

**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY  
S/59, MANCHESWAR INDUSTRIAL ESTATE  
BHUBANESWAR-751010, ODISHA**

**BID DOCUMENT**

**Tender Call Notice No: 3152/OREDA, Dated- 26.07.2016**

FOR

**Design, Supply, Installation, Testing, Commissioning and Maintenance for  
a period of 5 years for installation of 10Kwp Off-Grid Solar Photovoltaic  
Power Plant & 14Kwp Grid Interactive Solar Photovoltaic Power Plant  
and other related works**

at

**CMCE Building of OSPCB, Paradeep under ICZM Project**

<b>Date of release of bid</b>	<b>28.07.2016</b>
<b>Date &amp; time of pre-bid meeting</b>	<b>11.08.2016, on 11:00 AM at OREDA Conference hall 11-30 AM</b>
<b>Date and time of last submission of On-line bid document</b>	<b>07.09.2016 up to 1.00 P.M.</b>
<b>Date and time of last submission of hard copy of bid document</b>	<b>09.09.2016 up to 1.00 P.M.</b>
<b>Opening of Techno-commercial bid</b>	<b>09.09.2016 at 3.00 P.M.</b>
<b>Date of opening of the price bid</b>	<b>To be informed to the technically qualified bidders.</b>

**Tel-06742588260,2586398, 2585898,2580554,2581552**

**Fax-2586368, Website: [www.oredaodisha.com](http://www.oredaodisha.com)**

**E-mail : [ceoreda@oredaodisha.com](mailto:ceoreda@oredaodisha.com)**

## INDEX

<b>SI No</b>	<b>Items</b>	<b>Page</b>
1	Disclaimer	1
2	Notice inviting tender	2
3	Instruction to bidder online Submission	4
4	Submission of bid online	6
5	Undertakings by bidders	12
6	Letter of Authorisation	13
7	Eligibility Criteria	15
8	Instructions to Bidder	16
9	Commercial terms and conditions	19
10	Technical specification	23
11	Price bid to be uploaded online only, not in hard	41-42
12	Model Bank Guarantee Format for Performance Security	43

## 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.



ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY  
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)

### DETAIL OF NOTICE INVITING E-TENDER

#### ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY

invites e-tenders

For

Design, Supply, Installation , Testing, Commissioning and Maintenance for a period of 5 years for installation of 10Kwp Off-Grid Solar Photovoltaic Power Plant & 14Kwp Grid Interactive Solar Photovoltaic Power Plant and other related works

Particulars	Earnest Money Deposit (in Rs.)	Tender processing fee Non refundable (in Rs.)	Non refundable Cost of Bid document
1 No. of 10Kwp Off-Grid Solar PV Power Plant Systems at in the CMCE Building of OSPCB at parade under ICZM Project as per technical specification complete in all respect with 5 years warranty and maintenance.	Rs. 1,00,000	Rs. 4,600	Rs. 10,500
1 No. of 14Kwp Grid Interactive Solar PV Power Plant Systems at in the CMCE Building of OSPCB at parade under ICZM Project as per technical specification complete in all respect with 5 years warranty and maintenance.			

## 1. The Scope of works:

- 1.1 The broad scope of the work includes design, supply, installation, testing commissioning & maintenance for 5 yrs warranty with AMC charges payable at the end of each year for **10KWp off-grid SPV power plant & 14KWp grid interactive SPV power plant** on the roof top of the ICZM Building.
- 1.2 A clear understanding of the features of the site building, present control panel for grid interfacing.
- 1.3 Supply of the complete systems, including all necessary components, sub-components, spares, tools, tackles etc. as per technical specifications given in this document including packing, forwarding, safe storage, handling, commissioning, trial and performance testing and handing over, insurance coverage, operation & maintenance for 5 with warranty including CMC for corresponding period.
- 1.4 Providing pedestals if required for mounting of the PCU'S and control panels.
- 1.5 RCC structures (matrix of stay / leg / beams) to support the structure, steel frame work depending on design approval should be provided by the bidder.
- 1.6 Complete water proofing and grading of the building rooftop have to be carried out after installation of structures. Any other work urgently required as per site conditions.
- 1.7 All structural drawings to be got approved from OREDA / any other competent authority.
- 1.8 Adequate training has to be provided to the persons to be designated by OREDA in day to day maintenance and upkeep of the installed system. The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.
- 1.9 Open a local office at Bhubaneswar so as to deliver uninterrupted and sustainable maintenance services.

- i) 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.**
- ii) Bidders who want to submit bid shall have to pay the **tender cost** as mentioned in TENDER SCHEDULE. The tender cost is required to be paid in shape of **Demand draft** only, drawn in **favour of Chief Executive, OREDA payable at Bhubaneswar**. The tender cost is inclusive of VAT @ 5% and is non refundable.
- iii) The bidders shall have to submit the non-refundable tender processing fee as mentioned in TENDER SCHEDULE, in e-payment mode only. The processing is inclusive of service tax @15%.

***( 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).***

- iv) The bidders shall have to scan the Demand Draft towards **EMD, Tender Cost, signed copy of tender document (signed on all pages)** as token of unconditional acceptance of all terms and conditions of the tender 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.
- v) 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**".
- (v) 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.

**For and on behalf of OREDA**

## **SECTION-II**

### **Instruction to Bidders for Online Submission**

#### **1. SUBMISSION OF BIDS:**

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

- i) The bidder shall submit the bid in Electronic Mode only i.e. in [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) portal. The bidder must ensure that the bids are received in the specified website of the OREDA by the date and time indicated in the Tender notice.
- ii) Bids submitted by telex/telegram will not be accepted.
- 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-1) 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) Contractors / Vendors / Bidders / Suppliers are requested to follow the following steps for registration.

##### **(A-2)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 shall be made to KSEDCL, Bangalore for vendor registration in tender wizard portal in **e-payment** mode only.
- iii) As soon as the verification is done the e-tender user ID will be enabled/provided.

##### **(A-3) 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). If any Bidder wants to participate in the tender he has 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 be installed in your system)**

2. Click / Double Click to open the Microsoft Internet Explorer
3. (This icon will be located on the Desktop of the computer).
4. 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.
5. Enter e-tender User Id and Password, click on “Go”. 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.
8. Click to view the tender documents which are received by the user. Tender document screen appears.
9. 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**

The bidders shall have to scan the Demand Draft towards **EMD, Tender Cost , signed copy of tender document (signed all pages)** as a token of unconditional acceptance of all terms and conditions of the tender and **other documents** as required for the tender and **upload** the same in the prescribed form in .pdf or .jpg format in addition to sending the original **except bid sheets (.xls)** prior to last date and time of receipt of bids as specified in tender Notice. Tender processing fees is mandatory & to be paid on **e-payment** mode as stated elsewhere in the document.

### **(B-1) PROPER FILLING UP OF THE PRICE SCHEDULE:**

The bidder should fill up the Techno commercial and price schedule properly in the bid sheets provided in .xls format and up-load the same without changing the file name. The tender may be rejected if the schedule of price is submitted in incomplete form.

**NB: 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.**

- (i) 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 down / take a print of bid control number once it displayed on the screen**

- (ii) Tender Opening event can be viewed online.
- (iii) Competitors bid sheets are available in the website for all participated bidders.

**NOTES:**

**For any assistant, Contact:**  
**E-Tendering help desk number: 080- 40482000/121/133/140(Bangalore)**  
**OREDA Help Desk- 09937140591**

**(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.**

**DD towards Tender cost, DD towards Bid Security, 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.**

- ii) 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.
- iii) 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**

- i) 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., bid security, tender cost & any other document) within the stipulated deadline, its bid shall be considered as late bid. The hard copy submitted [specific documents (viz., bid security, tender cost.)] shall be returned unopened to the bidder.

- ii) Hard copy of the bid security i.e 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.

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:-**

- i) 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
- ii) The Bidders may modify and resubmit their bids as per the provisions given in the portal.
- iii) Bidders may withdraw their bids through the relevant provisions of mentioned in the portal.
- iv) **No bid shall be modified/ withdrawn after the dead line for submission of bids. Withdrawal/modification of bid before the expiry of bid validity shall result forfeiture of Bidder's bid security.**

**2. Submission of hard copies of the bids and Sealing and Marking :-**

**(A) 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. Bid Security in shape of Demand Draft.
4. Technical Bid document in **hard bound form** with each page legibly numbered comprising of the following:
  - **All Test certificates from MNRE approved laboratories as prescribed**
  - Technical Specifications of all materials to be supplied
  - Valid VAT / Sales tax clearance certificate ,Income Tax return, PAN card, Service Tax Registration Certificate

- Bid documents duly signed & sealed on every page as token of unconditional acceptance of all Terms and conditions mentioned in the bid document.
- Indignity Certificate
- Organizational profile
- Balance sheets and profit & loss accounts
- Certificate and proof as per qualification criteria
- Brochure, literature etc. if any

**All the papers of bid documents except the price bid should be duly signed and uploaded in e-tender portal. Hard copy (i.e EMD, Tender cost & signed e-tender document) shall be submitted to OREDA office at S-57, Mancheswar Industrial Estate, Bhubaneswar 751010 on or before the stated date in the manner prescribed elsewhere in the document. .**

**(B) 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.

**(C) Financial bid:**

The Electronic Form/Template of the Price bid (as available on the portal) shall be duly filled in.

**Any condition in regards to financial aspects, payments, terms of rebate etc beyond the prescribed financial terms of OREDA will make the bid invalid.**

Therefore it is in the interest of the bidders not to write anything extra in the Price Bid except price.

**3. 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:

- i) Bid security is not deposited either in shape of Bank Draft in favor of OREDA payable at Bhubaneswar or Bank Guarantee executed in favour of OREDA.

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

- ii) Complete Technical details are not enclosed.
- iii) Tender is received after the last date for what-so-ever reasons.

**4. Procedure for opening the bids:**

The procedure of opening of the bid shall be as under

- 4.1 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.
- 4.2 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.

**Forwarding Letter**  
**(To be submitted in the letter head of the bidder)**

To,

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

Subject: Submission of tender for the work of Design, Manufacturing, Supply, Installation, Testing Commissioning & Maintenance of **10Kwp off-grid SPV power plant & 14Kwp grid interactive SPV power plant** at in the CMCE Building of OSPCB at paradeep under ICZM Project.

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

Sir,

Having studied the Tender document carefully L/we, the undersigned, offer to submit our tender for the work of Design, Manufacturing, Testing, Supply, Installation, Commissioning & Maintenance for **10Kwp off-grid SPV power plant & 14Kwp grid interactive SPV power plant** in conformity of the tender document.

I/We have also read the various provisions of the Tender and confirm that the same are acceptable to us including the provision of CMC. We further declare that any additional conditions, variations, deviations, if any, found in our Tender offer shall not be given effect to. We further understand that **any deficiency / illegibility in documents shall make our tender liable for rejection as non responsive.**

I/we submit our tender understanding fully well that

- (a) The bid and other documents submitted along with the same will be subject to verification by appropriate authorities.
- (b) OREDA reserves the right to accept or reject any application or the bid 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.

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 Tender is made in good faith and the information contained is true and correct to the best of our knowledge and belief.

Yours faithfully,  
Signature of bidder

## UNDERTAKING BY THE BIDDER

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 work within the time frame stipulated in the tender/work order.
3. All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of one year.
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 work 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 work.
6. In case we fail to commence or complete the work 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 work.
7. I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the work 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 work and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.

9. Our state commercial tax / TIN registration no. is \_\_\_\_\_ and  
CST registration No.

\_\_\_\_\_.  
The PAN No. under the Income Tax Act is \_\_\_\_\_ and  
Service Tax Registration No. is \_\_\_\_\_

10. 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

Dated:

Letter of Authorization

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

To,

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

Sub: Submission of tender for the work of Design, Manufacturing, Testing, Supply, Installation, Commissioning & Maintenance of 10Kwp **off-grid SPV power plant & 14Kwp grid interactive SPV power plant.**

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

Sir,

I/we hereby authorise Ms./Mr. \_\_\_\_\_, Designation .....of our company is authorised 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.

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

Signature of the authorised person

1. \_\_\_\_\_

2. \_\_\_\_\_

Signature of bidder with stamp

Dated:

## DECLARATION

(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:- Submission of tender for the work of Design, Manufacturing, Testing, Supply, Installation, Commissioning & Maintenance of **10Kwp off-grid SPV power plant & 14Kwp grid interactive SPV power plant** in the CMCE Building of OSPCB at parade under ICZM Project.

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).



## **2. ELIGIBILITY CRITERIA:**

The bidding concern must fulfil all the following criteria for techno-commercial qualification of the tender.

- 2.1 The bidder must be manufacturer of Solar PV panels / Inverters / system integrator who have got their products tested and qualified by any of the authorized test centres.
- 2.2 The bidder must have valid STCC/ Odisha VAT clearance certificate.
- 2.3 The bidder must have ICRA/CRISIL Certification.
- 2.4 The bidder firm must have a minimum annual turnover of Rs 3.00 crore over last three years exclusively in the business of solar PV alone. Bidders should not have incurred losses during any of the last three years.
- 2.5 The firm must have designed, manufactured, tested supplied, erected, commissioned minimum 200 kWp(cumulative) in the range of up to 30 kWp in govt / PSUs/ Govt agency/ bodies (preference given to the agency who are doing or has completed work under state govt) and which are in successful operation on the date of bid opening.
- 2.6 The firm must have adequate capacity to design , manufacture, test , supply, erect, and commission the power plant within the given time schedule.
- 2.7 The products must conform to minimal technical requirements specified under the National Jawaharlal Nehru Solar Mission.
- 2.8 The firm must have established quality assurance systems and organization in line with the requirements under ISO 9001:2008.
- 2.9 The farm must not have been debarred / blacklisted by any Govt. Deptt, agency, PSUs / institution / agencies / autonomous organisations. The bidder shall submit a self certification by an authorized person duly notarized to this effect.

### 3. INSTRUCTIONS TO BIDDERS

- 3.1 **All bidders are required to submit e-bids as per the procedure specified in this documents**
- 3.2 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.**
- 3.3 Bids must be submitted in English language only.
- 3.4 Incomplete, telegraphic or conditional bids shall not be accepted.
- 3.5 Prices quoted must be firm and fixed. No price variation / escalation shall be allowed during process of completion of the project.
- 3.6 The bidders must sign at the bottom of each page of the bid documents at the time of submission in token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.
- 3.7 Valid TIN / OVAT/ Sales tax clearance certificate duly attested must be submitted along with the bid.
- 3.8 Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- 3.9 The bidders should furnish the information on all past supplies and satisfactory performance.
- 3.10 The bidder shall submit copies of documents defining the constitution or legal status, place of registration and principle place of business of company or firm or partnership.
- 3.11 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.
- 3.12 The bidders shall submit reports on financial standing of the bidder such as audited profit and loss statements, balance sheets and auditor's reports for the past, bankers' certificates. All accounting statements submitted should be duly audited and with proper auditor's note on accounts and accounting standards.
- 3.13 **Bids without E.M.D will not be accepted (other than NSIC certified holder).**
- 3.14 Bids received late due to postal delay or otherwise **will not be considered.**
- 3.15 Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- 3.16 Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.

- 3.17 Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- 3.18 The bidders must be having / willing to open a local office at Bhubaneswar before commencement of work for close coordination with OREDA.
- 3.19 Power of attorney to sign the agreement on behalf of bidders & partnership deed articles, if any, should be enclosed along with original bid documents.
- 3.20 Notice inviting tender, bid documents, prescribed Technical bid, price bid, terms & conditions will form the part of the tender.
- 3.21 All pages of the bid documents must be signed & sealed by the authorized person on behalf of the bidders.
- 3.22 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.
- 3.23 **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.**
- 3.24 All Taxes applicable at the time of supply will be admissible.
- 3.25 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.
- 3.26 The supplied materials should strictly comply with the specifications as mentioned in the bid, otherwise the material would be liable for rejection.
- 3.27 Any clarification on the technical specification and commercial terms and conditions may be clarified in writing from OREDA.
- 3.28 Deviation of any commercial terms and condition and technical specification shall not be entertained under no circumstances.
- 3.29 Bidders may in their own interest visit the sites and undertake site visit before submitting bids. OREDA will not be responsible for any incidental or consequential losses of the firms while execution and till expiry of the period of maintenance.
- 3.30 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.
- 3.31 The 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.
- 3.32 On award of contract the qualified bidder shall be termed as contractor / supplier / executor /turnkey operator.

**4. Acceptance/ Rejection of the bid documents:**

Chief Executive, OREDA reserves the right to reject or accept any bid or annul the bidding process at any time prior to award of contract, without having prejudice of incurring any liability to the affected bidders or any obligation to inform the bidders.

Chief Executive

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

Signature of Bidder with Seal

## 5. COMMERCIAL TERMS & CONDITIONS:

### 5.1 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.

### 5.2 Sales Tax & Duties etc.:

All Taxes and duties as prescribed both under Central and State Government sales tax rules would be applicable.

### 5.3. Earnest Money Deposit:

5.3.1 Earnest money deposit as specified above is required to be deposited along with the bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.

5.3.2 Earnest money can be deposited in cash at OREDA cash counter or, submitted in shape of a Demand Draft in favour of Chief Executive, OREDA from any Nationalised Bank Payable at Bhubaneswar and the proof of deposits should be attached to the bid. E.M.D would be refunded to the unsuccessful Bidders after finalization of the bid without any interest.

5.3.3 E. M. D would be adjusted against security deposit in case of successful bidders.

5.3.4 E. M. D would be forfeited in case of non- compliance of the purchase order by the successful bidder.

5.3.5 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.

### 5.4 Security Deposit/ Performance Guarantee Fees:

The successful bidders must deposit **Two numbers of bank guarantees** 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 as follows

- i) 7.5 % of the ordered value in shape of irrevocable Bank Guarantees with **5½ years validity** from the date of supply, installation and commissioning till the completion of respective warranty and CMC period of the composite system.

ii) 2.5 % of the ordered value in shape of irrevocable Bank Guarantees with **10½ years validity** from the date of supply, installation and commissioning till the completion of respective warranty

#### **5.5 Work Execution Schedule:**

- All ordered systems must be installed and commissioned in all respects within 90 days of receipt of firm work order from OREDA.
- Under exceptional circumstances the period of execution can be extended reasonably only upon written request by the vendor.
- 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.
- The issuance of a JCC shall, in no way relieve the executing firm of its responsibility for satisfactory operation of the power plant.

#### **5.6 Allocation of supply / installation & Execution:**

**All supply / installation orders shall be placed with the state local registered office of the qualified empanelled bidders having valid Odisha TIN/ OVAT as per the FD circular no 5439 dtd 25.2.14.**

#### **5.7 Validity of offer:**

The offer must be kept valid for a period of 180 days 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.

#### **5.8 VAT:**

The bidders must submit attested copy of valid up to date VAT clearance certificate along with the bid. The bid would not be considered without this document. The original certificate would be produced at the time of opening of the bid, or, before placement of purchase order, if required.

#### **5.9 Warranty:**

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.

Major system sub-component SPV modules must be warranted against any manufacturing defect of bad workmanship for a period of 5 years.

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.

#### **5.10 Penalty and termination of contract:**

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 without prejudice to the other remedies of the contract.

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.

#### **5.10 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.

#### **5.11 Inspection:**

**5.11.1** 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.

**5.11.2** OREDA shall have the right to have the tests carried out at its own cost by an independent agency at any point of time.

#### **5.12 Payment:**

**90 %** of the system cost and **100%** taxes on systems supplied shall be released upon commissioning of the systems at the location specified in the purchase order and verification by the concerned officer of OREDA. Balance **10%** cost of the supplied

materials, Installation & Commissioning charges will be released after 3 months successful performance of the systems and submission of all recommended reports and returns (JCC, warranty, GPS based photograph, Web enabled generation report, I-V curves, Operation manuals etc dos & don'ts in the form of a booklet, conducting training programme, if necessary and or as mentioned in the work order).

**5.13 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.

**5.14 Comprehensive Maintenance Contract (CMC):**

The bidder must enter into a Comprehensive maintenance contract for the specified period at the time of execution of the order. Offer without such CMC shall not be considered.(sample format of CMC enclosed at Annex - ) 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.

**5.15 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.

**5.16 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.

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



## Technical Specification for 10KW SPV Power plant

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

### System Details for 10KWp Off-Grid Solar PV Power Plant:

Sl. No.	Brief Description	Units	Make
1	SPV modules for a 10 Kwp Off-Grid Solar PV Power Plant, as per specifications.	1 Set	Compliant to bid document spec's
2	SPV module mounting structure suitable for accommodating 10 KWp capacity SPV modules including foundation as per specifications on rooftop	1 Set	As per BIS
3	PCUs as per specifications	1 Set	SMA / OPS/Schneider/KACO Siemens / ABB / Emerson / equivalent
4	Battery Bank as per Specification (120V 600AH)	1 Set	GEL/VRLA/Tubular Plate Lead Acid/Low Maintenance type.
5	Array Junction Boxes (Optional)	1 Set	Tyco / Hensel/ spelberg / equivalent
6	Main Junction Boxes(optional)	1 Set	Tyco / Hensel/ spelberg / equivalent
7	DC Distribution units as per specifications	3 Sets	Siemens / ABB / Schnieder Electric/ L&T / equivalent
8	AC Distribution units as per specifications	3 Sets	Siemens / ABB / Schnieder Electric/ L&T / equivalent
9	Cables requirement as per design	Mtrs. As required at site for full plant commissio ning	Finolex / Polycab / Havells /equivalent
5	Fire extinguisher in accordance with BIS codes for electrical short circuit	1 Set	

	fires along with sand buckets		
11	Lightning arrester complete set as per specification	2 Sets	BIS compliant
12	SPD (Protection device)	One set	
13	Earthing complete set as per specification	2 Sets	BIS compliant
14	Recommended underground /sealed cabling up to distribution control panel		
15	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills, if necessary		

### 1. Solar PV Modules:

The modules having capacity above 200Wp should only be provided in the array to obtain the required array power output. Indigenously produced PV module (s) containing mono/ multi crystalline silicon solar cells should only be used.

All modules must comply with IEC 61215, 61730 part 1 & 2 (Certificates from MNRE test centres in support of such compliance must be submitted along with the tender document.

The other criteria are as follows:

- Crystalline Silicon Solar Cell Modules IEC 61215 Edition (II)
- PV modules must have quality to IEC 61730 Part I & II, for safety qualification testing and to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.
- 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.
- Each PV module used in solar power project under this tender must use a RF identification tag (RFID), which must contain the following information. The RFID should be laminated inside the module and must be able to withstand harsh environmental conditions.
  - Name of the manufacturer of PV Module.
  - Name of the manufacturer of Solar cells.

- Month and year of the manufacture (separately for solar cells and module).
- Country of origin (separately for solar cells and module).
- I-V curve for the module.
- Peak Wattage,  $I_m$ ,  $V_m$  and FF for the module.
- Unique serial No and Model No of the module.
- Date and year of obtaining IEC PV module qualification certificate.
- Name of the test lab issuing IEC certificate.

## 2. Module Mounting Structure:

- Solar PV modules are to be installed & fixed with the module mounting structures with appropriate size stainless steel nuts & bolts.
- The array structure shall be made of hot dip galvanized MS angles of size not less than 50mm X 50mm X 6 mm size. The minimum thickness of galvanization should be at least 80 microns and for coastal area 120 microns. All nuts & bolts shall be made of very good quality of stainless steel. The minimum ground clearance of the lowest part of the module structure shall be 500 mm.
- The structure should be appropriately designed to withstand high wind velocities up to 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)**
- The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.

## 3. Array Foundation:

The legs of the structures made with hot dip GI angles will be fixed and grouted in the RCC foundation columns made with 1:2:4 cement concrete. The work includes necessary excavation, concrete-ing, back filling, shoring & shuttering etc.

## 4. Junction Boxes (JBS):

The junction boxes shall be dust and waterproof and made of thermo-plastic. The terminals will be connected to copper lugs or bus bar of proper sizes. The junction boxes will have suitable cable entry points fitted with cables glands. Suitable markings shall be provided on

the legs or bus bar for easy identification and cable ferrules will be fitted the cable termination points for identification. Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make.

- Array Junction Box should be IP 54 as per IEC 529 and should provided with reverse blocking diodes, fuses and Isolators of suitable ratings.
- DC Distribution board should comply with IP 21 as per IEC 529. It should be equipped with suitable rating of DC isolators for solar input from array junction box and fuse of suitable rating between PCU and battery.
- AC distribution board should comply with IP 21 as per IEC 529 and should be equipped with suitable rating of MCB between PCU and load.
- All switch , circuit breakers and connectors should comply with IEC 60947 (part –i, ii, iii) / is 60947 (Part-i, ii , iii).

## 5. Battery Bank:

There will be one battery bank comprising of appropriate capacity for respective SPV Power Plant (Off-Grid). The batteries should be of tubular plate lead acid & low maintenance type or Gel / VRLA Type and shall have long service life. The cells should confirm IEC 61427 / IS 1651 / IS 133369 and as per specification given below shall be provided.

Battery Bank Capacity	120 V, 600 Ah
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.
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.
Battery Voltage	2 Volt
Approval	Batteries shall have to be approved by ERTL or CPRI or any MNRE approved test centers
Service Life	Should perform satisfactory for a minimum period of 5 year under operating conditions as mentioned.

Each battery bank will contain suitable wooden rack or Mild Steel, hydrometer, thermometer, cell tester and connecting leads etc.

## **6. Power Conditioning Unit (PCU):**

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 should conform IEC 61683, IEC 60068 as per specifications.

PCU refers to combination of charge controller, inverter and AC charger and shall be supplied as integrated unit or separate units.

### **Inverter:**

The inverter will be highly efficient. The inverter should confirm IEC 61683 / IEC 60068 and should be based on MPPT design. 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:

- The PCU should be designed to be completely compatible with the SPV array voltage.
- The combined kVA rating of all PCUs shall not be less than corresponding KVA at standard temperature.
- Optimum numbers of central inverter with MPPT shall be used with the power plant for maximum efficiency and shall be efficient based on PWM MPPT with IGBT/ reliable power based design.
- The sine wave output of the inverter shall be 230V, 1 phase, 3 wire 50 HZ AC LT voltage.
- The peak inverter efficiency inclusive of built in isolation transformer shall exceed 85% at full load .
- 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.
- Inverter shall provide display of PV array DC voltage, current and power, AC output voltage and current, AC power, Power Factor and AC energy and frequency. Remote monitoring of inverter parameters should be possible.
- Operating temperature Range shall be 0 to 55 deg C
- Maximum Power Point Tracker (MPPT) shall be integrated in the power conditioner unit to maximize energy drawn from the Solar PV array.
- The charge controller/ MPPT units should qualify to IEC standards.

- Online microprocessor based Data Acquisition Systems and Remote Monitoring facility for 365 days with data Recovery from remote location should equip.
- Provision for Dual Energy Metering option should be there in the systems.
- Firm should have sufficient enclosure on report preparation and should provide energy generation report on demand of officials.
- All PCUs must be provided with remote monitoring and data acquisition systems.

Inverter Capacity	1 Phase, 230 V and equivalent capacity of 12.5KVA
Nominal Battery Voltage	120VDC
Output frequency	50 Hz +/- 0.5 Hz
Overload Capacity	200% for 30 Second.
Efficiency	80% at 50% of load and More than 90% at full load 0.8 PF
Short Circuit Protection	Circuit Breaker and Electronics protection against sustained fault.
Low Battery Voltage	Automatic Shut Down
Total Harmonic Distortion	Less than 3%
Over Voltage	Automatic Shut Down
AC over Current/Load	Automatic Shut Down
Protection	Over Voltage both at Input & Output Over Current both at Input & Output Over Frequency Surge voltage inducted at output due to external source.
Protection Degree	IP20/IP21
Instrumentation & Indication	Input & Output voltage, Input & Output Current, Frequency, Power output, different status of inverter, kind of fault by audio signal.

**Charge Controller Unit:**

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. 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. The charge controller shall be of MPPT type / PWM type employing IGBT switching elements.

Charge controller should confirm IEC 62093 / IEC 60068 as per specification.

The charging sequence from SPV array or external AC source shall be as follows:

**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 / dt sensing). The charger shall switch on the „trickle charge after this.

**From AC Source:**

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.

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.

Salient features of the Charge Controller shall be as follows:

Switching elements	IGBT
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.

Battery disconnected / Fault Battery Reverse Polarity, Low Solar Power, System Fault and Charger over Temperature and Input Over / Under Voltage (for AC).

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.

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.

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.

#### Salient Features:

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

### **7. AC Distribution Panel Board:**

The AC Distribution Board shall consist of the components as per designed PCU.

### **8. Cables & Wirings:**

- Cables running between solar panels and array junction box should be 4 Sqmm copper flexible.
- Cables running between AJB and DCDB should be of 25Sqmm copper flexible cable .
- Cable running between PCU and battery should be 25Sqmm coppers flexible cable.
- Cable running between PCU and ACDB should be 6 Sqmm Copper cables.
- All copper flexible cables should comply to IS651 and make should be Polycab,



Havells or equivalent.

- Colour code should be followed for over all wiring i.e, red for positive, black for negative , green for earth .
- All cable should run in suitable PVC Conduits .No cable should be directly exposed to sunlight.

## **9. Danger plates:**

The bidder have to provide at least 8 Danger Notice Plates of 200 mm X 150 mm made of mild steel sheet, minimum 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required. The inscription shall be in English and local language. Out of eight, four danger notice shall have to be provided at PV Yard & Four-danger notice at Control Room & Battery room.

## **10. Lightning & Over Voltage Protection System:**

- 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.
- 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 to be made after giving due consideration to maximum wind speed and maintenance requirement at site in future. The lightning conductor shall be earthed through 20 mm X 3 mm thick GI flat earth pits/earth bus made with 25 mm X 5 mm GI flats.

## **11. Earthing Systems:**

- The Earthing for array and distribution system & Power plant equipment shall be made with GI pipe, 4.5 m long 40 mm diameter including accessories and providing masonry enclosures with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS:3043. Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each array structure of the SPV yard shall be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.

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

## **12. Display Board:**

You shall provide the display board of size 3 ft x 3 ft that gives detailed circuit diagram of the system with its description.

## **13. Comprehensive Maintenance Contract (CMC):**

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 such as topping up of batteries, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of battery terminals, etc. 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.

## 14. Drawings & Manuals

2 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.

## 15. 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.

### System Detail for 14KWp Grid Interactive Solar PV Power Plant:

Sl. No.	Brief Description	Units	Make
1	SPV modules for a 14 KWp Grid Interactive Solar PV Power Plant, as per specifications.	1 Set	Compliant to bid document spec's
2	SPV module mounting structure suitable for accommodating 14 KWp capacity SPV modules including foundation as per specifications on rooftop	1 Set	As per BIS
3	PCUs as per specifications	1 Set	SMA / OPS/Schneider/KACO Siemens / ABB / Emerson / equivalent
4	Array Junction Boxes (Optional)	1 Set	Tyco / Hensel/ spelberg / equivalent
5	Main Junction Boxes(optional)	1 Set	Tyco / Hensel/ spelberg / equivalent
6	DC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/ L&T / equivalent
7	AC Distribution units as per specifications	1 Set	Siemens / ABB / Schnieder Electric/ L&T / equivalent
8	Cables requirement as per design	Mtrs. As required at site for	Finolex / Polycab / Havells /equivalent

		full plant commissioning	
9	Fire extinguisher in accordance with BIS codes for electrical short circuit fires along with sand buckets	1 Set	
10	Lightning arrester complete set as per specification and Protection device.	2 Sets	BIS compliant
11	Earthing complete set as per specification	2 Sets	BIS compliant
12	Recommended underground /sealed cabling up to distribution control panel		
13	Providing training to engineers and site staff for operating Maintenance and trouble shooting skills, if necessary		

All the items against which no make has been mentioned must confirm to ISI standards and not below REC specifications.

### **Technical Specifications For 14KWp SPV Systems:**

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**

The modules having capacity above 200Wp should only be provided in the array to obtain the required array power output. Indigenously produced PV module (s) containing mono/ multi crystalline silicon solar cells should only be used.

All modules must comply with to IEC 61215, 61730 part 1 & 2 (Certificates from MNRE test centres in support of such compliance must be submitted along with the tender document.

The other criteria are as follows:

- Crystalline Silicon Solar Cell Modules IEC 61215 Edition (II)
- PV modules must have quality to IEC 61730 Part I & II, for safety qualification testing and to be used in a highly corrosive atmosphere throughout their lifetime, they must

qualify to IEC 61701.

- 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.
- Each PV module used in solar power project under this tender must use a RF identification tag (RFID), which must contain the following information. The RFID should be laminated inside the module and but must be able to withstand harsh environmental conditions.
  - Name of the manufacturer of PV Module.
  - Name of the manufacturer of Solar cells.
  - Month and year of the manufacture (separately for solar cells and module).
  - Country of origin (separately for solar cells and module).
  - I-V curve for the module.
  - Peak Wattage,  $I_m$ ,  $V_m$  and FF for the module.
  - Unique serial No and Model No of the module.
  - Date and year of obtaining IEC PV module qualification certificate.
  - Name of the test lab issuing IEC certificate.

## **2. Module Mounting Structure:**

- Solar PV modules are to be installed & fixed with the module mounting structures with appropriate size stainless steel nuts & bolts.
- The array structure shall be made of hot dip galvanized MS angles of size not less than 50mm X 50mm X 6 mm size. The minimum thickness of galvanization should be at least 80 microns and for coastal area 120 microns. All nuts & bolts shall be made of very good quality of stainless steel. The minimum ground clearance of the lowest part of the module structure shall be 500 mm.
- The structure should be appropriately designed to withstand high wind velocities up

to 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)**
- The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly. There shall be no requirement of welding or complex machinery at site.

### **3. Array Foundation:**

The legs of the structures made with hot dip GI angles will be fixed and grouted in the RCC foundation columns made with 1:2:4 cement concrete. The work includes necessary excavation, concrete-ing, back filling, shoring & shuttering etc.

### **4. Junction Boxes (JBS):**

The junction boxes shall be dust and waterproof and made of thermo-plastic. The terminals will be connected to copper lugs or bus bar of proper sizes. The junction boxes will have suitable cable entry points fitted with cables glands. Suitable markings shall be provided on the legs or bus bar for easy identification and cable ferrules will be fitted the cable termination points for identification. Each main junction box shall be fitted with appropriate rating blocking diode. The junction boxes shall be of reputed make.

- Array Junction Box should be IP 54 as per IEC 529 and should provided with reverse blocking diodes, fuses and Isolators of suitable ratings.
- DC Distribution board should comply with IP 21 as per IEC 529. It should be equipped with suitable rating of DC isolators for solar input from array junction box and fuse of suitable rating between PCU and battery.
- AC distribution board should comply with IP 21 as per IEC 529 and should be equipped with suitable rating of MCB between PCU and load.
- All switch , circuit breakers and connectors should comply with IEC 60947 (part –i, ii, iii) / is 60947 (Part-i, ii , iii).

### **5. Power Conditioning Unit (PCU):**

The PCUs required shall be of minimum 14 KWp DC/ 15 KVA AC rated capacity. The PCU with grid interactive feature shall feed power to the captive load of the building. The Power Conditioning Unit (PCU) being grid interactive in nature shall consist of multiple MPPT controllers. It shall provide necessary features for Grid Synchronization and Data Logging/Monitoring. The PCU should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of Grid. The bidder may choose the inverter as string/Central as per their Design/ Project Philosophy.

Common Technical Specification:

Sl no	Particulars	Specification
1	Output voltage:	1 Phase, 230 V ac (+/- 20 %)
2	Frequency	50 Hz ( with tolerance limit of 46Hz - 54Hz)
3	MPP Voltage range	250V - 800V DC
4	Nominal Power	15 kVA
5	Maximum DC capacity of PCU	14KW
6	Standard conformation	IEC 61683
7	Total Harmonic Distortion	Less than 3%
8	Operating temperature Range	25 to 60 Degree C
9	Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 65 degree of ingress protection
5	PCU efficiency	98 % and above at full load,
11	Power Control	MPPT
12	Number of MPPT	Minimum 2 with possibility of both symmetric & asymmetric string design
13	The DC energy produced has to be utilized to maximum and supplied to the bus for inverting to AC voltage to extract maximum energy from solar array	1 Phase, 230 V AC/ (+20% to – 20%), 50 (56Hz - 54Hz) with total harmonic voltage distortion less than 3% to synchronize with local grid . DC voltage ripple content shall be not more than 3%.
14	The PCU shall be of very high quality	Efficiency not less than 98% and shall be capable of running in integrated mode.
15	Degree of protection	PCU shall be IP-54.
16	Data logging	Built in with data logging to remotely monitor plant performance shall be provided so that performance can be monitored through web

The PCU shall be designed for

- Continuous, reliable power supply as per specification
- The PCU should be designed to be completely compatible with the SPV array voltage and Grid supply voltage.
- PCU shall operate in sleeping mode when there will no power connected
- Protections:
- Over voltage both at input & output.
- Over current both at input & output.
- Over/under grid frequency.
- Short circuit.
- Anti- Islanding Protection
- It should have user friendly 4X40 LED/LCD display for programming and view
- Cooling – Natural Air Cooling/ Temperature driven fans

## 6. AC Distribution Panel Board:

The AC Distribution Board shall consist of the components as per designed PCU.

## **7. Cables & Wirings:**

- Cables running between solar panels and array junction box should be 4 Sqmm copper flexible.
- Cables running between AJB and DCDB should be of 25Sqmm copper flexible cable .
- Cable running between PCU and battery should be 25Sqmm coppers flexible cable.
- Cable running between PCU and ACDB should be 6 Sqmm Copper cables.
- All copper flexible cables should comply to IS651 and make should be Polycab, Havells or equivalent.
- Colour code should be followed for over all wiring i.e, red for positive, black for negative , green for earth .
- All cable should run in suitable PVC Conduits .No cable should be directly exposed to sunlight.

## **8. Danger plates:**

The bidder have to provide at least 8 Danger Notice Plates of 200 mm X 150 mm made of mild steel sheet, minimum 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required. The inscription shall be in English and local language. Out of eight, four danger notice shall have to be provided at PV Yard & Four-danger notice at Control Room & Battery room.

## **9. Lightning & Over Voltage Protection System:**

- 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.
- 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 to be made after giving due consideration to maximum wind speed and maintenance requirement at site in future. The lightning conductor shall be earthed through 20 mm X 3 mm thick GI flat earth pits/earth bus made with 25 mm X 5 mm GI flats.

## **10. Earthing Systems:**

- The Earthing for array and distribution system & Power plant equipment shall be made with GI pipe, 4.5 m long 40 mm diameter including accessories and providing



masonry enclosures with cast iron cover plate having locking arrangement, watering pipe using charcoal or coke and salt as required as per provisions of IS:3043. Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.

- Each array structure of the SPV yard shall be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.
- The inverters and battery charger and all equipment inside the control room and battery room to be connected to earth through 25 mm X 5mm tinned copper strip including supplying of material and soldering. As earth bus be provided inside the control room with 25 mm X 5mm tinned copper strip.
- In compliance to Rule 61 of Indian Electricity Rules, 2004 (as amended up to date), all non-current carrying metal parts shall be earthed with two separate and distinct earth continuity conductors to an efficient earth electrode.

### **11.Display Board:**

You shall provide the display board of size 3 ft x 3 ft that gives detailed circuit diagram of the system with its description.

### **12.Comprehensive Maintenance Contract (CMC):**

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 such as topping up of batteries, tightening of all electrical connections, changing of tilt angle of module mounting structure, cleaning & greasing of battery terminals, etc. 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.

### **13. Drawings & Manuals**

2 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.

### **14. 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.

**PRICE BID**

**For**

**10KWp off-grid solar PV Power plant (to be filled in On-line only)**

<b>Sl No</b>	<b>Particulars</b>	<b>Price in INR</b>
1	Design & Supply of 10 KWp Off-grid Solar PV Power Plant as per the technical specification given in the tender	
2	Taxes and duties(OVAT)	
3	Sub Total ( 1 +2)	
4	Cost of Installation and commissioning of the systems	
5	Service Tax	
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	Service Tax	
9	Sub Total (7+8)	
10	<b>Grand Total (3+6+9)</b>	

**PRICE BID**

**For**

**14 KWp Grid interactive solar PV Power plant (to be filled in On-line only)**

<b>Sl No</b>	<b>Particulars</b>	<b>Price in INR</b>
1	Design & Supply of 14KWp Grid Interactive Solar PV Power Plant as per technical specification given in the tender	
2	Taxes and duties(OVAT)	
3	Sub Total ( 1 +2)	
4	Cost of Installation and commissioning of the systems	
5	Service Tax	
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	Service Tax	
9	Sub Total (7+8)	
10	<b>Grand Total (3+6+9)</b>	

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

**Model Bank Guarantee Format for Performance Security**

[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. Up to a total of ----- .(Amount of the guarantee in words and figures).and we undertake to pay you. Upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the 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