

# ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY

## BHUBANESWAR

### BID DOCUMENT

TENDER CALL NOTICE No.

3127/OREDA

DTD- 08-08-2018

**Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plantat different buildings of Sambalpur University Campus & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla**

<b>Date of Hoisting of the bid document on Website</b>	<b>08-08-2018</b>
<b>Date &amp; time of pre-bid meeting</b>	<b>18-08-2018 at 11:00 AM in OREDA Conference Hall</b>
<b>Date of hoisting of final revised bid document</b>	<b>21-08-2018</b>
<b>Date and time of last submission of online bid document</b>	<b>05-09-2018 up to 01:00 pm</b>
<b>Date and time of last submission of hard copy of bid document</b>	<b>06-09-2018 up to 01:00 pm</b>
<b>Opening of Techno-Commercial bid</b>	<b>06-09-2018 at 03:00 pm</b>
<b>Date of opening of the price bid</b>	<b>To be informed to the technically qualified bidders.</b>

**S-3/59, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR-751010**

**Phone: (0674) 2588260, 2586398, 2580554, Fax:2586368**

**Website: [www.oredaorissa.com](http://www.oredaorissa.com) Email: [ceoreda@oredaorissa.com](mailto:ceoreda@oredaorissa.com)**

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## Disclaimer

Kindly Note:

1. This document is not transferable
2. Though adequate care has been taken for preparation of this document, the bidder shall satisfy himself that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any bidder on the pre bid meeting or within ten days from the date of issue of the bid document, it shall be considered that bid document is complete in all respects and has been received by the bidder.
3. The Odisha Renewable Energy Development Agency (OREDA) reserves the right to modify, amend or supplement this bid document keeping in view the necessity in implementation of the scheme.
4. While the bid document has been prepared in good faith, neither OREDA nor their employees or advisors make any representation, warranty, express or implied or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability and completeness of this bid document, even if any loss or damage is caused by any act or omission on their part.



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### **DETAIL OF NOTICE INVITING TENDER**

ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY invites e-tenders for Design, supply, installation, commissioning and maintenance for a period of 5 years of 250 kW (Aggregate Capacity) off-grid solar PV power plant & 23 Mini Mast Lights at Sambalpur University Campus, Jyoti Vihar, Burla.

<b>Particulars</b>	<b>Earnest Money Deposit (in Rs.)</b>	<b>Tender processing fee Non refundable(in Rs.)</b>	<b>Non refundable Cost of Bid document (in Rs.)</b>
<b>Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings &amp; 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla</b>	<b>3,00,000/-</b>	<b>5900/-</b>	<b>10,500/-</b>

## **1. SCOPE OF WORKS**

The broad scope of the work includes Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, Jyoti Vihar, Burla

### **1.1 DESIGN**

The bidder is required to design the complete system as per the solar PV modules/panels/arrays proposed to be used by them in view of the requirement of power /proposed capacity and provided all details of PCU, Battery Bank, ACDB, DCDB, Protection Equipment etc. to in the form of a design document.

## **1.2 SUPPLY**

- a. Supply of complete systems, including all necessary components, sub-components, spares, tools, tackles etc. as per BOQ and technical specifications given in this tender document.
- b. Supply should also include packing, forwarding, safe storage and handling of all plants and equipments including insurance coverage- all FOR Sambalpur University.

## **1.3 PRE- INSTALLATION OBLIGATIONS**

- a. All structural drawings duly certified by a chartered engineer for their strength, stability and capability to withstand wind velocities up to 200KM/hr must be submitted before proceeding for installation.
- b. Single Line Diagrams for all power plants indicating all wiring details, connectivity details etc. must be submitted.
- c. Critical Technical Documents (as per Annexure A) must be submitted.

## **1.4 INSTALLATION**

- a. Installation of all plants and equipments has to be done as per the design criteria and SLDs.
- b. There should not be any invasion/damage what so ever to the roof top due to setting up of the mounting structure of the solar power plant so that on a later day there is any leakage of rain water, etc. from the roof top.
- c. While cabling the array care must be taken such that no loose cables lie on the rooftops. The roof top should look clean and tidy after installation of the array.
- d. Display boards, danger boards etc. as mentioned in the tender should be prominently fixed in appropriate locations.
- e. As far as possible PCUs & Control Panels should be mounted on the walls of the battery room.
- f. Providing Remote Monitoring Systems in each of the inverters of the solar PV power plants and sharing the RMS protocol as well as log- in ID and pass word of each system with the University Registrar, AD(T), OREDA as well as concerned division of OREDA.
- g. Providing necessary protection devices to protect the power plant from lightening, sudden surges in voltage and current and to ensure safety of the grid to which the plant is connected .
- h. The bidder should also ensure protection of life and property likely to be endangered due to the installed solar power plant.

- i. If the roof top does not have any access such as stairs or Ladder, a proper and safe ladder must be provided to ensure easy access to the roof top mainly for the purpose of maintenance and inspection.
- j. Following completion of installation the bidder is required to submit a work completion report to the Asst. Director, RE Cell, DRDA , Sambalpur under intimation to the Dy. Director (Tech.), Division II, OREDA.

### **1.5 COMMISSIONING & TESTING :**

After completion of installation work the plants have to be tested and commissioned in presence of the Asst. Director, OREDA, RE Cell, DRDA, Sambalpur as well as the designated representative of Sambalpur University.

### **1.6 MAINTENANCE**

- a. To ensure proper maintenance of the installed systems the bidder is required to appoint a technically qualified person at Sambalpur University to look after day-to-day maintenance and upkeep of the plant. Sufficient Spare should also be kept with the service personnel so as to attend to any breakdown forthwith.
- b. The bidder must enter in to an Comprehensive Maintenance Contract for a period of 5 years as per the format given in Annexure K.
- c. The date of commencement of CMC shall be reckoned from the date of commissioning of the system. (LED Bulbs & Tubes are excluded from 5 years CMC)
- d. The bidder is required to submit the monthly generation reports of each power plant in Annexure H.
- e. The bidder is also required to adhere to the preventive maintenance protocol given in Annexure E and submit reports and returns as per the prescribed MIS.
- f. The bidder is required to train at least two designated persons from each of the establishment where RTS systems have been installed in day to day operation, maintenance and upkeep of the system.
- g. The bidder is required to undertake extended maintenance services beyond 5 years on mutually agreed terms and conditions.

## **2 IMPORTANT INFORMATION:**

- a. The bids are to be submitted online only.
- b. Interested bidders may visit OREDA's website [www.oredaorissa.com](http://www.oredaorissa.com) or [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) for details. Tender documents can be viewed free of cost.
- c. Bidders desirous of participating in the tender shall have to pay the tender cost as mentioned in shape of Demand draft only, drawn in favour of Chief Executive, OREDA payable at Bhubaneswar. The tender cost is inclusive of taxes and is non-refundable.

However the tender cost is exempted for Local MSME bidder and NSIC certificate holder.

- d. All participating bidders shall have to deposit non-refundable tender processing fee as mentioned in TENDER SCHEDULE, in e-payment mode only. The processing fee is inclusive of taxes.

***NOTE: For tender processing fee to K.S.E.D.C. Ltd. Bangalore, the bidder can use various modes of e-payment facility available through Tender wizard Portal, i.e. by Credit Card, Debit Card, Net Banking).***

- e. The bidders shall have to scan the Demand Draft / Bank guarantee towards EMD, Tender Cost, Signed copy of unconditional acceptance of all terms and conditions of the tender, Signed copy of Confirmation to Technical Specifications and all other documents as required in the tender and upload the same in the prescribed form in .pdf or .jpg format in addition to sending the originals.
- f. Any clarifications regarding the scope of work and technical features of the project can be had from the undersigned during office hours

**NB:** All subsequent addendum/Corrigendum to the tender shall be hoisted in OREDA's official web site [www.oredaorissa.com](http://www.oredaorissa.com) and [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) only.

### **3 INSTRUCTIONS TO BIDDERS:**

- a. All bidders must be registered under GST.
- b. Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted.
- c. The bidders should furnish the information on all past supplies and satisfactory performance.
- d. The bidder shall submit copies of documents defining the constitution or legal status, place of registration and principal place of business of company or firm or partnership.
- e. The bidder shall furnish a brief write up backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the required systems, equipments within the specified time of completion after meeting all their commitments.
- f. The bidders shall submit their financial standing such as Audited Profit Loss statements, Balance sheets and auditor's reports for 3 years. All accounting statements submitted should be duly audited and accompanied with auditor's note on accounts and accounting standards.
- g. Earnest money as specified in bid should be deposited in the shape of Demand Draft drawn in favour of the Chief Executive, OREDA payable at Bhubaneswar from any nationalized bank or as Bank guarantee (BG).

- h. Bids without E.M.D will not be accepted (EMD is exempted for companies/firms registered under NSIC or as Local MSME.)
- i. Hard copies of the bids received late due to postal delay or otherwise will not be considered.
- j. Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- k. Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.
- l. Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- m. Power of attorney to sign the agreement on behalf of bidders & partnership deed articles, if any, should be enclosed along with original bid documents.
- n. Notice inviting tender, bid documents, prescribed Technical bid, price bid, terms & conditions will form the part of the tender.
- o. Bids will be accepted & will be opened as per information mentioned in the notice-inviting tender. No receipt against submission of bid shall be issued by OREDA.
- p. If due to any reason the due date is declared as a holiday the bid will be opened on next working day at the same time.
- q. All Taxes applicable at the time of supply will be admissible.
- r. In case of supply of any defective material or substandard material, the materials will be rejected & it will be the responsibility of the supplier for taking back & replacing the rejected materials at their own cost. In case of non-lifting of such rejected materials within a reasonable time offered by the office it will have the right to suitably dispose off the same and forfeit the amount.
- s. The supplied materials should strictly comply with the specifications as mentioned in the bid, otherwise the material will be liable for rejection.
- t. Any clarification on the technical specification and commercial terms and conditions may be clarified in writing from OREDA.
- u. Deviation of any commercial terms and condition and technical specification shall not be entertained under no circumstances.
- v. OREDA will not be responsible for any incidental or consequential losses of the firms while execution and till expiry of the period of maintenance.
- w. During the warranty period, MNRE/ State Agencies/ Users reserve the right to cross check the performance of the systems with the minimum performance levels specified in the MNRE specifications.
- x. Chief Executive, OREDA shall award the contract to the successful bidder whose bid shall be qualified after evaluation in terms of the responsiveness and lowest rate determined on the basis price bids.



- y. On award of contract the qualified bidder shall be termed as contractor / supplier / executor /turnkey operator.

#### **4. SUBMISSION OF BIDS**

##### **A. MODE OF SUBMISSION OF BID:-**

- i) The bidder shall submit the bid in Online i.e. at [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) portal. The bidder must ensure that the bids are received in the specified website as per the date and time indicated in the Tender notice.
- ii) The bidders are advised to register their user ID, Password, company ID on website [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) by clicking on hyper link “**Register Me**”.
- iii) The OREDA reserves the right to reject any bid, which is not submitted in electronic mode and according to the instruction, stipulated above.

##### **a) PARTICIPATION IN e-TENDER:-**

##### **ACQUISITION OF DIGITAL SIGNATURE CERTIFICATE**

- i) For all the users it is mandatory to procure the Digital Signatures of **Class III only**.
- ii) All bidders are requested to follow the following steps for registration.

##### **b) REGISTRATION IN TENDER WIZARD PORTAL**

- i) Log in [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) Click “Register”, fill the online registration Form.
- ii) Payment for an amount of Rs. 2300/- shall be made to KSEDCL, Bangalore for vendor registration in tender wizard portal in **e-payment** mode only.
- iii) All bidders are required to pay the tender processing charge of Rs. 5900/- to M/s KSEDCL, Bangalore in tender wizard portal in **e-payment** mode only.
- iv) As soon as the verification is done the e-tender user ID will be enabled/provided.

##### **c) ON-LINE REQUEST FOR e-TENDER DOCUMENTS**

After viewing Tender Notification in [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) if bidder intends to participate in tender, he has to use his e-tendering User ID and Password which has been received after registration and acquisition of DSCs (Digital signature certificate) and to follow the instructions given below.

1. Insert the PKI (which consists of your Digital Signature Certificate) in your System.  
(Note: Make sure that necessary software of PKI has been installed in your system)
2. Click / Double Click to open the Microsoft Internet Explorer  
(This icon will be located on the Desktop of the computer)

3. Go to Start > Programs > Internet Explorer. Type [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) in the address bar, to access the Login Screen.
4. Enter e-tender User Id and Password, click on “Go”.
5. Click on “Click here to login” for selecting the Digital Signature Certificate. Select the Certificate and enter DSC Password. Re-enter the e- Procurement User Id Password.
6. Click “Un Applied” to view / apply for new tenders.
7. Click on Request icon for online request. After making the request, bidder has to pay the requisite tender processing fee (as indicated in tender notice) through e-payment facility only available in the portal. Bidders will receive the Tender Documents which can be checked and downloaded by following the below steps.
  - Click on the “Show form” icon.
  - Tender documents will appear on the screen.
  - Click “Click here to download” to download the documents.

**NOTE: For vendor registration and payment of tender processing fee to KESDCL, the bidder can use various modes of e-payment facility available through Tender wizard Portal, i.e. by Credit Card, Debit Card, Net Banking.**

## ***B. ONLINE SUBMISSION OF BID***

### ***a) SUBMISSION OF EMD AND TENDER COST:***

The bidders shall have to scan the Demand Draft towards EMD and Tender Cost and upload the same in .pdf or .jpg format.

### ***b) SUBMISSION OF TECHNO-COMMERCIAL BIDS:***

- i) The techno-commercial bid sheets in .xls format are to filled up and up-loaded without changing the file name. Submission of incomplete techno commercial bid sheets will be liable for rejection of the bid.
- ii) Scanned copies of all related documents as per the checklist shall be uploaded in .pdf or .jpg format prior to last date and time of receipt of bids as specified in tender Notice.

**\* Each Document must be a separate file and renamed properly.**

**\* Documents to be submitted only as asked for in this Tender. Irrelevant and Extra Documents must not be submitted.**

### ***c) SUBMISSION OF PRICE BIDS:***

- i) The bidder should fill up price schedule in the given bid sheets in .xls format and up-load the same without changing the file name. The bid will be rejected if the schedule of price is submitted in incomplete form.

- ii) After completing all the formalities, Bidders will have to submit the tender as specified in NIT and must take care of all instructions. Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.

**Note:**

- a. The bid sheets (.xls file) shall be uploaded in [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) portal, prior to online closing of the tender. By no other means (except online) price bid shall be accepted for evaluation of tender.
- b. Please note down or take a print of bid control number once it displayed on the screen.
- c. Tender Opening event can be viewed online.

### ***C. DEAD LINE FOR SUBMISSION OF BIDS***

- i) Soft copy of the bid shall be uploaded through the portal [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) on or before the online submission time and date as stipulated in the bidding document.
- ii) DD towards Tender cost, DD/BG towards EMD, tender processing fee acknowledgement & a set of all uploaded documents must be received by OREDA at the address specified not later than the time and date stated in the tender notification.
- iii) In the event of the specified date for the submission of bids being declared a holiday for OREDA, the bids will be received on the next working day as per the time indicated in tender notification.
- iv) OREDA may, at its discretion, extend this deadline for submission of bids by amending the Bidding Documents in accordance with Instruction to Bidders for the reasons specified therein at any time prior to opening of, in which case all rights and obligations of Employer and bidders will thereafter be subject to the deadline as extended.

### ***D. LATE BIDS***

- a. Soft copy of the bid will not be uploaded on the portal after expiry of submission time and the bidder shall not be permitted to submit the same by any other mode. In such case, even if the bidder has submitted the specific documents in hard copy in original (viz., EMD, tender cost & any other document) within the stipulated deadline, its bid shall be considered as late bid. The hard copy submitted [specific documents (viz., EMD, tender cost.)] shall be returned unopened to the bidder.
- b. Hard copy of the EMD in shape of DD if received by OREDA after the last date for submission of the bid the same will be considered as late bid even if the bidder has uploaded the soft copy of the bid within the stipulated deadline.
- c. In such a case, the soft part of the bid uploaded on the portal shall be sent unopened to "Archive" and shall not be considered at all any further.

### ***E. MODIFICATION AND WITHDRAWAL OF BIDS:-***

- a. Bidder may modify or withdraw their bids through the relevant provisions on the portal [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) up to due date and time of submission of bid indicated in tender notification
- b. The Bidders may modify and resubmit their bids as per the provisions given in the portal.
- c. Bidders may withdraw their bids through the relevant provisions of mentioned in the portal.
- d. No bid shall be modified/ withdrawn after the dead line for submission of bids. Withdrawal/modification of bid after the expiry of bid validity shall result forfeiture of Bidder's EMD.

### ***F. SUBMISSION OF HARD COPIES OF THE BIDS AND SEALING AND MARKING:-***

- a. Along with the e-tender, bidders shall also submit hard copies of all uploaded as well as other documents as asked for in the bid document in the form of a single hard bound book properly page numbered and Indexed as per the Checklist of Documents.  
\*No loose/ separate paper or spiral bound documents will be accepted.
- b. The bidders must sign at the bottom of all the pages of the hard bound book including each page of the bid document(which will also form an integral part of the hard bound book) as token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.
- c. Along with the e-tender, bidders must also submit their bids for all items as stated above in the form of a single hard bound book properly page numbered and Indexed. No loose/ separate paper or spiral bound documents will be accepted.

#### **\*Hard copies of the following items should only be submitted to OREDA**

- 1) Demand draft towards cost of bid document
- 2) Copy of acknowledgement of tender processing fee.
- 3) EMD in shape of "Demand Draft/ Bank guarantee"
- 4) Signed copy of "Confirmation to Technical Specifications"
- 5) Signed copy of "Certificate of Unconditional Acceptance of the tender"
- 6) Technical Bid document in hard bound form with each page legibly numbered comprising of the following:
  - a. All Test certificates from MNRE/NABL approved laboratories as prescribed.
  - b. Technical Specifications of all materials to be supplied
  - c. Income Tax return, PAN card and GST Registration certificate
  - d. Bid documents duly signed & sealed on every page as token of unconditional acceptance of all Terms and conditions mentioned in the bid document.

- e. Indignity Certificate
- f. Organizational profile
- g. Balance sheets and profit & loss accounts
- h. Certificate and proof as per qualification criteria
- i. Brochure, literature etc. if any

\*The Hard bound copy must be submitted in OREDA office at S-57, Mancheswar Industrial Estate, Bhubaneswar 751010 on or before the stated date in the manner prescribed elsewhere in the document. Submission of extra/ unrelated documents may be avoided.

**Note:**

\*Filled in price bids/copies of the uploaded price bids must not be submitted in hard form. Submission of the same in hard form will liable the tender for rejection. Price bid to be only filled up in the specified bid sheet and to be uploaded.

***G. TECHNICAL BID:***

The Electronic Form/Template of the bid for the Techno –Commercial bid, as available on the portal, shall be duly filled and scanned copies of documents in support of meeting the minimum qualifying requirement of the tender shall be given as attachments.

***H. FINANCIAL BID:***

- a. The Electronic Form/Template of the Price bid (as available on the portal) shall be duly filled in.
- b. Prices quoted must be firm and fixed. No price variation / escalation shall be allowed during process of completion of the project.
- c. Any condition in regards to financial aspects, payments, terms of rebate etc beyond the prescribed financial terms of OREDA will make the bid invalid.
- d. Therefore it is in the interest of the bidders not to write anything extra in the Price Bid except price.

***I. ACCEPTANCE/REJECTION:***

OREDA reserves the right to accept / reject any or all Tenders without assigning any reason thereof and alter the quantity of materials mentioned in the Tender documents at the time of placing purchase orders. Tender will be summarily rejected if:

- a. EMD is not deposited either in shape of Bank Draft in favor of OREDA payable at Bhubaneswar or in Bank Guarantee (BG).This shall not apply to those who are eligible for exemption from depositing EMD under NSIC etc. subject to submission of such exemption certificates.

**Note:** EMD against previous Tenders, if any, will not be adjusted towards EMD against this Tender.

- b. Complete Technical details are not enclosed.
- c. Tender is received after the last date for what-so-ever reasons.
- d. Hard copy of the tender is submitted loose or spiral bound.

#### ***J. PROCEDURE FOR OPENING THE BIDS:***

*The procedure of opening of the bid shall be as under*

- a. The TECHNICAL BID shall be opened at the time & date mentioned in the bid notice by OREDA in the presence of bidders, who choose to be present. If necessary, the firms may be called for Technical Presentation the schedule for which will be intimated by OREDA.
- b. The Price bid shall be opened after evaluation of technical suitability of the offers. The date for opening of Price bid shall be communicated subsequently. The Price Bid of only those bidders shall be opened who qualify in the technical bid.

#### **4. ELIGIBILITY CRITERIA:**

In order to be eligible to participate in the tender, the bidder must fulfill the following eligibility criteria. Any discrepancy or deviation from the same shall make the bidder ineligible for participating in the tender

- a. The bidder must be manufacturer/ of any or all of the 3 major components of the solar PV power plant namely Solar PV panels, Invertors and battery or an System integrator of solar PV power plants. In either case the bidders must submit the valid test reports of all major components i.e. Solar Module, Inverter and Battery issued by any of the authorized test centres of MNRE/NABL in favour of the OEM. The Test Certificates should comply to the Technical Specifications (as per Annexure A) mentioned in this Document. The bidder must have valid GST registration certificate. (Refer Annexure A for Test reports)
- b. The bidder must have a minimum turnover of **Rs. 1 Crore** in any of the last three years (2015-18) exclusively in the business of solar PV. As proof of the same a certificate to that effect duly signed and stamped by a registered chartered accountant in the letter head of the CA's firm must be included in the tender document.
- c. The bidder after getting the work order must be willing to register under SGST if required. A Self declared Willingness certificate to be submitted.

- d. The bidder must have commissioned minimum **500kWp** (cumulative) capacity rooftop solar power plants during last 3 years in any of Govt dept/ PSUs/ Govt agency/ Govt institutions in the country. The bidders have to submit Copy of Certificates/ work completion reports against the experience signed/ authorised by Designated Public Officer and mention the details in the given format to be attached.

Sl No	Name of the Organization	Capacity Commissioned (kW)	Certificates attached

Along with this Annexure G must also be submitted.

- e. The firm must have adequate capacity to design, manufacture, test, supply, erection, and commission the power plant within the given time schedule. Capacity Certificate (by NSIC or any authorized agency) to be submitted.
- f. The products must conform to minimal technical requirements specified under the National Jawaharlal Nehru Solar Mission. A Self declaration in the attached format to be submitted)
- g. The bidder's company/firm must have established quality assurance systems and organization in line with the requirements under ISO 9001:2015 and ISO 14001:2015 certification. However ISO 14001:2015 certificate can be submitted in the name of OEM along with the bid. Local MSMEs those have not established such quality assurance systems may participate in the tender and upon their selection they must establish the above before issue of work orders.
- h. The firm must not have been debarred / blacklisted by any Govt. Dept, agency, PSUs / institution / SNAs / autonomous organisations. The bidder shall submit a self certification by an authorized person duly notarized to this effect.

## **5. CHECK LIST OF DOCUMENTS TO BE SUBMITTED WITH HARD COPY OF BID**

Sl. No	Particulars	Complied	Page No.
1	Status of Bidder (Manufacturer/ System Integrator) (Authorization by MSME/DIC/NSIC/MNRE to be submitted)		
2	Valid Test report of Solar PV Module (minimum 300 Wp) (Annex A)		
3	Valid Test report of Inverter (10,15,20 & 25 kW) (Annexure A)		
4	Valid Test report of Battery (2V, 150-375Ah/ refer Annexure A& C)		
5	Valid GST Registration Certificate		

6	Annual Turnover (2015-16, 2016-17, 2017-18) in Solar Business		
7	Self Declaration for willingness to register under SGST		
8	Capacity of Solar PV Installations in the given format with proof		
9	Capacity Certificate (by NSIC or any authorized agency)		
10	Self Confirmation to minimum Technical Standards (AnnexureQ)		
11	Quality Assurance Certificate (9001 & 14001)		
12	Not Blacklisted Certificate (Notarized)		
13	Copy of PAN Card of the firm		
14	Copy of TIN Certificate of the firm		
15	Tax return, Odisha VAT/ STCC/E-submission		
16	Service centre opening willingness by Self		
17	Undertaking to supply Indigenous items		
18	Unconditional Acceptance to accept all Terms & Conditions of Bid Document by Board Resolution (Annexure O&P)		
19	Power of Attorney & Letter of Authorization to sign the documents on behalf of bidders (Annexure M for LOA)		
20	Forwarding letter, Declaration & Undertaking (Annexure L, N&R)		
21	Organizational profile containing the original documents defining the constitution or legal status, place of registration and principle place of business.		
22	Critical Technical Documents (refer Annexure A)		
23	Last 3 years performance (Annexure G)		

## **6. ISSUE OF LETTER OF INTENT (LOI)**

- a. Allocation of work will be done through specific work orders issued in the name of the select bidders.
- b. Prior to issue of work orders a Letter of Intent will be issued to the selected bidders detailing out the quantity and scope of the works, locations of works, Bank Guarantees and documents to be submitted before issue of work orders, other deliverables, etc.
- c. Upon receiving the same the bidder is required to visit the project sites along with AD(T)/Technician of the concerned districts , discuss details of the project with the concerned customers, finalize the exact sites of installation, loads to be separated for connecting to the solar power plants, convenient dates of installation etc. as well as all logistics details. Following this the bidder has to submit a letter of acceptance of the LoI along with the required bank guarantees, work execution schedule, required documents, etc. and after verification of the same by Chief Executive, OREDA formal work orders will be issued.



## **7. COMMERCIAL TERMS & CONDITIONS:**

### ***i) Rate:***

The offer should indicate the unit cost of the system, Installation & Commissioning charges, CMC Charges and taxes & duties separately. The unit cost must be inclusive of packing, forwarding, loading & unloading charges, cost of insurance and transportation FOR destination where the system will be installed as per the work order. The prices quoted should be firm, fixed and reasonable. In order to ensure reasonability in pricing a mechanism for submission of bid bond is being introduced as elaborated below: for the purpose of fixation of bid bond the benchmark price (Rs/kWp) determined by MNRE, GoI for different items will be considered as the base price (MNRE notification No. 30/11/2012-13/NSM, Dtd: 17.03.2017).

### ***ii) Taxes & Duties etc.:***

All Taxes and duties as prescribed under GST norms shall be applicable.

### ***iii) Earnest Money Deposit:***

- a. Earnest money deposit as specified above is required to be deposited along with the hard copy of bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.
- b. E. M. D would be adjusted against security deposit in case of successful bidders.
- c. E. M. D would be forfeited in case of non-compliance of the purchase order by the successful bidder.
- d. In case of claim for exemption from deposit of Earnest money sufficient proof in support of claim for exemption of EMD as prescribed in Govt. of India Notification is to be attached with the bid.

### ***iv) Security Deposit/ Performance Guarantee Fees:***

The successful bidders must deposit five numbers of bank guarantees (BG) each of value equal to 2 % of ordered value towards Security cum Performance Guarantee fees with the Chief Executive, OREDA, Bhubaneswar along with bills, challans and all other documents as per payment clause before processing of payment. The BGs will remain valid for 1, 2, 3, 4 and 5 years respectively from the date of installation of the systems.

### **\*Forfeiture of security deposit/performance Bank Guarantee**

The said deposit would be forfeited in the following cases

- a. If the systems are not installed and commissioned as per given schedules.
- b. If the systems are not properly maintained and the performance of the systems do not meet the standards mentioned in the work orders.

### **8. WORK EXECUTION SCHEDULE: (REFER ANNEXURE F)**

- a. All ordered systems must be installed and commissioned in all respects within 90 days of receipt of firm work order from OREDA.
- b. Under exceptional circumstances the period of execution can be extended reasonably only upon written request by the vendor.
- c. Upon intimation about commissioning of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, OREDA and User organization.
- d. The issuance of a JCC shall, in no way relieve the executing firm of its responsibility for satisfactory operation of the power plant.

### **9. ALLOCATION OF SUPPLY / INSTALLATION & EXECUTION:**

The entire work will be allotted only to a single technically qualified bidder quoting L1 price.

### **10. VALIDITY OF OFFER:**

The offer must be kept valid for a period of one year from the date of opening of the technical bid or till the completion of the project whichever is later. No escalation clause except the admissible tax component under the period of consideration would be accepted.

### **11. WARRANTY:**

- a. The complete system should be warranted against any manufacturing defect or bad workmanship at least for a period of 5 (five) years from the date of commissioning of the systems.
- b. Major system sub-component SPV modules must be warranted against any manufacturing defect or bad workmanship for a period of 5 years.
- c. Warranty certificate to the above effect must be furnished along with the commissioning reports. Any defect noticed during warranty period should be rectified / replaced by the supplier free of cost upon due intimation by OREDA.

## **12. PENALTY AND TERMINATION OF CONTRACT:**

- a. The systems shall be supplied, installed and commissioned within the scheduled time. If the bidder fails to adhere to the schedule, OREDA shall without prejudice to its other remedies under the contract deduct from the contract price as liquidated damages a sum equivalent to 1% of the delivery price of the delayed goods or unperformed services for each week of delay until actual delivery or installation/commissioning up to a maximum deduction of 5% of the contract price for delayed goods or installation and commissioning. Once the maximum is reached (i.e 5 weeks of delay) OREDA may consider termination of the contract and forfeit the security deposit and also take other punitive actions including blacklisting the firm without prejudice to the other remedies of the contract.
- b. However, Chief Executive, OREDA may at own discretion allow reasonable time extension upon written application of the supplying firm. If the delay is considered intentional or due to the negligence of the vendor, no extension can be allowed with imposition of penalty. If the delay is considered to be genuine time extension can be allowed without imposition of penalty.

## **13. FORCE MAJEURE:**

The supplier of the SPV system shall not be charged with liquidated damages nor shall his security for performance be forfeited when failure of the supplier in making delivery is due to any event beyond the control of the supplier and could not have been foreseen, prevented or avoided by a prudent person. These include, but are not restricted to acts of nature, acts of public enemy, acts of Government, fires, floods, epidemics, strikes, freights, embargoes and unusually severe weather.

## **14. INSPECTION:**

- a. All tests and inspections shall be made at the place of delivery. Officers authorized by OREDA shall be entitled at all reasonable time to inspect and supervise and test during erection and commissioning. Such inspection will not relieve the executing firm of their obligation in the contract.
- b. OREDA shall have the right to have the tests carried out at its own cost by an independent agency at any point of time.

## **15. PAYMENT:**

- a. **90 %** of the cost of system and installation charge along with all applicable tax shall be released upon commissioning of the systems at the location specified in the purchase order upon due verification by authorised officers and submission of following documents

<b>Performance report signed by the Assistant Director, OREDA</b>	<b>JCC</b>
<b>Warranty</b>	<b>GPS based photograph</b>
<b>Web enabled generation report</b>	<b>I-V Curves</b>
<b>Operation manual</b>	<b>Dos &amp; Dont's in the form of a booklet</b>
<b>Conducting training programme</b>	<b>Photographs of all installations in the specified manner</b>

- b. Balance **10%** cost of the supplied materials, Installation & Commissioning charges will be released after 3 months successful performance following submission of the following:
  - i) **Submission of monthly/ hourly power consumption reports(Annexure H) supported by the reading of inverter given with the power plant in the format given.**
  - ii) **Performance report of Street Lights duly signed by the The Registrar of the University or his representative.**

## **16. EXECUTION:**

Execution of work shall be carried out in an approved manner as outlined in the technical specification or where not outlined, in accordance with relevant Indian Standard Specification, to the reasonable satisfaction of the Authorized OREDA Officer. The general schedule of execution will be as follows

- a. Under normal circumstances all ordered systems must be installed and commissioned in all respects within 90 days of receipt of firm work order from OREDA.
- b. Under exceptional circumstances Chief Executive, OREDA may consider to extend the execution period by a maximum of 90 days upon written application of the vendor stating justified reasons for delay which should be

supported by the concerned customer and recommended by the concerned AD(T) of OREDA.

- c. Upon intimation about commissioning of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, OREDA and User organization.
- d. The issuance of a JCC shall, in no way relieve the executing firm of its responsibility for satisfactory operation of the power plant.  
The bidder must securitize the execution schedule by providing bank guarantee equal to 10% of the ordered value from any nationalized bank with validity of 200 days from the date of issue of the work order. In case of delay beyond the approved period the bank guarantee will be encashed and retained by OREDA. Additionally penalty may be imposed / order may be terminated as per provisions in the tender.

## **17. CMC & BG FOR PERFORMANCE GUARANTEE**

### **A. Comprehensive Maintenance Contract (Annexure K)**

Upon selection, the bidder must enter into a Comprehensive Maintenance Contract with OREDA for a period of 5 years from the date of commissioning of each project in the format given at Annexure. Willingness to execute such CMC will have to be submitted along with the tender.

\* The broad scope of CMC shall cover

- a. Routine visit to each project site at least once in 3 months.
- b. Attend maintenance calls given by customer/ escalated by OREDA-CRC within maximum 3 days of receipt of the intimation.
- c. The scope of CMC must cover supply of spare parts (including wherever necessary) / services during the contract in force. Order shall be placed on bidders who agree to offer such CMC. The CMC charges quoted by the bidder must be realistic in view of actual rendering of after sale services. The payment of annual maintenance charges under the Comprehensive Maintenance Contract shall depend upon the functionality of the system duly certified by the concerned Authorised officials of OREDA.
- d. Repair/Replace defective/malfunctioning spares/components within warranty period.
- e. Provide monthly kWh meter reading to OREDA.
- f. LED Bulbs & Tubes are excluded from 5 years CMC

### **B. BG for Performance Guarantee (Annexure L)**

At the time of execution of maintenance contract the bidder shall deposit five numbers of bank guarantees (BG) each of value equal to 2 % of ordered value towards maintenance Performance Guarantee fees with the Chief Executive, OREDA having validity of 1, 2, 3, 4 and 5 years respectively from the date of commissioning of the systems.

- a. The Performance Bank Guarantees will be returned after completion of 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 5<sup>th</sup> year maintenance and submission of reports thereon.
- b. Annual Maintenance Charges (AMC) will be paid annually upon successful maintenance of the systems and submission all necessary reports thereon.

**Note:**

Execution of CMC and submission of Performance Bank Guarantees (Format at Annexure K & J) are pre conditions for release of 1<sup>st</sup> payment of 90%.

**18. LIMITATION OF LIABILITY:**

OREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of work. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations.

**19. DISPUTE:**

For adjudication of any dispute between OREDA and the bidders arising in this case, reference can be made to any Law courts under the jurisdiction of Odisha High court only. The Chief Executive, OREDA reserves the right to accept or reject any or all bids without assigning any reason thereof.

Sd/-

Chief Executive

I/We have carefully read and understood the above terms and conditions of the bid and agree to abide by them.

SIGNATURE OF BIDDER WITH SEAL

**For any assistant, Contact:**

**E-Tendering help desk number: 080- 40482000/121/133/140(Bangalore)**

# **TECHNICAL SPECIFICATION FOR 250 kW (AGGREGATE) OFF GRID ROOF TOP SOLAR PLANT AT VARIOUS BUILDINGS**

**\*REFER ANNEXURE A FOR TEST REPORT COMPLIANCE, MNRE APPROVED TEST LABS AND  
CRITICAL TECHNICAL DOCUMENTS TO BE SUBMITTED**

**\*REFER ANNEXURE B FOR SINGLE LINE DIAGRAM**

The general scope under this contract includes to design, manufacture, testing, inspection, packing and forwarding, transportation up to project site, loading & unloading, storage in safe custody, erection, carrying out preliminary tests at site, commissioning, performance testing, operation and maintenance for 5 years & handing over to all the equipment of SPV Power plant on the respective sites / as per instruction from time to time. The illustrative Schedule of requirements is in accordance with the specifications contained in this document

## **1. SOLAR PHOTOVOLTAIC MODULES: (refer Annexure D for Module Connection)**

- a. The PV modules to be used should be made in India.
- b. The PV modules should qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules will conform to IEC 61730 Part-2- requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.
- c. The total solar PV array capacity should not be less than 250 kWp and should comprise of solar crystalline modules of minimum **300Wp** and above wattage.
- d. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
- e. PV modules will be tested and approved by one of the MNRE/IEC authorized test centers.
- f. The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- g. Other general specification for the PV modules and subsystems shall be the Following as
  - i. The rated output power of any supplied module shall have tolerance of +/-3%.
  - ii. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

- iii. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
- iv. I-V & P-V curves at STC will be provided after installation.
- v. PV modules used in solar power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.
- h. Modules should have a RF identification tag. The following information will be mentioned in the RFID used on each modules (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).
  - 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.

## **2. ARRAY/MODULE MOUNTING STRUCTURE:**

- a. Hot dip galvanized MS/Aluminium mounting structures shall be used for mounting the modules/ panels/arrays. Each structure will have angle of inclination as per the site conditions to take maximum insolation.
- b. The Mounting structure must be Non-invasive and any sort of penetration of roof to be avoided.
- c. The mounting structure should be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- d. The fasteners should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be



so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

- e. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m<sup>2</sup>.
- f. The minimum clearance of the structure from the roof level should be 300 mm.
- g. The legs of the structures should be provided with hot dip GI angles, fixed and grouted in the RCC foundation columns with 1:2:4 cement concrete. The work includes necessary excavation, concreting, back filling, shoring & shuttering etc.
- h. The structures should be laid on the rooftop on weather resistant FRP mountings which should be non-penetrating type and proper drainage of rain water over terrace through the installation area should be maintained.
- i. The structures should be suitably loaded with re-enforced concrete blocks of appropriate weight made out of M25 concrete mixture.
  - i. Special care should be taken while designing all structures for modules to cater to heavy rainfall.
  - j. The array shall be located sufficiently inside the boundary wall of the terrace (parapet wall) and should not be projecting out. PV array shall be installed in the terrace space free from any obstruction and/or shadow.
  - k. PV array shall be installed utilizing optimum terrace space to minimize effects of shadows due to adjacent PV panel rows.
  - l. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.
  - m. Additional waterproofing shall be provided in the areas where RCC blocks are placed on the terrace.
  - n. The minimum clearance between lower edge of PV panel and terrace ground level shall be 500mm to allow ventilation for cooling, also ease of cleaning and maintenance of panels as well as cleaning of terrace.
  - o. The PV array structure design shall be appropriate with a factor of safety of min. 1.5.
  - p. Each PV panel structure shall incorporate one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.
  - q. The support structure shall be free from corrosion when installed.
  - r. PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames. Module fasteners/clamps shall be adequately treated to resist corrosion.

- s. Adequate spacing shall be provided between any two modules secured on PV array for improved wind resistance.
- t. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.
- u. The total load of the structure (when installed with PV modules) on the terrace should be less than 50 kg/m<sup>2</sup>. The load shall be well distributed so that point loads are well within the limits.
- v. The structure should be appropriately designed to withstand high wind velocities up to 180-200 km per hour. (The bidder is required to submit a certificate from an authorized chartered engineer with regards to the strength and durability of the structure)

### **3. ARRAY/ MAIN JUNCTION BOXES (JBs):**

**(refer Annexure D for detailed Specifications)**

- a) Polycarbonate junction boxes should be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement shall be provided. All wires/cables shall be terminated through Copper cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.
- b) Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands.
- c) Fuse protection should be provided for each string for both +ve and -ve cables. Each main junction box shall be fitted with appropriate rating blocking diode.
- d) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.
- e) Suitable markings should be provided on the bus bar for easy identification and suitable cable glands with ferrules must be fitted at the cable termination points for identification.
- f) Array Junction Box should be IP 65(for outdoor)/ IP 54(for indoor) as per IEC 60529 and should be provided with fuses and Isolators of suitable ratings.
- g) ACDB should have surge protection device of class 2 as per IEC 60947/60364-5-53, to protect inverters from surges in the AC line.
- h) ACDB should be put at safe distance from DCDB/AJBs/MJBs to avoid Eddy current interference.

#### **4. BATTERY BANK: (refer Annexure C)**

There should be battery bank comprising of appropriate capacity for respective SPV Power Plants (Off-Grid). The batteries should be of tubular plate Gel / VRLA Type and shall have long service life. The cells shall conform to IEC 61427 / IS 1651 / IS 133369 and as per specification given below shall be provided.

Battery Bank Capacity	Capacity @3.6 Vah/Wp
Container	Polypropylene Co-polymer/hard rubbers with carrying handle.
Terminals	Made of lead alloy suitable for bolted connection. The terminals should be greased with petroleum gel.
Self Discharge	Less than 3% per month at 30 degree C
Life expectancy	1500 cycle duty at 27degree C at 80% depth of discharge 3000 cycle duty at 50% discharge.
Battery Voltage	2 Volt
Approval	Batteries to be approved by any MNRE approved test centers
Service Life	shall perform satisfactory for a minimum period of 5 year under operating conditions as mentioned.

#### **5. DC DISTRIBUTION BOARD:**

**(refer Annexure D for detailed Specification)**

- a) Dust & vermin proof Enclosures of Polycarbonate/GRP/FRP/Powder coated Aluminium/Cast Aluminium Alloy & should have IP 65(outdoor)/54(indoor) compliant to IEC 60529.
- b) The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.
- c) Suitable cable entry points with cable glands and ferrules should be provided.
- d) DC SPD of type 2 compliant to IEC 60497 with fuse should be provided.

- e) Design ambient temperature should be 0-60 degC.

**6. AC DISTRIBUTION PANEL BOARD:**

**(refer Annexure C for detailed Specifications)**

- a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary overcurrent & surge protection.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- c) All the Panel's should be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz.
- d) Suitable cable entry points with cable glands and ferrules should be provided.
- e) DC SPD of type 2 compliant to IEC 60497 with fuse should be provided.
- f) Design ambient temperature should be 0-60 degC.
- g) The panels should be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- h) All indoor panels should have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- i) Should confirm to Indian Electricity Act & rules (till last amendment)
- j) All the 415 V or 230 V devices/ equipment like bus support insulators, circuit breakers, SPDs, VTs, etc... mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in Supply Voltage	+/- 10%
Variation in Supply frequency	+/- 3 Hz

**7. POWER CONDITIONING UNIT:**

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels before powering equipment designed for nominal mains AC supply. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit" OR simply PCU. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter,

to maximize Solar PV array energy input into the System.  
 PCU refers to combination of charge controller, inverter and AC charger and shall be supplied as integrated unit or separate units.

***A. Inverter:***

The inverter should be highly efficient. The inverter should confirm IEC 61683 & IEC 60068 and should be based on MPPT design and should be DG interactive. Inverters would display its own parameters and the parameters of battery bank connected to the inverter. Beyond the maximum load the inverters will trip. The inverters should be designed to be completely compatible with the charge controllers and distribution panels and are of integrated design.

Salient features of the Inverters shall be as follows:

- a. The PCU should be designed to be completely compatible with the SPV array voltage.
- b. A Central inverter with MPPT shall be used with the power plant for maximum efficiency and shall be efficient based on PWM with IGBT/ reliable power based design.
- c. The sine wave output of the inverter shall be 230V, Single phase, 50 HZ AC.
- d. There should be provision to charge the battery using Grid power as long as grid voltage is between 170V-265V. In case Grid voltage falls below 170V up to 130V, Grid charging shall stop but load shall continue to run using Grid supply not by Solar.
- e. The peak inverter efficiency inclusive of built in isolation transformer shall exceed 85% at full load
- f. There should be provision to export excess PV power to grid in case the load consumption is less than the actual generation. This is futuristic feature and provision should be there to enable or disable this export feature.
- g. Inverter shall provide display of PV array DC voltage & current, Battery Voltage & Current, Inverter Voltage & Current, Grid voltage & Current, Battery charging status and required parameters when fault occurs. Remote monitoring of inverter parameters should be possible.
- h. Operating temperature Range shall be 0 to 55 deg C
- i. Maximum Power Point Tracker (MPPT) shall be integrated in the power conditioner unit to maximize energy drawn from the Solar PV array.
- j. The charge controller/ MPPT units should qualify to IEC standards.
- k. Online microprocessor based Data Acquisition Systems and Remote Monitoring facility for 365 days with data Recovery from remote location should equip.

- Detailed Specifications are:

Inverter Capacity	1 Phase, 230 V
Nominal Battery Voltage	120VDC
Output frequency	50 Hz +/- 0.5 Hz
Frequency synchronization range	+3 Hz

Overload Capacity	150% for 10 Second
Efficiency	>93% for 10 kW & above/ >90% for less than 10 kW
THD	<3%
PF	>0.9
Short Circuit Protection	Circuit Breaker and Electronics protection against sustained fault.
Low Battery Voltage	Automatic Shut Down
Total Harmonic Distortion	Less than 3%
Over Voltage	Automatic Shut Down
Grid Voltage tolerance	-20% & +15%
AC over Current/Load	Automatic Shut Down
No Load losses	Less than 1% of rated power
Protection	Over Voltage both at Input & Output Over Current both at Input & Output Over Frequency Surge voltage inducted at output due to external source.
Protection Degree	IP 65 (Outdoor)/IP 56 (Indoor)
Instrumentation & Indication	Input & Output voltage, Input & Output Current, Frequency, Power output, different status of inverter, kind of fault by audio signal.
Switching devices	IGBT/MOSFET
Controls	Microprocessor/DSP
Ambient Temperature	-20 degC to 50 degC
Humidity	95% non condensing

### ***Charge Controller Unit:***

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

***i) From SPV Array:***

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

***ii) From AC Source:***

- a. The battery shall be charged at the rate manually set depending on the battery condition or capacity of AC source. The maximum rate shall be internally preset.
- b. The battery charging should be automatically terminated when the rate of increase of battery voltage is steady (dv / dt sensing) or when the battery terminal voltage reaches 2.75 volts per cell.

c. Salient features of the Charge Controller shall be as follows:

Switching elements:	IGBT/MOSFET
Type of Charger:	PWM
Input :	From Solar PV array
Output Voltage:	Suitable for charging nominal battery bank from respective capacity of SPV array.
Protections:	Short Circuit, Deep Discharge, Input Surge Voltage, Over Current (load), Battery Reverse Polarity, Solar array reverse polarity.
Indication :	String „ON“, Main „ON“, Charging „ON“, 80% Charged, 100% Charged, Charger Overload, Battery On Trickle.

- d. Battery disconnected / Fault Battery Reverse Polarity, Low Solar Power, System Fault and Charger over Temperature and Input Over / Under Voltage (for AC) protections must be provided.
- e. MIMIC Diagram: To indicate power flow and operation of the charge controller/ battery charger; shall have provision for visual indications of existing power input/output through MIMIC diagram.
- f. You may design Power Conditioning Unit (PCU), which consist of a solar charge controller & inverter as per design mentioned above. In addition, it should have a Grid Charger. It provides the facility to charge the battery bank either through Solar or Grid set. The PCU continuously monitors the state of Battery Voltage, Solar Power output and the loads. Due to sustained usage of power, when the Battery Voltage falls below a preset level, the PCU will automatically transfer the load to the grid power and also charge the Batteries through the in-built Grid Charger. Once the batteries are charged to the present level, the PCU cuts

off the Grid power from the system and will restore to feeding the loads from the battery bank & continue to charge the battery bank from the available solar power.

**g. Required Specifications are**

Battery Voltage: 240 V		Battery Voltage: 120 V	
Power rating	20/10/5 kW	Power rating	10/5 kW
Model	WS200-240/WS100-240/WS50-240	Model	WS100-120/WS50-120
PV Charge Current	60/30/15 Amps	PV Charge Current	60/30 Amps
Unload Voltage	280/280/280 V	Unload Voltage	140/140 V
PWM control mode; LCD display with PV voltage, charge current, power, battery voltage; Working Temperature - 20 to +50 deg C, Temperature Compensation 4 mV/degC/2V, -35 to +80 deg C, Precision +/- 1 degC; Humidity 35-85% RH; Communication mode RS232, RS 485, RJ 45, GPRS. <b>Protections to be deployed:</b> Solar reverse charge protection , Solar reverse connection protection, Battery over charge protection, Battery reverse connection protection, Lightning protection			

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

**i. Salient Features:**

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

**8. PROTECTION:**

The SPV power plant should be provided with Lightning and over voltage protection, connected with proper earth pits. The main aim of over voltage protection is to reduce the over voltage to a tolerable level before it reaches the PV or other sub-system components. The source of over voltage can be lightning or other atmospheric disturbance.



## **A. Lightening**

- a. The lightning Conductors shall be made of 25 mm diameter 4000 mm long GI spike as per provisions of IS 2309-1969. Necessary concrete foundation for holding the lightning conductor in position should be made after giving due consideration to maximum wind speed and maintenance requirement at site in future. The lightning conductor will be earthed through 20 mm X 3 mm thick GI flat earth pits/earth bus made with 25 mm X 5 mm GI flats. Height of Lightning Conductors from Array Structure should be minimum 4 metres.
- b. Most areas of the State being prone to lightning, Type-II SPDs shall be included as a mandatory requirement.
- c. Similarly Type I+II SPD should also be provided on the grid side in ACDB or PCU to protect the PCU from damage

## **B. Earthing**

- a. Earthing should conform to IS 3043.
- b. Earth Continuity wire/conductor should be 3-8 SWG. Thickness of Conductor should be more than half of the thickest wire used in Electric wiring. Total resistance of continuity conductor should be less than 1 ohms.
- c. Earthing lead can be of GI/Copper Strip. For each Earth Electrode 2 Leads must be provided.
- d. Earth Electrode can be of GI Pipe/Plate. Pipe Electrode should be of 40 mm dia, 4.75 m length (for rocky soil)/2.75 m (for ordinary soil). Plate Electrode should be of 60 cm\*60 cm at a depth of 3 m. Thickness of Plate should be 3.18 mm (copper)/6.35 mm (GI). Moistened land should be preferred for Earthing.
- d. Charcoal along with Salt and Lime mixture/ Bentonite in granular form mixed with water/ Marconite should be provided. The mixture should be inserted into the pipe or put around the plate. The Electrode system should be covered with cast iron cover plate with locking arrangement. (Marconite is recommended due to its Very Low resistivity)
- e. No . of Earthing points to be used:
  1. One Earthing for all the Structural Conducting Parts
  2. One Earthing for Inverter with ACDB, Array JB & Main JB.
  3. One Earthing for Lightning Arrester.
- f. Each array structure of the SPV yard will be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.

- g. The inverters and battery charger and all equipment inside the control room and battery room will be connected to earth through 25 mm X 5mm tinned copper strip including supplying of material and soldering. Earth bus should be provided inside the control room with 25 mm X 5mm tinned copper strip.
- h. In compliance to Rule 61 of Indian Electricity Rules, 2004 (as amended up to date), all non-current carrying metal parts should be earthed with two separate and distinct earth continuity wires.

### **9. SURGE PROTECTION DEVICES (SPD):**

- a. Surge protection device should be provided on both the DC side and the AC side of the solar PV system. It should have protection voltage of 2.5 kV & Nominal Discharge current of 5 kA (8/20)  $\mu$  sec.
- b. The DC surge protection devices (SPDs) should be installed in the DC distribution box adjacent to the solar inverter.
- c. The AC SPDs shall be installed in the AC distribution box adjacent to the solar inverter.
- d. The SPD's earthing terminal should be connected to earth through the abovementioned dedicated earthing system.

### **10. CABLES & WIRINGS:**

- a. The Cable & Wires should comply to IEC60227 or IS694 & IEC60502 or IS1554 BSEL50618 (for DC cables for PV systems).
- b. All copper flexible cables should comply to IS651 and make should be Polycab, Havells or equivalent.
- c. Colour code should be followed for over all wiring i.e, red for positive, black for negative, green for earth.
- d. All cable should run in suitable PVC Conduits .No cable should be directly exposed to sunlight.
- e. Cable Sizes should be as per the given Current and Voltage ratings.

### **11. DISPLAY BOARD:**

Display board of size 3 ft x 3 ft that gives detailed circuit diagram of the system with its description should be provided.

### **12. REMOTE MONITORING SYSTEM:**

For better appreciation, the Solar PV Power plant must be provided with remote monitoring system. In case of mobile network is not available, the same may be provided with data dumping system. These systems should work using GSM/GPRS data communication service or

SMS (Short Message Service).They must provide data on power generation every 15 minutes indicating all spikes, dips etc.

\*Important features:

- a. Cloud based Communication
- b. Dashboard display either on PC, Laptop, Tab, smart phone
- c. Internal communication protocols.

\*Monthly Report has to be submitted to OREDA.

### **13. DRAWINGS & MANUALS:**

Two copies of Engineering, electrical drawings 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 and distribution for street lighting system along with protection equipment. Approved ISI and reputed makes for equipment be used. For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to OREDA before progressing with the installation work.

### **TECHNICAL SPECIFICATION OF MINI MAST LIGHT**

Lighting Emitting Diode (LED) is a p-n junction device which emits light when forward electric current passes through it. A LED based solar street lighting system aims of providing solar electricity for operating LED lights for specified hours of operation per day. The broad performance specification of a White Light Emitting Diode (W-LED) light source based solar street lighting system are given below  
Mini Mast Solar Street Lighting System (LED based) of 500 Watt Module capacity and LED lights of 24 Watt respectively with 04 numbers light.

#### **1. DUTY CYCLE**

The LED Solar Street Lighting System should be designed to operate for dusk to dawn, under average daily insolation of 5.5 kWh / Sq.m on a horizontal surface.

#### **2. LIGHT SOURCE**

- a. White Light Emitting Diode (W-LED) Light with output of white colour (Colour temperature 5500-6500 K) is required. The Light source should have a minimum intensity of 16 Lux.

- b. The illumination should be uniform without dark bands or abrupt variation, and soothing to the eye. Higher light output will be preferred. Light output should be constant throughout the duty cycle.
- c. Mounting of light for mini mast of LED Street Lighting System 4 nos. x 18 W and 4 nos. x 24 Watt to minimum 09 meters octagonal pole, having 7.5 meters above the ground level will be required.
- d. The light source will be of white LED type, single lamp or multiple lamps can be used. The colour temperature of white LEDs used in the system should be in the range of 5500K - 6500 degree K . Use of LEDs which emits ultra violet light will not be permitted.
- e. The lamps should be housed in an assembly suitable for outdoor use and shall comply with IP 65. The LED housing preferably should be made of pressure die cast aluminium having sufficient area for heat dissipation and heat resistant toughened clear glass/ high quality poly carbonate fitted with pressurised die cast aluminium frame with SS screw.
- f. The temperature of heat sink should not increase more than 30 ° C above ambient temperature even after 48 hours continuous operation. This condition should be complied even after two hours or operation at its maximum operation voltage i.e. just before over voltage cut off.
- g. The white LED should be of mini quality and should stands for maximum 50000 hours
- h. The make, model number, country of origin and technical characteristics of white LEDs used in the lighting system must be furnished.
- i. The LED unit shall comply to LM 70, LM 79 and LM -80.
- j. The LED efficacy should be more than 120 lumen/ watt @ 350mA . The total luminary efficacy should not be less than 80 lumen per watt ( including losses) i.e 1920 for 24 watt LED and 1440 for 18 watt LED.

### **3. PV Module**

- a. Module required for mini Mast Street Light should be 500 Wp module.
- b. The PV modules must have quality to the latest edition of any of the following IEC PV module qualification test or equivalent BIS standards for module design qualification and type approval. Crystalline Silicon Solar Cell Modules IEC 61215 Edition (II).
- c. PV modules must have quality to IEC 61730 Part I & II, for safety qualification testing and to be used in a mainly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.
- d. PV modules used in solar power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. Full rated output of the SPV Array to be ensured after one year of operation. Number of modules and array capacity will depend on the rated output of individual modules. The peak power rating of the Solar PV array should not be less

than as per rated capacity of PV Module. RFID tag shall be mandatory placed inside the module laminate.

- e. The power output of the module(s) under STC should be a minimum of 500Wp at a load voltage\* of  $16.4 \pm 0.2$  V.

\*The load voltage and Voc conditions of the PV modules are not applicable for the system having MPPT based charge controller

The open circuit voltage\* of the PV modules under STC should be at least 21.0 Volts.

#### 4. **BATTERY**

- a. Battery required for Mini Mast Street Light: 12V 500 Ah (each cell should be 2 Volt) Tubular positive Plate GEL/ VRLA/**Lithium ferro Phosphate**, 2C/10, Max DoD 75%, Electronics Min 85% total efficiency, Average duty cycle Dusk to dawn Autonomy 3 days (Minimum 42 Operating hours per permissible discharge).
- b. 75 % of the rated capacity of the battery should be between fully charged and load cut off conditions.
- c. The batteries should be of tubular plate Gel / VRLA Type and shall have long service life. The cells should confirm IEC 61427 and IS 15549 and as per specification given below shall be provided.

Container	Polypropylene Co-polymer/hard rubbers with carrying handle.
Cover	Protective cover of polypropylenes against dirt & possible short circuit.
Terminals	Made of lead alloy suitable for bolted connection. The terminals should be greased with petroleum gel.
Electrolyte	Battery grade Sulphuric acid Self Discharge Less than 3% per month at 30 degree C
Life expectancy	1500 cycle duty at 27degree C at 80% depth of discharge 3000 cycle duty at 50% discharge.
Voltage	2 Volt 500 Ah
Approval	Batteries shall have to be approved by ERTL or CPRI or anyMNRE approved test centres

#### 5. **ELECTRONICS**

- (i) The total electronic efficiency of DC-DC Converter should be at least 85%.
- (ii) Electronics should operate at 12V and should have temperature compensation for proper charging of the battery throughout the year.

- iii) The light output should remain constant with variations in the battery voltages.
- iv) No Load current consumption should be less than 20 mA.
- v) The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
- vi) The PCB containing the electronics should be capable of solder free installation and replacement.
- vii) Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided. .

## **6. ELECTRONIC PROTECTIONS**

- a. The system should have protection against battery overcharge and deep discharge conditions. The numerical values of the cut off limits must be specified, while submitting the sample for the testing purposes.
- b. Fuses should be provided to protect against short circuit conditions.
- c. A blocking diode should be provided as part of the electronics, to prevent reverse flow of current through the PV module (s), in case such a diode is not provided with the PV module.
- d. Full protection against open circuit, accidental short circuit and reverse polarity should be provided.
- e. Adequate protection is to be incorporated under no load conditions, e.g. when the lamps are removed and the system is switched ON.
- f. Electronics should operate on 12V and should have temperature compensation for proper charging of the battery throughout the year.
- g. The W-LED driver circuit should be based on constant voltage, constant current, mini frequency technology. The component used in LED driver circuit should be reliable and of reputed make and efficient.
- h. Efficiency- the total electronic efficiency should be at least 80%.
- i. W-LED Life – Lumen output of W-LED should remain same throughout the warranty period.
- j. Adequate protection should be provided against battery reverse polarity.

## **7. CHARGE CONTROLLER**

The unit should have the following feature-

- a. This unit should be designed for charge regulation of storage battery and safe guard the battery against over charge & deep discharging.
- b. The voltage cut-off should be set in such a way to utilize the 75% of the fully charged battery capacity.
- c. The lower limit of cut off voltage should not be less than 10.8 Volts.
- d. The charge controller should reconnect the load when battery gets fully charged. The difference in these two voltage set point should be neither too small nor too large to avoid the relay chattering.

e. A reverse blocking diode should be provided to prevent discharge of battery in rainy season and in night.

f. The various functions should be displayed through LED indicator indicating the operations being carried out by the controller such as low battery warning sign (yellow), load current off (red) battery charging (green).

g. The indicator should be fixed on front side of the battery box / luminary.

h. A switch & fuse should be provided with the controller.

i. The unit should have protection against short circuit, lightning, reverse polarity surge etc.

j. The PCB's of controller should be glass epoxy.

k. All the connector indication should be covered with transparent hard plastic sheet screened properly.

l. Charge controller shall have automatic dusk-dawn circuit based on SPV module as sensor for switching on/off the street lights without manual intervention.

m. The self consumption of the charge controller shall not be more than 20mA at rated voltage and rated current.

n. The electronics should operate at 12 Volt and the efficiency of DC-DC converter should be at least 90%.

#### **a. MECHANICAL COMPONENTS**

(i) The frame structure of module should have provision to adjust its angle of inclination to the horizontal between 0 and 45, so that it can be installed at the specified tilt angle. A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module. The lamp housing should be water proof and should be painted with a corrosion resistant paint.

(ii) It should be possible to mount the light source on a metallic arm attached to the pole.

Mini Mast Light should have a minimum height of 7 metres above the ground level after grouting and final installation.

For mini mast street lighting system each of the metallic arm / ring for holding the light assembly should be extended of at least 0.5 meter from the pole and set at a suitable angle to maximize uniform illumination of desired level over the specified area. Proper arrangement should be provided in the mini mast lights for repairing and maintenance.

(iii) A vented metallic / polymer box with acid proof corrosion resistance paint (in case of metallic) for housing the storage battery outdoors should be provided. The quality should of mini standards to withstand the life period. If defect arises in the guarantee period, same is to be (mandatory) replaced.

(iv) The pole should be hot dipped galvanized ( 120 microns) octagonal GI pipe , min top 70 mm diameter and bottom 175 mm of 9 meter length with suitable thickness ( minimum 4mm)to withstand at least 200 km. / hour of wind speed.

(v) Vented metallic box of 18 SWG thick made of pre-coated GI MS sheet with powder coating of 60 micron thickness for housing of storage battery and also provision of lock & key. The size of the box should be as per battery size providing minimum clearance of 25 mm on all sides. The box should be mounted on ground with proper GI frame and grouting. Louvers for proper ventilation should be provided on one side and back of the battery box . Two wooden battens should be fixed inside the box to avoid electrical contact between battery and box.

(vi) Pole pit size of 1m\*1m\*1m & Coupling size of 0.4m\*0.4m\*0.4m with Cement Concreting must be done.

## **9. ELECTRIC CABLE**

The electric cables shall be twin core PVC insulated water and UV resistance copper cables of minimum size 1.5 sqmm . Cables shall meet IS 1554 /694 Part I:1988 and shall be of 650V/1.1kV.

## **10. INDICATORS**

- i. The system should have two indicators, green and red.
- ii. The green indicator should indicate the charging under progress and should glow only when the charging is taking place.
- iii. It should stop glowing when the battery is fully charged.
- iv. Red indicator should indicate the battery “Load Cut Off” condition.

## **11. QUALITY AND WARRANTY**

- a. The street lighting system (including the battery) shall be warranted for a period of five years from the date of supply.
- b. The PV module(s) will be warranted for a minimum period of 25 years from the date of supply. The PV modules must be warranted for their output peak wattcapacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
- c. The Warranty Card to be supplied with the system must contain the details of the system.

## **12. OPERATION AND MAINTENANCE MANUAL**

An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Street Lighting System. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on Solar Street Lighting System - its components, PV module, battery, electronics and luminaire and expected performance.



- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system.
- About Charging and Significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (s) and lamp housing assembly on the pole.
- Clear instructions on regular maintenance and trouble shooting of the Solar Street Lighting System.
- DO's and DONT's.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

### **\*SYSTEM MAINTENANCE (for both 250 kW Plant & 23 Mini Mast Lights)(refer Annexure E )**

- The PV module (s), battery bank, Inverter and other sub - components will be warranted as per the given clause. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.
- Scope of Operation & Maintenance of SPV Power Plant for a period of 5 years from date of commissioning
- Regular maintenance of the SPV Power Plant for a period of 5 years after commissioning along with supply of consumable items.
- The breakdown maintenance of the entire system including supply of necessary spare parts if any shall be for a period of 5 years from the date of commissioning of power plant
- 5 years maintenance period shall begin on the date actual commissioning of the power plant.
- Normal and preventive maintenance of the power plant shall be covered under CMC.
- During maintenance period of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons pertaining to the vender's deputed personnel, what-so-ever, the vender shall be responsible for immediate replacement/rectification. The damaged component may be repaired or replaced by new component. It is understood after examination the performance of the component or the system shall not degrade.

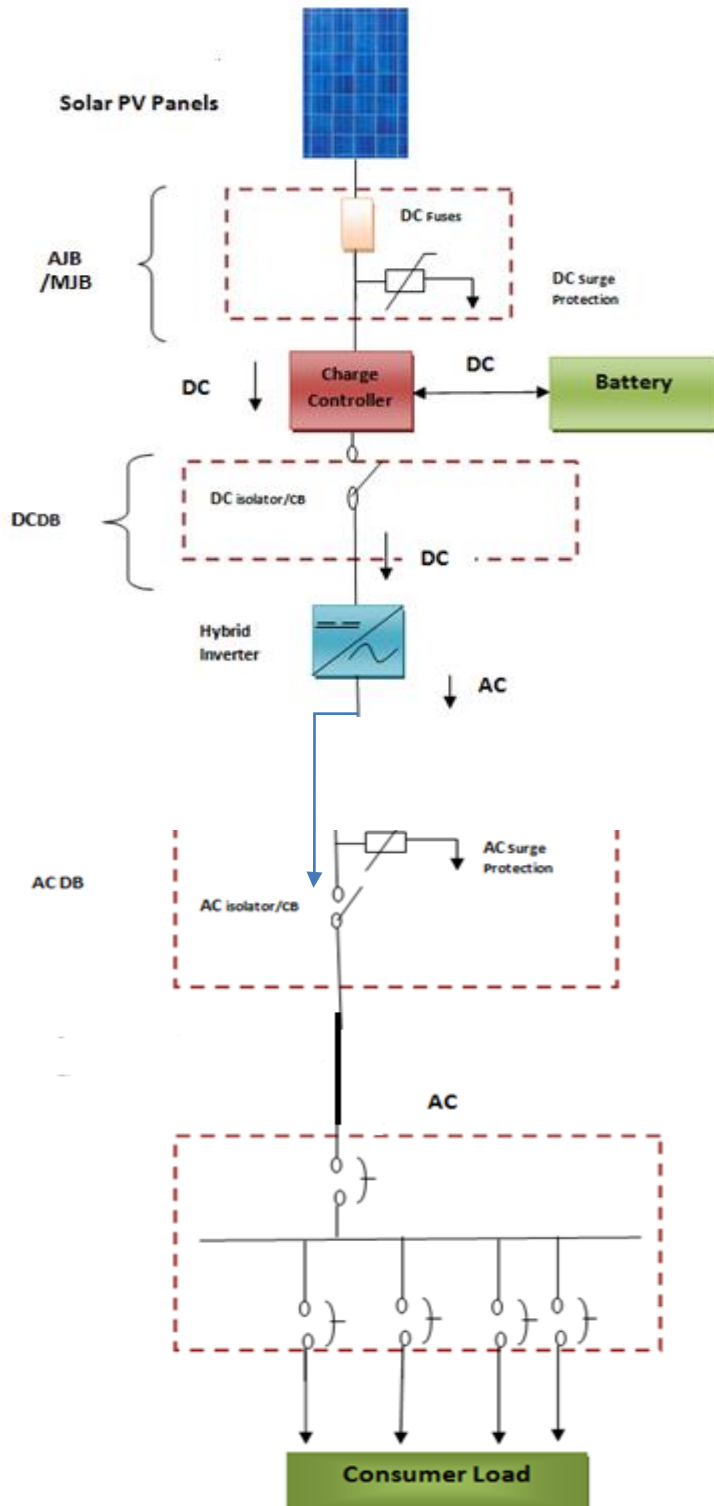
# ANNEXURES

## Component wise Test Reports & Critical documents (Annexure A)

S/N	Major Component	Test Certificates Required	Test description	Designated Test Labs
1	Crystalline Silicon Terrestrial PV Modules	IEC 61215	Design qualification	UL India( up to 400 Wp), TUV Rheinland( up to 400 Wp) , NISE(up to 100 Wp), ETDC
		IEC 61730	Safety Qualification	UL India( up to 400 Wp), TUV Rheinland( up to 400 Wp)
		IEC 61701	Salt Mist Corrosion Test	UL India( up to 400 Wp), TUV Rheinland(upto 350 Wp), ETDC ( up to 100 Wp)
2	Power Conditioning Units(PCU)/ Inverter	IEC 61683	Efficiency Test	UL India( up to 50 KVA), TUV Rheinland(upto 20 KVA) , NISE(upto 10 KVA), ERTL, ETDC( upto 3 KVA), CPRI(upto 10 KVA), ERTL North(upto 5 KVA), Intertek(upto 5 KVA)
		IEC 60068	Environmental Test	UL India (upto 250 KVA), TUV Rheinland, NISE, ERTL,ETDC,CPRI, ERTL, Intertek
		IP 65/56	Ingress Protection for Outdoor/Indoor Enclosure	TUV Rheinland, NISE
3	Battery (Stationary VRLA Lead Acid)	IS 61427/ 1651/ 13369/15549	As per IS 15549 -2005	NTH,NISE, ERTL East(upto 1000H),,ETDC(upto 100 AH),CPRI(upto 1000AH

Sl No	Critical Technical Documents required
1	Contact information of Various Stakeholders such as PV System Owner, Project developer, EPC Contractor, designer, lending agency, etc...
2	Datasheets of key equipments and the overall PV system
3	SLD, Equipment Layout Diagram &Earthing wiring diagram
4	Warranty Documents of key equipments by Original Equipment Manufacturer
5	Design Document of the Module mounting Structure
6	Warranty Document of the entire Rooftop PV System as a whole by the Installer
7	Generation estimation report based on realistic weather conditions
8	Operation &Mintenance manual of the PV System
9	Test results & Commissioning Certificate
10	Purchase Bills & Contracting Documents

## Single Line Diagram (Annexure B)



**\*This SLD is only for reference. Qualified Bidder has to submit the detailed SLD (including Lightning Arresters & Earthing) before allotment of Work order.**

## Individual Plant Capacities, Connected Loads & ACDB Specification (Annexure C)

Name of Building	Solar Plant Capacity (kWp)	Battery Bank Voltage (Volts)	Main Battery Bank Capacity (Ah)	Connected Load (Watts) (230 V, single phase)	ACDB MCB Specification (Single MCB)
Brahmaputra Hostel	20	240	300	14400	3 phase, 415 V, 43 Amps
Golden Jubilee Boys Hostel	25	240	375	16800	3 phase, 415 V, 50 Amps
Mahanadi Boys Hostel	20	240	300	13920	3 phase, 415 V, 42 Amps
New Library	25	240	375	14400	3 phase, 415 V, 43 Amps
Health Centre	10	120	150	4800	1 phase, 240 V, 43 Amps
PG Central Office	10	120	150	4464	1 phase, 240 V, 40 Amps
New Administrative Building	20	240	300	9600	3 phase, 415 V, 29 Amps
	20	240	300	9600	3 phase, 415 V, 29 Amps
Baitarani Ladies Hostel	15	240	225	9936	3 phase, 415 V, 30 Amps
Mahodadhi Boys Hostel	10	120	150	7488	1 phase, 240 V, 67 Amps
Bhagirathi Boys Hostel	20	240	300	13848	3 phase, 415 V, 41 Amps
Narmada Womens Hostel	20	240	300	15264	3 phase, 415 V, 45 Amps
Parvati Womens Hostel	20	240	300	14184	3 phase, 415 V, 42 Amps
Silver Jubilee & Durgabati Womens	15	240	225	10368	3 phase, 415 V, 31 Amps
<b>TOTAL</b>	<b>250</b>				

## Module Connection & Specifications of AJB, MJB & DCDB (Annexure D)

Name of Building	Solar Plant Capacity (kWp)	Series/ Parallel (For each module of 300 Wp)	Array JBs Specifications (I/O MCB ratings)	Main JB Specifications (I/O MCB ratings)	DCDB Specifications (MCB ratings)
Brahmaputra Hostel	20	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
Golden Jubilee Boys Hostel	25	6/14	3 AJBs/ Each with 5 IN (11 Amps each)- 1 OUT (55 Amps)	3 IN (55 Amps each)- 1 OUT (165 Amps)	1 No. MCB of 165 Amps
Mahanadi Boys Hostel	20	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
New Library	25	6/14	3 AJBs/ Each with 5 IN (11 Amps each)- 1 OUT (55 Amps)	3 IN (55 Amps each)- 1 OUT (165 Amps)	1 No. MCB of 165 Amps
Health Centre	10	3/10	2 AJBs/ Each with 5 IN (11 Amps each)- 1 OUT (55 Amps)	2 IN (55 Amps each)- 1 OUT (110 Amps)	1 No. MCB of 110 Amps
PG Central Office	10	3/10	2 AJBs/ Each with 5 IN (11 Amps each)- 1 OUT (55 Amps)	2 IN (55 Amps each)- 1 OUT (110 Amps)	1 No. MCB of 110 Amps
New Administrative Building	40 (2*20 kWp)	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
		6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
Baitarani Ladies Hostel	15	6/8	2 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	2 IN (44 Amps each)- 1 OUT (88 Amps)	1 No. MCB of 88 Amps
Mahodadhi Boys Hostel	10	3/10	2 AJBs/ Each with 5 IN (11 Amps each)- 1 OUT (55 Amps)	2 IN (55 Amps each)- 1 OUT (110 Amps)	1 No. MCB of 110 Amps
Bhagirathi Boys Hostel	20	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
Narmada Womens Hostel	20	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
Parvati Womens Hostel	20	6/11	3 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	3 IN (44 Amps each)- 1 OUT (132 Amps)	1 No. MCB of 132 Amps
Silver Jubilee & Durgabati Womens Hostel	15	6/8	2 AJBs/ Each with 4 IN (11 Amps each)- 1 OUT (44 Amps)	2 IN (44 Amps each)- 1 OUT (88 Amps)	1 No. MCB of 88 Amps
<b>TOTAL</b>	<b>250</b>				

## Periodic Maintenance Protocol for Solar power plants/packs (Annexure E)

S/N	Task	Quarterly	Semi-annual	Annual	Bi-annual
1	PV Array				
a	Inspect each PV modules for damage				
b	Observe PV array shading and take corrective measures				
c	Clean array with water and remove debris around array				
d	Inspect array mounting structure, check for loose fasteners, corrosion, broken/ damaged concrete footings etc. and take corrective measures, if necessary.				
e	Check array junction box, all wires and cables and take corrective measures if necessary.				
f	Adjust tilt angle , if necessary				
g	Check array current & voltage. If required each module current, voltage & bypass diode condition.				
h	Check for any loose contacts in the string connection(+ve/-ve MC4 connectors)				
2	PCU				
a	Check inverter and/or charge controller for correct settings				
b	Check Inverter capacity and max allowable load using dummy load.				
c	Ventilation fan condition/filter cleaning				
d	Check all the parameters (I/P & O/P) as per Manufacturer datasheet for any Malfunctioning				
3	Battery Bank				
a	Cleanliness of battery room				
b	Ambient air temperature within the battery room				
c	Exhaust fan/ ventilators of battery room				
d	Cleanliness of batteries				
e	Terminal damage				
f	Evidence of heating				
g	Damage to container/cover				
h	DC Voltage of each polarity of battery to ground				
i	Ground fault , if any				
j	DC Float Charging Voltage and current if each individual battery				
k	System Equalization Voltage and current				
l	Resistance/ conductance of each individual unit				
m	Re-torque all inter-unit connecting hardware				
n	Battery capacity testing at service load				
4	Protections devices				
a	Check for continuity of lightening arrestor				
b	Check system earthing				
c	Check all SPDs				
d	Check all bypass/ blocking diodes and take corrective measures if necessary.				

## **Format of Work Completion Report (Annexure F)**

**(Each Installation shall have a separate Work Completion Report)**

<b>Sl. No.</b>	<b>Particulars</b>	<b>Details to be filled-up</b>
1	Plant Location (GPS Co-ordinates)	
2	Customer's Name & Contact Details	
3	Capacity of Solar Power Plant	
4	Type of Solar Plant (Off-grid/On-grid)	
5	Date of Commissioning of the Project	
6	Copy of Completion report submitted to MNRE or State Nodal Agency if any	
7	URL of Remote Monitoring System (Mandatory for the plant capacity of 5 KW or above)	
8	Joint commissioning certificate duly signed by customer & the applicant	
9	URL of GPS tagged site location as uploaded on MNRE SPIN website etc if any	
10	Photograph of the project with the customer in the inset.	

**Signature of bidder with stamp & date**

## Format of Performance for last 3 years (Annexure G)

(To be submitted on letter head of company)

Sl. No	Particulars	Details to be filled up
1	Name of the bidder and contact details	
2	Status of bidder (Manufacturer/System integrator)	<i>In support of this the bidder may submit valid certificate from MNRE/Other state agency/Rating agency</i>
3	Production/Integrating capacity per annum	<i>In support of this the bidder may submit valid Production/integrating certificate from NSIC/DIC/OSIC</i>
4	Total amount of solar system (On/Off-grid Power plant, Street light, Solar Pump, Home lighting system) installed in kWp in 3 years (2015-18)	<i>Please submit year wise installed data along with roofs thereof such as work completion reports by the concerned customer.</i>
5	Annual Turnover over last 3 years (2015-18)	
6	No. of employee currently working	
7	Awards/Honours received during 3 year	

(Signature).....

Date: \_\_\_\_\_

(Printed Name).....

Place: \_\_\_\_\_

(Designation).....

(Common Seal).....



## **Format of Monthly Generation Report (Annexure H)**

**(Report will contain Daily Average data and to be submitted on monthly basis)**

<b>Sl. No</b>	<b>Particulars to be reported</b>	<b>Description</b>
1	Name of Project site along with GPS Co-ordinates	
2	Capacity of Solar Power plant	
3	Capacity of Solar Inverter	
4	Capacity of Battery Bank	
5	Monthly Average Solar PV generation	
6	Monthly Average Power consumption	
7	URL of Remote Monitoring System	
8	User Id and Password of Remote Monitoring system	

**Signature of bidder with stamp & date**

**PRICE BID for 250 KW OFF-GRID SPV POWER PLANT & 23 MINI MAST  
LIGHT (Annexure I)**

**(\*To be filled online only)**

<b>Sl No</b>	<b>Particulars</b>	<b>Price in INR</b>
1	Design & Supply of 250KWp Off-grid Solar PV Power Plant & 23 Mini Mast Light as per the technical specification given in the tender	
2	GST@5% levied on Sl. No-1	
3	Sub Total ( 1 +2)	
4	Cost of Installation and commissioning of the system	
5	GST@18% levied on Sl. No-4	
6	Sub Total (4+5)	
7	CMC for 5 years from the date of Commissioning 1 <sup>st</sup> year 2 <sup>nd</sup> year 3 <sup>rd</sup> year 4 <sup>th</sup> year 5 <sup>th</sup> year	
8	GST@18% levied on Sl. No-7	
9	Sub Total (7+8)	
10	<b>Grand Total (3+6+9)</b>	

## Model Bank Guarantee Format for Performance Security (Annexure J)

Annexure-II of Finance Department Office Memorandum 4939 dtd 13.2.12, Govt of Odisha

[Ref Para 22(i1)]

To

WHEREAS----- (name and address of the supplier) (hereinafter called "the supplier") has undertaken. in pursuance of contract no----- dated----- to supply -----(description of goods and services) (herein after 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 scheduled commercial bank recognized by you for the sum specified therein, as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee; NOW THEREFORE we hereby affirm that we, are guarantors and responsible to you on behalf of the supplier. upto 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 limits 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.

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

We further agree that no change or addition to or other 'modification of the terms of the contract to be performed there under or of any of the contract documents --which may be made between you 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 be valid until the day of-----20----- Our branch at \* (Name & Address of the \_\_\_\_ \* branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our----- -- \* branch a written claim or demand and received by us at our \_\_\_\_ \* branch on or before Dt.-----otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

(Signature of the authorized officer of the Bank)

Name and designation of the officer

Seal.name& address of the Bank and address of the Branch

## SAMPLE FORMAT FOR C.M.C (Annexure K)

(Subject to modification as per suitability of system and project requirement)

Comprehensive Maintenance Contract (CMC) for maintenance of SPV power plant supplied and install by M/S ..... for five years.

---

This Comprehensive Maintenance Contract (CMC) is executed between the Orissa Renewable Energy Development Agency ( OREDA ) , S-3-59, Mancheswar Industrial Estate, Bhubaneswar-10, represented by its Deputy Director ( Tech), Project Division herein after called as 1<sup>st</sup> party and M/S .....

.....  
herein after called as 2<sup>nd</sup> party, for maintenance of ..... sets of .....for a period of five years with effect from ..... AD, supplied, installed and commissioned vide purchase order No ..... Dated ..... in ..... village ..... blocks of ..... Districts.

The 2<sup>nd</sup> party will maintain these ..... Systems as per the terms and conditions mentioned here under.

1. It has been envisaged in the purchase order No ...../ OREDA dated ..... under clause No ..... that these ..... No/sets of ..... shall be warranted against any manufacturing defect and bad workmanship at least for a period of 5 years for the system and battery and 10 years for the PV modules from the date of commissioning . As these systems have been commissioned and handed over to the 1<sup>st</sup> party through its Assistant Director (Tech) / authorized OREDA official at DRDA ..... During ..... all these systems , as such are covered under warranty period up to ....., ..... and ..... respectively. Hence, the 2<sup>nd</sup> party is fully responsible for their trouble free maintenance

and the 2<sup>nd</sup> party is liable to rectify / remove any defect noticed within the aforesaid period free of cost.

2. The 2<sup>nd</sup> party will impart training to two nos. of youth from each completed village to be able to provide first aid repair service for the SPV systems installed in the village.

3. The 2<sup>nd</sup> party will ensure a formal training of such identified youth (2 from each village) at a cluster level of villages in consultation with the 1<sup>st</sup> party.

4. An amount of 10% of the ordered value shall be kept as fees towards Performance guarantee for a period of 10 years of warranty & maintenance. After expiry of the successful and satisfactory maintenance period of 10 years which remains valid up to ..... AD , the security deposit / PGF shall be returned to the 2<sup>nd</sup> party thereafter only.

5. The CMC includes repair/ replacement of all spares and consumable, including CF Lamp, battery & PV module during the maintenance period.

6. The 2<sup>nd</sup> party will setup a state level office at Bhubaneswar duly headed by a Service Engineer.

7. The 2<sup>nd</sup> party shall undertake the periodical maintenance work of these ..... sets prescribed formats attached herewith ( Format I ) on the 10<sup>th</sup> of every succeeding quarter duly countersigned by the concerned Assistant Director ( Tech), / Authorized Officer, R.E. Cell , DRDA .....

8. The 2<sup>nd</sup> party should be in readiness to attend to the defects of any system (out of these ..... Sets) as and when required by the beneficiary/ 1<sup>st</sup> party and ensure rectification of defects and restore functionality within seven days of lodging the complaints. The 2<sup>nd</sup> party shall furnish the status report

after the maintenance work are over, which shall invariably bear the signature of the beneficiaries as per the format annexed herewith (format- II ).

9. The 2nd party shall appraise the 1st party about the requirements and supply of spares during warranty as well as CMC period.

10. The 2nd party will ensure to submit quarterly reports of visits made by their representatives to the completed villages every three months during the warranty and CMC period.

11. The 1st party in consultation and cost sharing with the 2nd party will maintain a central complaint cell at Bhubaneswar alongwith adequate stock of spare parts as a backup.

12. Separate bills/ invoices in triplicate enclosing the prescribed formats duly filled in (Format-I and II ) are to be submitted by the 2nd party to 1st party for effecting payment after end of the each year from the date of maintenance of the systems.

13. Certificates in support of successful maintenance of the system(s) shall be obtained from the users which should be countersigned by the Assistant Director ( Tech), / Authorised Officer, RE Cell , DRDA ..... in token of verification of maintenance done.

14. It will be the liberty of the 1st party to cross checks the systems maintained by the 2nd party. Random verification of the maintenance may be carried out by the 1st party wherever necessary.

15. The 2nd party may continue to maintain the gadgets after expiry of the maintenance period of 10 years , provided the beneficiaries/ 1st party desires.

16. For adjudication of any dispute between the two parties arising on execution of this CMC , the matter shall first be brought to the notice of Chief Executive, OREDA.

17. In case, there will be no amicable settlement of the issues, the matter can be referred to the court of law having jurisdiction at Bhubaneswar only. The Annual Maintenance contract is signed jointly between the two parties today i.e on dated ..... day of 2016 and shall come into force from the date of its signature(s).

For and on behalf of Odisha Renewable Energy Development Agency,  
Bhubaneswar .....

For and on behalf of M/S

( 1stParty) .....

( 2ndparty) .....with Seal

## **UNDERTAKING BY THE BIDDER (Annexure L)**

I/we here by undertake that

1. We have thoroughly read and examined the notice inviting tender and the tender document along with all its schedules, annexure etc.
2. The rates quoted by us are firm and final and are meant for execution of the allotted supply / installation within the time frame stipulated in the tender/supply / installation order.
3. All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of min one year from the date of opening of the technical bids.
4. In case our tender is incomplete in any respect or we violate any of the prescriptions given in the tender for submission of the same OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the earnest money deposited by us.
5. In case of award of supply / installation in our favour OREDA shall have the right to convert the EMD deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of the supply / installation.
6. In case we fail to commence or complete the supply / installation as per the time schedules or fail to fulfill any of the terms and conditions given in the tender OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the security deposit made by us against the award of the supply / installation.
7. I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the supply / installation as secret/confidential and shall not communicate information derived there-from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudiced to the safety of OREDA/the State Govt.
8. I/We shall abide by all the laws prevailing at the time of the execution of the supply / installation and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.
9. The entire tender document has been discussed in the Board meeting and a resolution has been concurred for participation in the tender (copy enclosed)
10. We are not blacklisted / debarred / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
11. In case any false documents submitted and found any time in future the firms shall be liable to be proceeded against as per prevailing laws.
12. Our state commercial tax / TIN registration no. is \_\_\_\_\_ and CST registration No. \_\_\_\_\_  
The PAN No. under the Income Tax Act is \_\_\_\_\_ and  
GST Registration No. is \_\_\_\_\_
13. I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize OREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

**Signature of bidder with stamp & date**

## Letter of Authorization (Annexure M)

(to be submitted in the letter head of the bidder)

To,  
Chief Executive  
Odisha Renewable Energy Development Agency  
S-59, MIE, Bhubaneswar-751010  
Odisha

Sub: Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla

Ref: Tender Call **NoticeNo.** -----/ **OREDA, dtd** -----.

Sir,

I/we hereby authorise Ms. /Mr. \_\_\_\_\_, Designation .....of our company to sign all relevant documents on behalf of the company/firm in dealing with the above tender. She / He is also authorized to attend all meetings and submit technical and commercial information as may be required by OREDA in the course of processing of the tender.

We further authorise Ms. /Mr. \_\_\_\_\_ designation..... of our company to make technical presentation on behalf of the company.

Signature of the authorise persons

1. \_\_\_\_\_ **Yours faithfully**

**Head of the organization**

Name and designation of the attesting officer with stamp.

## **DECLARATION (Annexure N)**

**(To be submitted on the letter head of the company)**

To,

The Chief Executive,  
Odisha Renewable Energy Development Agency,  
S-59, MIE, Bhubaneswar 751 010,  
Odisha.

Sub:-Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla

Ref:- Tender call Notice No.        /OREDA, dt.

Sir,

I/we hereby declare the following in the context of the aforementioned tender that:

- a) The entire tender document has been discussed in the Board meeting and a resolution has been passed for participation in the tender (copy enclosed)
- b) We are not involved in any litigation that may have an impact of affecting or compromising the delivery of services as required under this tender
- c) We are not blacklisted / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
- d) In case any false documents submitted and found in future the firms shall be liable to be proceeded against as per prevailing laws.

Yours faithfully,

Authorised signatory

(Stamp).



**Certificate of Unconditional Acceptance of the tender (Annexure O)**

(to be submitted on the letter head of the company

by Board Resolution)

We \_\_\_\_\_ a prospective bidders for the work of “**Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla**” here by certify that we have carefully studied and understood the contents of the entire bid document hoisted on the website of OREDA as well as tenderwizard.com/OREDA on \_\_\_\_\_ and hereby confirm our unconditional acceptance to each and every line of the said bid document.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

**BOARD RESOLUTION (Annexure P)**

**(To be submitted on pre-printed Corporate Letter Head)**

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS OF M/S.....

HAVING ITS REGISTERED OFFICE AT..... HELD ON DD/MM/YY AT.... HRS

Resolved that the company/firm do agree to participate in the tender invited by OREDA vide Notice No ..... Dtd..... for Design, supply, installation, commissioning and maintenance for a period of 5 years of 222 No. of 10 KW Solar PV Power Plants (with battery backup), 2220 No. of Solar Street Lighting Systems (SLS), 222 No. of 1 HP AC Submersible Pump with overhead tank as per the technical specification and description given in the tender document in Residential Schools located in 11 district of Odisha.

RESOLVED FURTHER THAT, the company/firm does agree to unconditionally accept all terms and conditions mentioned in the aforementioned tender document.

RESOLVED FURTHER THAT, subject to eligibility, the company/firm agree to open an effective service center in the state of Odisha, preferably in the vicinity of projects so as to cater regular maintenance services to the customers of the company/firm.

RESOLVED FURTHER THAT, Ms/Mr ..... Director and/or Ms/Mr..... authorized signatory of the company be and hereby authorized to sign, execute and submit such applications, undertakings, agreements and other requisite documents writings and deeds as may be deemed necessary or expedient to implement the above assignment

AND RESOLVED FURTHER THAT, the common seal of the company is affixed, wherever necessary, in the presence of any Director of the company who shall sign the same as token of the presence.

For .....

Chairman/Company Secretary

Name of the Authorized person

Specimen Signature of Authorized person

**The above signature to be attested by the person signing the resolution**

## **Confirmation to Technical Specifications (Annexure Q)**

**(to be submitted on the letter head of the company)**

Certified that we have carefully read and understood the technical specifications of the products and services to be provided under this tender and we hereby confirm our total adherence to the given technical specifications. The test certificates provided by us also base on the same technical specifications/ parameters.

Date:.....

(Signature).....

Place:.....

(Printed Name).....

(Designation).....

(Common Seal).....

## **Forwarding Letter (Annexure R)**

**(To be submitted in the letter head of the applicant)**

To,

The Chief Executive  
Odisha Renewable Energy Development Agency (OREDA)  
S.59. MIE, Bhubaneswar -751010  
Odisha.

Sub:- Submission of tender for **Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla.**

Sir,

Having studied the bid document carefully I/we, the undersigned, offer to submit our bid for **Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of 250 kW (Aggregate Capacity) Off-grid Solar PV power plant in different buildings & 23 Solar Outdoor Lighting (Mini mast) at Sambalpur University Campus, JyotiVihar, Burla**

I/We have also read the various provisions therein and confirm that the same are acceptable to us. We further declare that any additional conditions, variations, deviations, if any, shall not be given effect to. We further understand that **any deficiency / illegibility in documents shall make our application liable for rejection.**

I/we submit our application understanding fully well that

- (a) The documents submitted along with our application are subject to verification by appropriate authorities.
- (b) OREDA reserves the right to accept or reject any application or the empanelment process itself without assigning any reasons thereof and shall not be held liable for any such action.
- (c) Any genuine changes made by OREDA in the interest of the work with respect to the technical requirement during the course of project implementation will be acceptable.
- (d) All acts, rules, regulations, norms and conditions of Govt of India and Govt of Odisha shall be applicable during the process of empanelment as well as during the period of execution of project.

We hereby declare that all the information and statements made in this proposal are complete, true and correct and also accept that any misinterpretation contained in it may lead to our disqualification.

We hereby declare that our application has been submitted in good faith and the information contained is true and correct to the best of our knowledge and belief.

**Yours faithfully,**

**Signature of bidder with seal**