component / equipment of the power plant and he shall provide all labour, material, consumables etc. for routine and preventive maintenance at his own cost.

  Breakdown maintenance shall mean the maintenance activity including repairs and replacement of any component or equipment of the power plant which is not covered by routine and preventive maintenance and which is required to be carried out as a result of sudden failure/breakdown of that particular component or equipment while the plant is running. The supplier shall be responsible to carry out breakdown maintenance of each and every component of the power plant and he shall provide the required manpower, materials, consumables, components or equipment etc. for breakdown maintenance at his own cost irrespective of the reasons of the breakdown/failure.

Capital maintenance shall mean the major overhaul of any component or equipment of the power plant which is not covered by routine, preventive and breakdown maintenance which may become necessary on account of excessive wear & tear, aging, which needs repair/replacement. The capital maintenance of power plant and all civil structures shall normally be planned to be carried out on an annual basis. For this purpose, a joint inspection by the supplier and purchaser shall be carried out of all the major components of the power plant, about two months in advance of the annual maintenance period, in order to ascertain as to which components of the power plant require capital maintenance. In this regard the decision of the purchaser will be final and binding. However, if the condition of any plant and component warrants its capital maintenance at any other time, a joint inspection of the purchaser and supplier shall be carried out immediately on occurrence of such situation and capital maintenance shall be carried out by arranging the shutdown of the plant/part of the plant, if required, in consultation with concerned authorities. The decision of the purchaser shall be final and binding.

CHECK LIST FOR CONTRACTORS FOR SUBMISSION OF TENDER

- **The bidder should upload certificate from CA mentioning financial turnover of last three years as per ANNEXURE-F along with the technical bid. Supporting documents i.e. complete balance sheet and copy of Audited Financial statement with profit and loss account for the last three years be also enclosed**.
- **Details of Equipment Service Centre /After Sale Service Centre with telephone facility**.
- **Proof of execution of similar nature of work with copy of certificates of satisfactory completion and performance from an authority for which the work was executed along with date of completion**.
- **The firm should also upload an Undertaking on its letterhead as per ANNEXURE-G that all the terms and conditions of the DNIT are acceptable to the Bidder**.
- **Notarized affidavit on Indian non judicial stamp paper of appropriate value that bidder/ firm has never been blacklisted**.
- **Site visit undertaking as per ANNEXURE-B.**

ANNEXURE-A

NAME OF THE SITES/ VILLAGES

Sr No.	Name of the Site/Village	Capacity of the Plant	No. of SPV Power Plants	No. of Solar Street Lights
1	Village Mehtot, Block Chamkaur Sahib, Distt. Ropar	5 KWp (On Grid Solar Power Plant under Net Metering)	01	50
2	Village Soonk, Block Majri, Distt. SAS Nagar	5 KWp (Off-Grid Solar Power Plant)	01	50
3	Village Swara, Block Mohali, Distt. SAS Nagar	1 KWp (Off- Grid Solar Power Plant)	05	50

1. The 5KWp SPV power plant shall be installed at common place of Village Mehtot, Block Chamkaur Sahib, Distt. Ropar under Net metering. The successful bidder shall also provide the energy meter LT/ Schnider and also complete all necessary arrangement.
2. The 5KWp SPV power plant shall be installed at common place of Village Soonk, Block Majri, Distt. SAS Nagar. The successful bidder shall also provide the complete all necessary arrangement.
3. 5 nos. SPV Power Plants of 1 KWp each shall be installed at common place of Village Swara, Block Mohali, Distt. SAS Nagar along with 7watt 220 Volt AC LED based 10 Solar Street Lights shall be installed through AC distribution cable.

ANNEXURE-B

E-Tender No: PEDA/2019-20/13

SITE VISIT UNDERTAKING

(On Letter Head of the Company)

We _____ hereby submit that we/ authorized representatives of the company have visited the all sites covered under the contract of Pilot Project for Installation of LED based Solar Street Lights powered by centralized On-Grid & Off-Grid Solar Power Plants in three villages of state of Punjab. (As per detail at ANNEXURE-A) on dated _____ and the rates are quoted as per site requirement.

Name of the signatory

Date:

Name of the Company

ANNEXURE-C

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 the .....day of.....20…....

Signature and Seal of Guarantors
.....
Date.....20…….....
.....
Address: .....
.....

ANNEXURE-D

THE ILLUSTRATIVE SCHEDULE OF REQUIREMENTS IS IN ACCORDANCE WITH THE SPECIFICATIONS CONTAINED IN THIS DOCUMENT FOR 5 KWP ON GRID SPV POWER PLANT UNDER NET METERING

Sr No.	Description	Capacity	Quantity	Make/ Requirement
1	SPV Module	5 KWp	1 Set	Indigenous make as per specs of MNRE, GOI
2	SPV Module mounting Structure	5 KWp	1 Set	Hot dipped Galvanized
3	PCU (Hybrid)	5 KW	1 Set	SMA/ KAKO/ Fronius/ Schneider
4	LED Luminary	7-Watt 220 Volt AC	50 Nos.	Nachia/ Cree/ Philips
5	Hot dipped GI Pole	5 Meter, B Class, ISI Mark	50 Nos.	OD 75 mm with Arm
6	Cable	**A)** 2C *2.5 Sq.mm PVC insulated Cu cable **B)** 2C *4 Sq. mm PVC insulated Cu cable **C)** 2C* 6 Sq.mm PVC insulated Cu cable **D)** 2C *10 Sq. mm Aluminium armoured cable	--	Finolex/ Havells/ CCI or BIS marked. As per site requirement.
7	Laying of distribution Cable	Underground/ Over head	--	As per site requirement
8	AC / DC distribution Unit (ACDB & DCDB)	As per specification including main change over	1 Set	As per site requirement
9	Array Junction Box	As per site requirement	1 No.	
10	Main Junction Box	As per site requirement	1 No.	
11	Lighting arrestor	Complete set as per specification/ requirement	1 No.	
12	Earthing	Complete set as per specification/ requirement	1 No.	
13	Spares & Tools	As per list	1 Set	
14	Drawing & Manual	Engineering, Electrical Drawings and OEM manual	3 Sets	
15	Civil work	All civil work related to grouting of the structure required for the plant will be supplier's level	--	As per site requirement
16	Bi Directional Meter	Single Phase	01 No.	As specified by PSPCL and make LT/ Schneider
17	Any other equipment required to complete the installation			

THE ILLUSTRATIVE SCHEDULE OF REQUIREMENTS IS IN ACCORDANCE WITH THE SPECIFICATIONS CONTAINED IN THIS DOCUMENT FOR 5 KWP OFF GRID SPV POWER PLANT

Sr No.	Description	Capacity	Quantity	Make/ Requirement
1	SPV Module	5 KWp	1 Set	Indigenous make as per specs of MNRE, GOI
2	SPV Module mounting Structure	5 KWp	1 Set	Hot dipped Galvanized
3	PCU (Hybrid)	5 KW	1 Set	Reputed make as per latest specifications of MNRE, GOI
4	Battery Bank with stand	96V, 300Ah or 120V, 250Ah with Tubular Lead Acid battery	1 Set	Exide/ Amara raja
5	LED Luminary	7-Watt 220 Volt AC	50 Nos.	Nachia/ Cree/ Philips
6	Hot dipped GI Pole	5 Meter, B Class, ISI Mark	50 Nos.	OD 75 mm with Arm
7	Cable	**A)** 2C *2.5 Sq.mm PVC insulated Cu cable **B)** 2C *4 Sq. mm PVC insulated Cu cable **C)** 2C* 6 Sq.mm PVC insulated Cu cable **D)**2C*10 Sq.mm Aluminium armoured cable	--	Finolex/ Havells/ CCI or BIS marked. As per site requirement.
8	Laying of distribution Cable	Underground/ Over head	--	As per site requirement
9	AC / DC distribution Unit (ACDB & DCDB)	As per specification including main change over	1 Set	As per site requirement
10	Array Junction Box	As per site requirement	1 No.	
11	Main Junction Box	As per site requirement	1 No.	
12	Lighting arrestor	Complete set as per specification/ requirement	1 No.	
13	Earthing	Complete set as per specification/ requirement	1 No.	
14	Spares & Tools	As per list	1 Set	
15	Drawing & Manual	Engineering, Electrical Drawings and OEM manual	3 Sets	
16	Civil work	All civil work related to grouting of the structure required for the plant will be supplier's level	--	As per site requirement
17	Any other equipment required to complete the installation			

THE ILLUSTRATIVE SCHEDULE OF REQUIREMENTS IS IN ACCORDANCE WITH THE SPECIFICATIONS CONTAINED IN THIS DOCUMENT FOR 1 KWP X 5 Nos. OFF GRID SPV POWER PLANT

Sr No.	Description	Capacity	Quantity	Make/ Requirement
1	SPV Module	1 KWp	5 Sets	Indigenous make as per specs of MNRE, GOI
2	SPV Module mounting Structure	1 KWp	5 Sets	Hot dipped Galvanized
3	PCU (Hybrid)	1 KW	5 Sets	Reputed make as per latest specifications of MNRE, GOI
4	Battery Bank with stand	24V/ 200 AH with Tubular Lead Acid battery	5 Sets	Exide/ Amara raja
5	LED Luminary	7-Watt 220 Volt AC	5 Nos.	Nachia/ Cree/ Philips
6	GI Pole	5 Meter, B Class, ISI Mark	5 Nos.	OD 75 mm with Arm
7	Cable	**A)** 2C *2.5 Sq.mm PVC insulated Cu cable **B)** 2C *4 Sq. mm PVC insulated Cu cable **C)** 2C* 6 Sq.mm PVC insulated Cu cable **D)** 2C *10 Sq. mm Aluminium armoured cable	As per site requirement	Finolex/ Havells/ CCI or BIS marked. As per site requirement.
8	Laying of distribution Cable	Underground/ Over head	As per site requirement	As per site requirement
9	AC / DC distribution Unit (ACDB & DCDB)	As per specification including main change over	5 Sets	As per site requirement
10	Array Junction Box	As per site requirement	5 Nos.	
11	Main Junction Box	As per site requirement	5 Nos.	
12	Lighting arrestor	Complete set as per specification/ requirement	5 Nos.	
13	Earthing	Complete set as per specification/ requirement	5 Nos.	
14	Spares & Tools	As per list	5 Sets	
15	Drawing & Manual	Engineering, Electrical Drawings and OEM manual	5 Sets	
16	Civil work	All civil work related to grouting of the structure required for the plant will be supplier's level	--	As per site requirement
17	Any other equipment required to complete the installation			

NOTE: -

- Providing training to engineers and site staff for operating, Maintenance and trouble shooting skills

- The requirements for the plant and machinery are indicated in the schedule of requirements. The items indicated in the schedules are only indicative and the suppliers are required to include and quote for any other item left out in the schedule. 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, before supply.
- Party must visit the sites before quoting the rates otherwise it will be assumed that the party has already visited the site before quoting the e-tender. The party may contact with PEDA for site visit purpose.

ANNEXURE-E

TURNOVER RECORD FORM
TO BE CERTIFIED BY CHARTERED ACCOUNTANT

Name of Company: -

Annual turnover data for past three years

Sr. No.	Year	Turnover (Rs. In Lacs)	Profit	Loss
1.	2016-17			
2.	2017-18			
3.	2018-19			

Signature with seal of the company

Signature with seal of the Chartered Accountant

ANNEXURE-F

(ON THE LETTER HEAD OF THE BIDDER)
CERTIFICATE OF ACCEPTANCE FROM THE BIDDER.

I, the bidder _____ unconditionally and unequivocally agree to / accept the terms and conditions of DNIT.

Name & Seal of the Authorized Person of the Company

ANNEXURE-G

SCHEDULE OF TECHNICAL SPECIFICATIONS AND MAKE FOR EQUIPMENT TO BE SUPPLIED TO MAKE THE PLANT FUNCTIONAL (PLEASE PROVIDE VILLAGE WISE DETAILS)

NAME OF VILLAGE …….
DISTRICT……..

Sr. no.	Equipment's Details	Specifications and Make	Quantity
1.			
2.			
3.			
4.			
5.			
6.			
7			

ANNEXURE-H

SERVICE SUPPORT DETAILS

NEAREST SERVICE CENTRE									
Pack No.	Destin-ation	Location							List of models & types of PCs. Serviced in last 2 years
		Phone no.	Telex/ Fax no.	Status of office working days and hours	No. of software engineers	No. of hardware engineers	No. of hardware staff	Value of Min. stock available at all times	

Signature and Seal of the Manufacturer/Bidder