

**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY**  
**BHUBANESWAR**  
**BID DOCUMENT**

**DETAILS OF TENDER CALL NOTICE No. 4864 /OREDA DTD.18.11.16**

**FOR**

**Supply, Erection, Commissioning, and Maintenance for five years of Solar PV  
Micro grids in 58 selected villages in Odisha on Build, Operate, and Maintain and  
Transfer (BOMT) basis**

**Under**

**“DDG under DDUGJY”**

<b>Date of Hoisting of the bid document on Website</b>	<b>Dt: 21-11-2016</b>
<b>Date &amp; time of pre-bid meeting</b>	<b>Dt: 28-11-2016, 11:00 AM at OREDA Conference Hall</b>
<b>Hoisting date of final revised bid document</b>	<b>Dt: 02-12-2016</b>
<b>Date and time of last submission of online bid document</b>	<b>Dt: 15-12-2016 (13:00 Hrs)</b>
<b>Date and time of last submission of hard copy of bid document</b>	<b>Dt: 17-12-2016 (13:00 Hrs)</b>
<b>Opening of Techno-Commercial bid</b>	<b>Dt: 17-12-2016 (15:00 Hrs)</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)**



**OREDA**

**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY**  
S-3/59, MANCHESWAR INDUSTRIAL ESTATE, BHUBANESWAR-751010 S-3/59  
Web: [www.oredaorissa.com](http://www.oredaorissa.com)

**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY** invites sealed e-tenders in two part bidding system for  
**Supply, Erection, Commissioning, and Maintenance for five years of Solar PV Micro grids in 58 selected villages in Odisha on Build, Operate, and Maintain and Transfer (BOMT) basis Under “DDG under DDUGJY”**

<b>Name of Package (Package Wise)</b>	<b>Estimated Cost (Rs. in .Lakhs)</b>	<b>Earnest Money Deposit (Rs. In Lakhs)</b>	<b>Tender processing fee Non refundable (in Rs.)</b>	<b>Non refundable Cost of Bid document</b>
<b>Package-1</b>	<b>1012.5</b>	<b>10</b>	<b>1000</b>	<b>Rs. 10500/-</b>
<b>Package-2</b>	<b>818</b>	<b>8</b>	<b>1000</b>	
<b>Package-3</b>	<b>458.93</b>	<b>5</b>	<b>1000</b>	
<b>Package-4</b>	<b>774.63</b>	<b>8</b>	<b>1000</b>	

## SECTION-I

### GENERAL INFORMATION

- 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** for the intended package(s) only 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 for the intended package(s) 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 / Bank guarantee towards **EMD, Tender Cost** 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**

### SALIENT FEATURES OF THE TENDER

SL. NO.	DESCRIPTION	SCHEDULE
1.	<b>Tender Notice No.</b>	<b>/OREDA DTD</b>
2	Tender For	Supply, Erection, Commissioning, and Maintenance for five years of Solar PV Micro grids in 58 selected villages in Odisha on Build, Operate, and Maintain and Transfer (BOMT) basis Under “DDG under DDUGJY”
3	Cost of Tender document	The cost of tender document shall have to be paid in shape of DD drawn in favour Chief Executive, OREDA payable at Bhubaneswar
4	Estimated Cost of Tender	<i>As per tender schedule</i>
5	Bid security in INR (EMD)	To be paid separately for each package as mentioned in the tender document either in shape of DD drawn in favour Chief Executive, OREDA payable at Bhubaneswar or BG in the prescribed format.
6	Tender processing fee	To be paid separately for <b>each package</b> as mentioned in the tender document to K.S.E.D.C. Ltd, Bangalore on e-payment mode only.  <b>NOTE: For tender processing fee 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>

## **SECTION-II**

### **SUBMISSION OF ON-LINE 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 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) 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.

- (i) 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).
- (ii) Click / Double Click to open the Microsoft Internet Explorer

(This icon will be located on the Desktop of the computer).

- (iii) 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.
- (iv) 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
- (v) Click "Un Applied" to view / apply for new tenders.
- (vi) 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.
- (vii) Click to view the tender documents which are received by the user. Tender document screen appears.
- (viii) 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 / Bank guarantee towards **EMD , Tender Cost** 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 e-tendering assistant contact help desk number,**

**080- 40482000(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/BG 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.**

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.

(ii) 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/BG 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

- i. Demand draft towards cost of bid document
- ii. Copy of acknowledgement of tender processing fee.
- iii. Bid Security in shape of DD/BG as described.
- iv. 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
  - 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 only. The signed tender document need not to be submitted in hard copy. Hard copy (i.e EMD,Tender cost & all necessary documents compliance to eligibility) shall be submitted to OREDA office at S-57, Mancheswar Industrial Estate, Bhubaneswar 751010 before dt-17.12.2016 2016 (13.00 Hrs) in the manner prescribed elsewhere in the document. .



**(B) Technical bid:-**

The Electronic Form/Template of the bid for First Envelope (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.

4.3 All taxes applicable at the time of supply will be charged separately.

- 4.4 The supplied materials should strictly comply to the specifications as mentioned in the bid; otherwise the material would be liable for rejection.
- 4.5 Any clarification on the technical specification and commercial terms and condition may be clarified in writing from OREDA.
- 4.6 Deviation of any commercial terms and condition and technical specification shall not be entertained under no circumstances.
- 4.7 Bidders may in their own interest visit the sites and undertake field survey 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 CMC.
- 4.8 All the bidders shall essentially indicate the break-up of prices as shown in Price bid.
- 4.9 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.

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## **Background**

- 1.1 The Project will be implemented on Build , Operate, Maintain and Transfer (BOMT) basis
- 1.2 The Installed systems are to be maintained by the successful bidder for a period of 5 years after which the same has to be handed over to state government in good working condition along with all replaced parts.
- 1.3 Infrastructure to be established under the project should be done in a manner so that they are grid compatible.
- 1.4 The entire project consisting of 58 villages has been divided in to 4 distinct packages taking contiguous districts and a sizable capacity. A bidder is free to apply for any one or more packages provided that the bidder it has the required turnover.
- 1.5 During execution of the project there may be some increase in the number of villages and in such case the additional number of villages will be awarded to the vendors only who have been awarded work in the respective districts under this tender such award is subject to their performance under to tender.

## **1. General Conditions for Eligibility**

### **Technical Criteria (for Individual Firm)**

The bidder must have successfully erected ,tested and commissioned Generation (Including Renewable energy Transmission or sub-transmission & distribution projects /stations) ,or conducted O & M services in generation ,transmission or distribution works/stations in last 7 years as on the date of bid opening ,having at least

- a) 80% KW capacity (of generation or transmission /distribution network or operation and maintenance works) stipulated in bid in single completed work.  
or
- b) 50% KW capacity (of generation or transmission /distribution network or operation and maintenance works )stipulated in bid in two complete work  
or
- c) 40% KW capacity (of generation or transmission /distribution network or operation and maintenance work ) stipulated in bid in three completed work.  
Or
- d ) Technical experience of erection ,testing and commissioning of at least one DDG Project whose generation capacity shall be higher than the maximum of the individual DDG projects covered in

the bid and the system so created /maintained must be in satisfactory operation for at least one (1) year as on date of opening of bid.

*( For example : a bid of DDG Projects of 50 KW 2 Nos , 40 KW 5 Nos. 30 KW 5 Nos. Projects is floated ; individual firm having experience of 50 KW single project can quote for all the 12 projects in the bid whereas single firm having experience of one No 30 KW Project can quote for 5 Nos of 30 KW projects only.)*

**Technical Criteria (for Joint venture)**

Bids may be submitted by joint venture firms (having not more than three partners with one partner as lead partner), wherein:

All the partners should jointly meet qualification requirements set forth at point (a) or (b) or (c) or (d) above

And

Successfully erected, tested and commissioned or completed at least a single similar works/projects in last 7 years as on the date of bid opening.

A single turnkey contract, having at least 50% of the KW capacity experience as considered in proposed bid by at least one partner

And

A single turnkey contract, having at least 30% of the KW capacity considered in proposed bid, by each of remaining partner (s)

**Commercial Criteria (for Individual Firm)**

The bidder shall meet the following minimum commercial criteria in past 7 years of work of electrical erection, testing and commissioning or electrical O & M services in Generation, Transmission or sub-transmission & Distribution projects /Stations:

a) 80% of estimated amount of project in a single completed work.

Or

b) 50% of estimated amount of project in two completed works individually.

Or

c) 40% of the estimated amount of the project in three completed works individually.

- d) Minimum Average Annual Turnover (MAAT) for last three years out of last five financial years of the bidder should not be less than 30% of the estimated cost of the package.
- e) For bidders to qualify for more than one package the MAAT requirement shall be the sum of MAAT requirement of the packages, they proposed to qualify.

**Commercial Criteria (for Joint venture)**

The bidder shall meet the following minimum commercial criteria in past 7 years of electrical work of erection, testing and commissioning or of electrical O & M services in Generation, transmission or sub- transmission & Distribution projects /stations:

- a) 80% of the estimated amount of the project in a single completed work  
Or
- b) 50% of the estimated amount of the project in two completed works individually,  
Or
- c) 40% of the estimated amount of the project in three completed works individually.

The figures for each of the partner of the joint venture shall be added together to determine the bidders compliance with the minimum qualifying criteria out: however in order for joint venture to quoting: the partner(s) of joint venture must meet the following minimum criteria:

- The lead partner shall meet, not less than 40% of the minimum criteria given in MAAT.
- For bidders to qualify for more than one package, the sum of requirements of individual packages shall be considered for determination of Qualifying Requirements of the bidder.
- If the company has formed in last 2 years (for company not older than 3 years), total turnover shall be divided (by three) and shall be compared with MAAT requirement of the bid. In case, turnover, so calculated is more than MAAT requirement, agency shall be commercially accepted for participation in the bidding. However, no such relaxation shall be available for company formed less than 2 years before.

## 2. Scope of the work

The broad scope of the work would be

- a. Supply, erection, commissioning of solar PV power plants of approved capacities in identified sites in allotted villages.
- b. Construction of control rooms as per laid down specifications in identified sites.
- c. Laying of LT lines of 220 V or 440 V as the case may be of given lengths within the village strictly as per the norms of DISCOMs
- d. Providing service connections to all houses in the village
- e. Internal wiring of each house including provision of switch board with necessary switches and sockets, a watt hour meter, 4 LED lamps, a mobile charging point etc all within a capacity of 200 w only as per given technical specifications.
- f. Providing street lights @ 10% of the total numbers of households in suitable locations in the village so as to illuminate the streets, approach roads etc.**
- g. Testing and commissioning the entire solar micro-grid system as well as service connection etc.
- h. Operation and maintenance of the installed systems for a period of 5 years from the date of installation.
- i. Handing over of the system to State Government through the concerned DISCOM in good working condition along with all spares after completion of the 5 years' maintenance period

### 3. Instructions to Bidders

**As this is a very important and time bound project, prior to submission of bids all bidders are advised to visit the villages / areas (packages) they intend to bid for and develop a clear understanding of the logistics and other relevant features of the villages. .**

- a. The successful bidders shall after completion and commissioning of the systems submit all details of the installed systems like beneficiary details, systems details, installation report, etc. in the formats to be provided at the time of issue of purchase order. The details will also include Photographic proof of delivery of the system to the genuine beneficiary, GPS location of the village.
- b. All necessary conditions as further outlined in the subsequent sections of this document must be strictly adhered to.
- c. The quantity of materials intended to be purchased as mentioned in this documents is subject to alteration without any notice.
- d. The bidders are required to furnish their offers in the price bid both in words & figures. In case of corrections ,if any, the original text/numerical must be clearly crossed out and re-written legibly above, below or on the side of the crossed out characters as per availability of space and the authorized person must put his dated initial under such corrections. In case of any conflict between figures and words, the later shall prevail.
- e. Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- f. Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.
- g. Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- h. All essential supplementing documents should be signed and stamped and in case of need for verification, originals should be produced.
- i. Copy of Test Reports from Solar Energy Centres (SEC)/Other Authorized Test Centres (OATC) in regards to SPV Systems confirming to MNRE specifications spelt out in the Administrative Approval of Jawaharlal Nehru National Solar Mission vide MNRE communication would be a major criteria for evaluation of bids for standalone systems only.
- j. The bidders must be having / willing to open a local office at Bhubaneswar before commencement of work for close coordination with OREDA and also cluster level service centres at suitable places as will be indicated by OREDA during installation of the systems.



- k. The bidders must remain prepared for submitting information such as identity proof of beneficiaries, photographs, GPS locations of the villages etc. along with installation reports.
- l. The bidders during installation of the systems will be required to install signboards indicating details of the project as per direction of OREDA.
- m. Bidders will be required to open Cluster Level Service Centres at block headquarters or any other suitable location in consultation with the concerned Asst. Director. At least one such service centre should be opened for a cluster of 20 to 25 villages. The service centres should have trained technicians to handle jobs like replacement of PCBs, minor repairs etc. Such service centres should also be provided with adequate tools as well as spare and consumables to provide services to all the beneficiaries within its jurisdiction.
- n. Bidders will also be required to open at least one State Level Service Centre in Bhubaneswar having trained personnel, adequate spares & consumables and facilities to undertake component level repairs of PCBs etc and all other repairs / services that cannot be provided by the cluster level service centres.

#### **Submission of Bids**

**The bidders are requested to submit both technical and financial bids online in specified bid sheets only. Soft copies of all other compliances related to the bids may be dropped in the specified folders with proper name of the file. The corresponding file name should be mentioned in the technical bid before uploading otherwise the bid will be rejected.**

**They should also submit a hard copy of the technical bid sheets, all other documents compliance to techno-commercial eligibility, testimonials etc. in the hard bound form. They are requested to drop the same on or before the date mentioned in tender schedule at OREDA office, S-59, MIE, Bhubaneswar.**

**Details of the Project**

S. No.	District	No. of Villages	No. of Household	Proposed Capacity (KW)	Length of LT Line	No. of Service Connection	Total project Cost (in Lakh)	EMD (In Lakh)	Minimum Turnover Requirement three years of last five FY (In Lakh)
<b>Package 1</b>	Koraput-I	18	1238	383	65	1238	1012.5		
	<b>Total</b>	<b>18</b>	<b>1238</b>	<b>383</b>	<b>65</b>	<b>1238</b>	<b>1012.5</b>	<b>10</b>	<b>304</b>
<b>Package 2</b>	Koraput-II	18	888	280	39.5	888	732.94		
	Nabarangpur	2	101	31	6	101	85.06		
	<b>Total</b>	<b>20</b>	<b>989</b>	<b>311</b>	<b>45.5</b>	<b>989</b>	<b>818</b>	<b>8</b>	<b>245</b>
<b>Package 3</b>	Rayagada	7	321	98	17.5	321	270.7		
	Gajapati	7	268	65.5	13	268	188.23		
	<b>Total</b>	<b>14</b>	<b>589</b>	<b>163.5</b>	<b>30.5</b>	<b>589</b>	<b>458.93</b>	<b>5</b>	<b>138</b>
<b>Package 4</b>	Nuapada	6	967	300	60	967	774.63		
	<b>Total</b>	<b>6</b>	<b>967</b>	<b>300</b>	<b>60</b>	<b>967</b>	<b>774.63</b>	<b>8</b>	<b>232</b>
<b>Package 1-4</b>	<b>Grand Total</b>	<b>58</b>	<b>3783</b>	<b>1157.5</b>	<b>201</b>	<b>3783</b>	<b>3064.06</b>	<b>31</b>	<b>919</b>

**Detail of Packages:**

Package 1							
S. No	District	Village	Census Code	No. of Household	Proposed Capacity (KW)	Length of LT Line	No. of Service Connection
1	Koraput-I	Bhitaralacha	428662	99	30	2	99
2		Martiguda	428759	21	7	1	21
3		Raiganda	428761	21	7	1	21
4		Upparpatesu	428751	30	10	1	30
5		Jangiribhalsa	428832	71	22	3	71
6		Kasu	428757	28	9	1	28
7		Kunjari	428785	38	13	1	38
8		Digudabari	428787	18	6	1	18
9		Siribeda	429186	234	71	15	234
10		Damanjodi	429299	45	14	3	45
11		Bodaguda	429227	80	24	5	80
12		BATIGUDA	429400	34	11	1	34
13		Palijodipodar	430000	131	40	8	131
14		Bari	428872	208	63	12	208
15		Dugam	428668	24	8	1.5	24
16		Deobil	428644	55	17	3	55
17		Tapapodar	428640	57	18	3	57
18		Tuturi	428626	44	13	2.5	44

<b>Package 2</b>							
<b>S. No</b>	<b>District</b>	<b>Village</b>	<b>Census Code</b>	<b>No. of Household</b>	<b>Proposed Capacity (KW)</b>	<b>Length of LT Line</b>	<b>No. of Service Connection</b>
1	Koraput-II	Pardiambo	428572	23	7	1.5	23
2		Lalpadar	428666	48	15	3	48
3		Mangalpur	428667	41	13	2	41
4		Masanimunda	428571	41	13	2	41
5		Nandimitika	428593	35	11	1	35
6		Raivalsa	428682	28	9	1	28
7		Rangajodi	428633	27	9	1	27
8		Suresi	428601	34	11	1	34
9		Talalachha	428663	105	33	4	105
10		AMBAGUDA	428636	18	6	1	18
11		BASANJHOLA	428669	34	11	1	34
12		Bandagudi (Bandhagudi)	430100	91	28	5	91
13		Bangarugudi	430097	30	9	2	30

14		Narlavalasa (Nardavalasa)	430129	34	11	2	34
15		Pilikabitra	430032	40	13	2	40
16		Uppersembi	430124	48	15	2	48
17		Bituguda	430053	93	30	4	93
18		BITRA	430029	118	36	4	118
19	Nabarangpur	Mundaguda	428003	31	10	2	31
20		Poda Aunli	428035	70	21	4	70
<b>Package 3</b>							
S. No.	District	Village	Census Code	No. of Household	Proposed Capacity (KW)	Length of LT Line	No. of Service Connection
1	Rayagada	Gunjuguda	427000	27	8	1.5	27
2		Kotili	426956	116	35	7	116
3		Boripadar	426877	35	11	2	35
4		Tedikano	426909	56	17	3	56
5		Kudurumunda	424935	23	7	1.5	23
6		Hirasuli	425548	26	8	1.5	26
7		Kalakani	425919	38	12	1	38
8	Gajapati	Badapur	3429900	33	8	2	33

9	Purunapani	3429200	57	14	3	57
10	Satyanagar	3429900	33	8	2	33
11	Duranga	3431400	30	7.5	2	30
12	Taila	3430000	25	6	2	25
13	Tarabhanga	3429300	56	13.5	2	56
14	Lanja	3430400	34	8.5	2	34

**Package 4**

S. No .	District	Village	Census Code	No. of Household	Proposed Capacity (KW)	Length of LT Line	No. of Service Connection
1	Nuapada	Bhuinpani	421922	180	56	12	180
2		Kathafar	422094	154	48	10	154
3		Patdarha	422069	490	150	30	490
4		Patapani	421893	40	13	2.5	40
5		Sibanarayanpur	421850	28	9	1.5	28
6		Chitarama	422170	75	24	4	75

## **SECTION III**

### **6 . Commercial Terms & Conditions**

#### **6.1 Rate**

The rates offer should indicate the package wise complete cost including supply, erection, commissioning and CMC Charges in respect of power plant, control room, LT Line, service connections and house wiring. For standalone power packs 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.

All taxes & duties are to be given 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. Besides the package cost, the cost for each individual village within the package should also be given in the enclosed format.

#### **6.2 Sales Tax & Duties etc.**

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

#### **6.3 Earnest Money Deposit**

**6.3.1** Earnest money as shown against each package is required to be deposited along with the bid without which the bid will not be accepted. No interest will be payable on the EMD amount under any circumstances.

Earnest money can be deposited in shape of a Demand Draft/ Bank Guarantee (valid for a period of 6 months) in favour of Chief Executive, OREDA from any Nationalized Bank Payable at Bhubaneswar and the proof of deposits should be attached to the bid.

**6.3.2** E.M.D would be refunded to the unsuccessful Bidders after finalization of the bid without any interest.

**6.3.3** EMD would be refunded to successful bidder(s) after submission of security deposit as detailed at clause 6.4. E. M. D would be forfeited in case of non- compliance of the purchase order by the successful bidder.

In case of claim for exemption from deposition 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.

#### **6.4. Security Deposit/ Performance Guarantee Fees**

The successful bidder must deposit the Security amount / Performance Guarantee fees @ 10% of the ordered value with the Chief Executive, OREDA, Bhubaneswar-10 at the time of acceptance of the work order in shape of Bank Guarantees with 5 ½ years validity from the date of acceptance of the work order or till the completion of respective warranty periods whichever is later. The said deposit would be forfeited, if the supplies are not made as per the Terms & Conditions of the purchase order. The security deposit amount will be refunded after the expiry of the Warranty period and CMC period (ref. clause 2 of Scope of Work) of the systems, subject to satisfactory execution / performance of the systems.

#### **7. Award of work**

For each package the work will be awarded to the respective L1 bidder only.

#### **8. Programme Execution Schedule**

**The entire work should be completed in all respects within 90 days from the date of handing over of land.**

**Upon award of work the bidders concerned will be asked to submit work execution schedules which will be reviewed periodically.**

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 the concerned DISCOM. Following such inspection a joint commissioning report shall be brought out within 30 days of intimation about commissioning of the systems in the prescribed format, which shall form a part of the documents for release of payments.

##### **Validity of offer**

The offer must be kept valid for a period of one year from the date of opening of the technical bid. No escalation clause except the admissible tax component under the period of consideration would be accepted. The validity can be further extended with mutual consent.

#### **9. STCC**

The bidders must submit attested copy of valid up to date sales Tax / 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.



## **10. Warranty**

The SPV Modules and the Balance of Systems (BOS) should be warranted against any manufacturing defect or bad workmanship for a period of 10 (Ten) and 5 (five) years respectively from the date of commissioning of the systems.

Warranty certificate to the above effect must be furnished along with the commissioning reports.

## **11. Penalty and termination of contract**

The systems shall be supplied, installed and commissioned within the scheduled time. If the supplier 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 10% of the contract price for delayed goods or installation and commissioning. Once the maximum is reached (i.e 10 weeks of delay) OREDA may consider termination of the contract and forfeit the security deposit without prejudice to the other remedies of the contract along with recovery of mobilization advance by forfeiture of bank guarantee.

However, Chief Executive, OREDA may at his own discretion allow reasonable time extension upon written application of the supplying firm. If the delay is considered intentional or due to negligence of the vendor 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.

## **12. Operation and Maintenance**

**The bidder shall undertake the responsibility of operation and maintenance of the system for a period of 5 years from the date of commissioning of the systems. Before commissioning of the project the bidder shall provide the detailed arrangement made by her/him for regular trouble free operation and maintenance of the system which will include the name(s), contact details of operator(s) involved in the project.**

**The bidder will also provide an inventory of spares maintained at the project site as well as cluster level/ state level service centres.**

**For better appreciation, the power plants must be provided with remote monitoring system. In case of mobile network is not available the same may be provided with data dumping system.**

**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 God, acts of public enemy, acts of Government, fires, floods, epidemics, strikes, freights, embargoes and unusually severe weather.

**14. Inspection**

i. All tests and inspections shall be made at the place of delivery unless otherwise specifically agreed upon by the bidder and OREDA. Authorized OREDA Officer 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.

ii. OREDA has the right to have the tests carried out at its own cost by an independent agency at any point of time. Pre- delivery inspection at the factory site if necessary will be carried out by OREDA.

**15. Payment**

Payment will be made as per the following schedule subject to submission of completed documents as detailed against each

- Acceptance of work Order
- Schedule of supply of materials

15.1 Interim Payment- I- 50% of material cost and full taxes on material cost will be paid after construction of control room, supply of materials for L.T Line & house wiring in the prescribed format to be provided with the work order subject to submission of Verification report of the Asst. Director, District Renewable Energy Cell/ authorized officer of OREDA against the materials supplied in the prescribed format to be provided with the work order.

15.2 Interim payment-II- 40% of material cost, 80 % of installation cost and full tax on installation cost subject to submission of

- Installation & commissioning report to be provided with work order.
- Photograph of project (component wise)
- GPS details of the village
- Names of the trained village youths
- Contact details of cluster level service centres
- Photograph of village wise sign boards
- Certificate from DISCOM on drawl of LT Line
- CMC

15.3 Final payment @ 10% of material cost and 20% of installation cost will be released after successful functioning of the system, verification by the third party verifier engaged by OREDA and receipt of report thereof.

**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.

**17. 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- E to be provided with work order ) The scope of CMC must cover supply of spare parts ( including battery) / 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. Bids with very low/unrealistic CMC charges will be liable for rejection. The payment of annual maintenance charges under the Comprehensive Maintenance Contract shall depend upon the functionality of the system duly certified by the concerned local village energy committee and Authorised officials of OREDA. Upon receipt of such certificates CMC amount as applicable shall be paid at the end of 1<sup>st</sup>,2<sup>nd</sup>,3<sup>rd</sup> , 4<sup>th</sup> and 5<sup>th</sup> years.

**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 Orissa High court only. The Chief Executive, OREDA reserves the right to accept or reject any or all bids without assigning any reason thereof.

Sd/-18/11/2016

Chief Executive  
OREDA

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:**

### **PV MODULES**

#### **PV Module Qualification**

The PV modules used in the solar power projects must qualify to the latest edition of any of the following IEC PV module qualification test or equivalent BIS standards.

Crystalline Silicon Solar Cell Modules :IEC 61215

In addition, PV modules must qualify to IEC 61730 for safety qualification testing. For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701.

#### **Authorized Test Centers**

The PV modules must be qualified tested and approved by one of the MNRE/NABL accredited test centers providing IEC qualifying certification. In addition a PV module qualification test certificate as per IEC standard, issued by ETDC, Bangalore is also valid. MNRE will review the list of authorized testing laboratories / centers from time to time.

#### **Identification and Traceability**

Each PV module used in any solar power project must use a RF identification tag. RFID shall be mandatorily placed inside the module laminate and it must be able to withstand harsh environmental conditions.

The following information must be mentioned in the RFID used on each module.

- Name of the manufacturer of PV module
- Name of the Manufacturer of Solar Cells
- Month and year of the manufacturer (separately for solar cells and modules)
- Country of origin (separately for solar cells and module)
- I-V Curve for the module
- Wattage,  $I_m$ ,  $V_m$  and FF of the module
- Unique serial no. and Model no. of the module

- Date and year of obtaining IEC PV module qualification certification
- Name of the test lab issuing IEC certification.
- Other relevant information on traceability of solar cells and module as per ISO 9000.

Solar PV power plants must install necessary equipment to continuously measure solar radiation, ambient temperature, wind speed and other weather parameters and simultaneously measure the generation of DC power as well as AC power generated from the plant.

### **Warranty**

The mechanical structures, electrical works including power conditioners/inverters/charge controllers/maximum power point tracker units /distribution boards/digital meters/switchgear/storage batteries, etc and overall workman ship of the Off grid solar power plants must be warranted for a minimum of 5 years. PV modules used in Off grid 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.

- The PV modules used should be made in India.
- The front surface of the module shall consist of impact resistant, low iron and high transmission toughened glass.
- The module frame shall be made of GI/ Anodized Aluminum / corrosion resistant material which shall be electrolytic ally compatible with the structural material used for mounting the modules.
- It shall have back sheet for environment protection against moisture and high voltage electrical insulation.
- The fill factor of module shall not be less than 0.70 (typical). The V-I curve of each PV module with Sl. Nos. should be submitted along with Modules meeting the required specifications.
- Solar cell shall have surface anti-reflective coating to help to absorb more light in all weather conditions.
- Solar module shall be laminated using lamination technology using established polymer (EVA) and tedlar /Polyester laminate.
- Output Cables: Polarized Weather Proof DC rated multi-contact connector as per relevant IEC 60189, IS 694/IS 1554,IS/IEC 69947 standards.
- Photo conversion efficiency of SPV Module should be greater than 14%.
- DC negative conductor shall be bonded to the ground via Ground Fault Detector Interrupter (GFDI). The grounding point shall be as close as possible to the PV Array.
- Bidder shall provide data sheet for Solar PV Module (Under STC) along with their offer as per Guaranteed Technical Particular Data Sheet- 1.

## **PCU/ INVERTER**

- 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.
- The inverter shall be efficient based on PWM MPPT with IGBT/ reliable power based design.
- The PCU shall have internal protection arrangement against any sustained fault in the feeder line and against lightning in the feeder line.
- The PCU shall have the required protection arrangements against earth leakage faults.
- Specifically, the PCU should be three phase power conditioning unit using static solid state components.
- The sine wave output of the inverter shall be 220V, Single phase, 4 wire 50 HZ AC LT voltage for power plant capacity less than 10 KWp. For power plant capacity more than 10 KWp capacity, the output shall be 415V, 3 phase, 4 wire 50 HZ AC LT voltage.
- The inverter shall incorporate transformer isolated output (transformer less inverter shall be used with suitable external transformers), suitable DC/AC fuses/circuit breakers and voltage surge protection shall be provided. Fuses used in the DC circuit shall be DC rated.
- The peak inverter efficiency inclusive of built in isolation transformer shall exceed 94% at full load
- The kVA ratings of inverters for PV systems should be chosen as per the PV system wattage.
- The output power factor should be of suitable range to supply or sink reactive power. Inverter shall provide display of PV array DC voltage, current and power, AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency. Remote monitoring of inverter parameters should be possible.
- The inverter shall include adequate internal cooling arrangements (exhaust fan and ducting) for operation in a non-AC environment.
- Operating temperature Range shall be 0 to 55 deg C
- THD should be less than 3%.
- The injection of DC power in to distribution network shall be avoided by using suitable isolation transformer etc at output of inverter.
- Ripple content must not exceed 3% on DC side.
- The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes. The Inverters should qualify to IEC 61683 or equivalent standard. The inverters should also qualify at the IEC 60068 2 (6,21,27,30,75,78)

- 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 62093,IEC 60068 standards.
- The Bidder shall furnish Guaranteed Technical Particulars as per Sheet-2.

#### **DATA ACQUISITION SYSTEM**

- **Data Acquisition System shall be provided with solar PV power plant of capacity 50 KW and above.**  
2 Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent),Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
- The time interval between two sets of data shall not be more than 3 minutes.  
(A min. of 20 samples of data shall be recorded per hour)
- Data Acquisition System shall have real time clock, internal reliable battery backup and data storage capacity to record data round the clock for a period of minimum 6 months.
- Computerized AC energy monitoring shall be in addition to the digital AC Energy meter.
- The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
- All instantaneous data shall be shown on the computer screen.
- Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- Provision for Internet monitoring and download of data shall be also incorporated.
- The communication interface shall be suitable to be connected to local computer and also remotely via the Web using either a standard modem or a GSM / WIFI modem. The following parameters shall be measured, displayed and recorded/logged. Daily plotting of graphs for various parameters shall also be available on demand.
- 15 minute, Daily, monthly & Annual energy generated by the solar system (kWh)
- Solar system temperature
- Ambient temperature
- Solar irradiation/isolation
- AC and DC side voltage and currents
- Power factor on AC side
- DC injection
- Total Current Harmonics distortion in the AC side
- Total Voltage Harmonic distortion in AC side
- Efficiency of the inverter
- Solar system efficiency
- Display of I-V curve of the solar system
- Any other parameter considered necessary by supplier of the solar PV System based on prudent practice

## **SOLAR RADIATION AND ENVIRONMENT MONITORING SYSTEM**

- Computerized solar radiation and environment monitoring system shall be installed on one of the buildings along with the solar PV power plant.
- The system shall consist of various sensors, signal conditioning, data acquisition, LCD display and remote monitoring.
- Global and diffuse beam solar radiation in the plane of array (POA) shall be monitored on continuous basis.
- Ambient temperature and relative humidity near PV array, control room temperature, wind speed and wind direction at the level of array plane shall be monitored on continuous basis.
- Solar PV module back surface temperature shall be also monitored on continuous basis.
- Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for co-relation with solar and environment data shall be provided.

## **WATER FOR CLEANING**

Contractor must ensure cleaning of solar PV module on a daily basis. He shall provide permanent arrangement for module washing in the SPV Plant.

## **SAFETY REGULATIONS**

Adequate fire fighting equipment and extinguishing agents of sufficient capacity and quantity must always be available at site and kept ready for immediate use. Sufficient number of workmen must be fully trained in the use of such equipment and must be available for immediate intervention at all times. Statutory regulations on safety measures shall be strictly followed. Safety appliances, viz. fire extinguishers, sand buckets, earth rods, gloves, rubber mats, danger sign boards, safety regulation charts, etc. shall be procured and installed as per safety norms.

## **BATTERY**

- Only tubular lead acid/ VRLA / GEL batteries suitable for solar application should be used in the battery banks.
- The batteries must be conforming to the latest edition of any of the following IEC / equivalent BIS Standards/MNRE guidelines for design qualification and type approval: IEC 61427 / IS 1651/ IS 13369/IS 15549.
- **The battery bank capacity should not be less than 7.2 Vah/Wp.**
- **Details of Battery Bank Capacity is specified for each capacity of power plant as the MNRE Specification @7.2 Vah/Wp and Battery Voltage of 2 V in Annexure-IV.**



**The general specifications shall be as under:**

- The battery bank shall consist of required number of deep-discharge electrochemical storage cells, suitably interconnected as required. Parallel connections of storage cells will be discouraged.
- The cells shall be capable of deep discharge and frequent cycling with long maintenance intervals and high columbic efficiency. Automotive or car batteries shall not be accepted.
- The nominal voltage and capacity of the storage bank shall be selected and specified by the supplier in the bid.
  
- The self-discharge rate of the battery bank or individual cell shall not exceed three (3) percent per month.
- The battery bank should be designed for minimum three days autonomy, i.e it should have enough storage to provide power even if there is no sun for three consecutive days.
- The permitted maximum depth of discharge (DOD), shall be specified by the supplier in the bid. Supplier should also specify the expected life of the Battery bank.
- The cells shall include explosion proof safety vents.
- The cells shall include the required number or corrosion resistant inter-cells with all required chemicals electrolyte packed in separate containers
- The flooded electrolyte type cells shall preferably be supplied in dry charged condition. Full instructions and technical details shall be provided for electrolyte filling and battery recharging at site for the first time.
- If the cells are supplied in uncharged conditions, then the supplier shall provide full instructions for first time charging including, but not limited to, the following:  
A checklist of all items required:  
Minimum specification with possible alternatives of the required battery charger for first time charging.  
Instruction of electrolyte filling, battery charging etc. and instructions on the transportation of charged batteries, if required.
- Suitable number of corrosion resistant and acid-proof storage racks shall be supplied to accommodate the cells tester and other accessories. The rack design shall be such that minimum space is required, without any way obstructing the maintenance requirements. For metallic racks, standards specified for control panel enclosures and other metallic shall govern.
- All the connectors should be insulated except for the end portions.  
All technical and other details pertaining to the storage cells shall be supplied including but not limited to the following: -  
Rated voltage and ampere-hour capacity of each storage cell at the rated discharge rate.
  - Permitted maximum DOD.
  - Self discharge rate.
  - Cycle life of the storage cell and the anticipated life (in years) of the battery bank.
  - Total number of storage cells in use.

**Details on cell interconnections, if any.**

All the connectors should be insulated except at both ends from where the connectors are connected to battery terminals. Every cell should have proper numbering marked clearly for

its identification. Only pre-insulated connectors should be used.

#### **Battery Rack:**

Placement of battery should be such that maintenance of the battery could be carried out easily. **The non-reactive acid proof material should be provided to cover the entire floor space covering the battery rack. Battery rack should compulsorily be placed on the appropriate rubbers pads to avoid the contact of wooden racks with the floor, to protect wooden rack particularly from termite. Termite resistant material should be provided.**

#### **Battery Protection Panel**

The battery protection panel shall be made of suitable powder coated metal casting having two incoming and two outgoing terminals .There shall be 2 Nos HRC Fuses of suitable rating with fuse holder/base etc as required.2 poles MCB/MCCB can also be used for isolation purpose in stead of fuses,if required. BPP should be connected between Battery Bank &DCDB. This can be integrated in the PCU.

#### **TECHNICAL SPECIFICATION SPV STRUCTURE –**

##### **MOUNTING STRUCTURE FOR SPV PANELS –**

These support structure are to be manufactured with Galvanised Extruded Aluminium. These structures are to be designed for suitable mounting on RCC structure on Ground with fixed angle of tilt to maximize the power generation. These structures are to be easily transportable, with ease in assembly at site. These structures are to be designed to withstand wind up to 200 Km/hr from backside of the panels, as per specific requirement at Site. The structures should be designed for either fixed tilt with provision for seasonal adjustment OR Daily manual tracking three times a day along with seasonal adjustment provision to maximize the power generation –

- a.The material should be rust proof and long lasting.
- b. Specialized structures compatible for on ground installation as well
- c .Easily able to with stand wind speeds upto 200kmph.

- **LIGHTNING PROTECTION:**

The SPV Power Plant should be provided with lightening protection equipment. The principal aim in this protection is to reduce the over voltage to a tolerable value before it reaches the PV or other sub-systems components. The source of over voltage can be lightening or any other atmospheric disturbance. The Lighting Arrestor (LA) is to earthed using 1½" diameter (minimum) and 12 feet long GI spike on the basis of the necessary meteorological data of the

location of the projects. Necessary foundation for holding the LA is to be arranged keeping in view the wind speed of the site and flexibility in maintenance in future. Each LA shall have to be earthed through suitable size earth bus with earth pits. The earthing pit shall have to be made as per IS 3043. LA should be installed to protect the array field, all machines and control panels installed in the control rooms. Number of LA shall vary with the capacity of SPV Power Plant & location.

Since most areas of Odisha are prone to heavy lightning that can cause severe surges, suitable Surge Protection Devices (SPD) should also be provided in the system.

- **EARTHING PROTECTION:**

PV Array structure should be grounded properly. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian Electricity Act/IE rules /CEA safety regulations as amended up to date. After earthing resistance of each earthing pit should be tested in presence of the representative of OREDA by calibrated earth tester. The Participant shall make all testing arrangements. The earthing pit shall have to be made as per IS: 3043. All the array structures, equipments & control systems should be compulsorily connected to the earth. Number of earthing shall vary with the capacity of SPV Power Plant & location..

- **AJB (Array junction Box)**

This shall consist of suitable FRP/Thermoplastic/ polycarbonate / powder coated metal casting. In this box/boxes a separate arrangement which shall consist of SPDs and DC connector of suitable specifications for Array which can withstand respective flow of current. Each main junction shall be fitted with appropriate blocking diode. The junction boxes shall be of reputed make and should be as per IP 65(for outdoor) ,IP21 (for indoor).

- **DCDB (DC DISTRIBUTION BOARD)**

DCDB with the purpose of providing the option for isolating the battery bank. There shall be copper bus bars of suitable rating. These can either be independent or integrated in the PCU.

- **AC DISTRIBUTION BOARD (ACDB):**

This shall consist of box of suitable powder coated metal casting. One feeder per phase shall be provided in ACDB with MCB of suitable capacity installed at each feeder in the ACDB. One Electronic Energy Meter, ISI make, Single / Three Phase, (as per requirement) of good quality shall also be installed in ACDB suitably placed to measure the consumption of power from SPV Power Plant. Proper rating MCB shall be installed at every feeder (in case of single phase output also, there shall be three feeders) to protect feeders from the short circuit current as per the requirement of the site. A separate dedicated feeder from conventional line to PCU as well as ACDB should also be installed

Two numbers of real time based Timers shall also be installed in ACDB placed in a suitable metal box which can be easily hanged ,with settable time ranging from 0-24 hours operation in two spells for eg:-5A.M to 9 A.M and 6 PM to 10 PM. One timer shall be for domestic feeders while another one separately for street light feeder.

A separate change over switch of proper rating should also be suitably installed in the ACDB to isolate the existing connected load from the Solar System. ACDB should be connected between PCU & Load.

- **DANGER BOARDS:**

Danger boards should be provided as and where necessary as per IE Act/IE Rules/CEA Safety rules as amended up to date, as per the instructions of OREDA & affixed at various appropriate locations.

- **CABLES/WIRE:**

All connections should be properly made through suitable lug/terminal crimped with use of suitable proper cable glands. The size of cables/wires should be designed considering the line losses, maximum load on line, keeping voltage drop within permissible limit and other related factors. For normal configuration the minimum suggested sizes of cables are:

Module to Module/AJBs minimum 4 sq mm (single core)

MJBs to AJBs minimum 10/16 sq mm (two core),with respect to current

ratings of designing

MJBs to DCDB	minimum 25 sq mm (single core) or as per design&rating.
DCDB to PCU	-minimum 25 sq mm (single core),or as per design&rating.

Battery to BPP	minimum 25 sq mm (single core)or as per design&rating.
----------------	--

BPP to DCDB	minimum 25 sq mm (single core)or as per design &rating.
DCDB to PCU	minimum 25 sq mm (single core)or as per design &rating.
PCU to ACDB	as per design & rating

The size & rating of the cables may vary depending on the design & capacity of SPV Power Plant. Participant should compulsorily get the design & rating of the cables approved from the local DISCOM prior to the installation.

**Balance of Systems (BOS)**

- Conduits/concealed cable trays shall be provided for all DC cabling.
- Conduits/concealed cable trays shall be adequately secured
- The DC and AC cable type shall be PVC/XLPE insulated, suitably armoured, 1100V grade multi stranded copper conductor. Appropriate colour coding shall be used.
- The DC and AC cables of adequate electrical voltage and current ratings shall be also rated for 'in conduit wet and outdoor use'.
- The DC and AC cable size shall be selected to maintain losses over the entire lengths of

the cables to minimum.

- All wires used shall conform to IS and should be of appropriate voltage grade. Only copper conductor wires of reputed make shall be used.
- DC cables from array combiner box to DC distribution box in the control room shall be laid inside cable duct where available or secured with conduits/concealed cable trays where duct is not available.
- The DC and AC distribution boxes shall be wall mounted inside control Room.
- DC distribution box shall incorporate DC disconnect switch, lightning surge protectors, any other protection equipment, screw type terminal strips and strain relief cable glands.
- AC distribution box shall incorporate AC circuit breaker, surge voltage protectors, any other protection equipment, plant energy meter, screw type terminal strips and strain relief cable glands.
- DC and AC cabling between inverter and distribution boxes shall be secured with conduits/concealed cable trays.
- The total AC cable losses shall be maximum of 1% of the plant AC output over the specified ambient temperature range.
- All cable conduits shall be GI/HDPE type.
- All cable trays shall be powder coated steel or GI or equivalent.

### **Power Distribution Network**

Installation of Power Distribution Network:

To supply, install & commissioning of Power Distribution Network at the site which shall operate on the electrical power produced by the SPV Power plant installed at the concerned site in the following manner:

(1) Installation of domestic connection to every household through service wire as per the standard as per the specifications of OREDA.

(2) Installation of appropriate load limiting switch / fuse for controlling domestic / street lighting connections, as per requirement of the site.

(3) Supply, installation & grouting of MS/PSC Poles as per REC norms (or if the tenderer has better drawing he may attach the same with additional offer) for overhead / underground distribution network of cables at village/site..All the poles/street lights should be numbered by oil paint in the specified format of OREDA. Two numbers of MS sign boards and danger/Interlinking Boards has to be supplied, painted (in the same manner as pole painting instructions) & clamped on the poles of the PDN as per OREDA instructions.

(4) Supply, installation & commissioning of overhead cabling from pole to pole & pole to house. Cabling between pole to pole should be done as per standard norms of REC.

(5) Supply, installation & commissioning of required numbers of poles with LED Lamp.

(6) Supply & installation of earthing kits, stay wire sets with complete set for poles etc. as per norms where ever required.

Note:i)All cables should be of Aluminium, copper tested for General Test and Measuring Method PVC insulated cables as per IEC 60227 / IS 694 and IEC 60502 / IS 1554.

ii) All the materials to be consumed in the power distribution network should be of best Quality confirming to specification & should be with prior approval of OREDA.

### **Technical Specifications of Control Room**

A brick machinery room with RCC roof and cement concrete floor of suitable size is to be constructed to house the battery bank and other control equipments .The room should be well ventilated and spacious enough so that a part of the room can be used as a small office. The room should be provided with necessary furniture and fixtures. It should also be provided with a toilet.

In order to save time, pre-cast / pre -fabricated control rooms can also be installed with all the above features.

### **Operation & Maintenance:**

Operation & maintenance of SPV Power Plant along with the Power Distribution Network system installed at site has to be done. Tenderer shall be responsible for supplying required quantum of power for 6-8 hours per day at the identified timing, at least for 25 days in a month for a period of five years. Tenderer shall also be responsible for providing training / capacity building to villagers / users for safe usage of power & running of power plant. Reporting of the progress of the project has to be submitted in the prescribed format to every month.

### **Operation and Performance Monitoring.**

Operation part consists of deputing necessary manpower necessary to operate the Solar Photovoltaic Power Plant at the optimum capacity. Operation procedures such as preparation to start, routine operations with safety precautions, monitoring of Solar Power Plant etc. shall be carried out as per the manufacturer's instructions to have trouble free operation of the complete system.

Daily work of the operators in the Solar Photovoltaic Power Plant involves:

- Cleaning of Modules, logging the voltage, current, power factor, power and energy output of the solar Power Plant.
- Note down failures, interruption in supply and tripping of different relays, reason for such tripping, duration of such interruption etc.
- Check battery voltage – specific gravity and temperature.

The operator shall record monthly energy output, down time, etc.

**Solar PV Modules and other components such as Inverter, Battery etc used in DDG projects shall conform to Minimum Technical requirements of Jawarhalal Nehru National solar Mission (JNNSM).**

## TECHNICAL SPECIFICATION OF DISTRIBUTION LINE & HOUSE WIRING

### 1. Construction of LT Lines

The LT lines shall be of following configurations

Sl No.	Type of line	Conductor	Support	Average span in mtr.
1	3Phase 4Wire	AB cable of size 3X35mm <sup>2</sup> +1X25mm <sup>2</sup> XLPE Insulation	8Mtr. 200KG PSC	40
2	3Phase 4Wire	AB cable of size 3x55+1x50+mm <sup>2</sup> XLPE Insulation	8Mtr. 200KG PSC	40
3	1Phase ABC	Aerial Bunched Cable (ABC) of size 1X35+1X25	8Mtr. 200KG PSC	40

LT Lines using AB Cable shall be constructed on 8 mtr 200KG PSC Pole/MS joist poles complete with eye hook, suspension/dead end clamp including belting of clamps etc. complete as required for supporting LT AB conductor, earthing arrangement, anti climbing device, danger plate, stay sets as required, bolts, nuts & washers and any other hardware required to complete the work, as finalised during detailed engineering.

### 2. Service Connections

2.1 The scope includes providing service connections to the beneficiary including 2 points wiring and coil earthing to the installation. The service cable shall travel from service pole to the premises of the consumer with the provision of

- i) PVC insulated double core with outer sheath 2.5 sq. mm single strand Aluminium cable
- ii) UDC (Universal Distribution Connector) ABC cable with piercing type connector and distribution box at DT
- iii) Supporting GI wire 10 SWG
- iv) GI pipe 20 mm, bend etc.
- v) Providing 2Nos. LED Bulb (18W each) lamp in the consumer premise

## 2.2 **L.T. consumer connection from service pole**

The contractor shall provide the service connections to the identified households. The service connection shall be complete in consumer's premises. Service Connection shall be provided with 'PVC' insulated 650/1100 V grade, twin core Aluminum solid Conductors of size 2.5 sq.mm (3/22 cu equivalent) these wires shall be supported by a bearer GI wire (3.15 mm) as per REC Spec. No. 45/1986. Cable shall be tied to bearer wire with an insulated (Porcelain or bakelite) ring of adequate size and strength. The bidder shall provide his own arrangements for anchoring the bearer wire at the premises of customers in case of BPL households.

## 2.3 **Pole Top Distribution Box**

Locations, where the numbers of consumers are in excess of 2 (say 3 to 5), a pole top LT distribution box shall be provided. If the number of consumers exceeds 5, then the connection has to be provided from adjacent pole having separate distribution box.

## 2.4 **Piercing Connector**

Wherever, the consumers for a particular pole are 1 or 2, piercing type connectors, having provision for main conductor and service conductor of appropriate size for ABC & UDC for bare conductor, shall be used. For LT main lines with bare conductors, service connection shall be provided using 'UDC' or wedge type connectors of suitable dimension/size as per REC specification.

Cost of all items/material required to complete the service connections shall be included in the quoted price. The installation of all the material is in the scope of contractor.

As far as possible the service connection shall be given from the DT/pole of the LT line, which is nearest to the consumer's premise.

The service cable shall enter to the meter of the consumer premises through GI pipe of 20mm dia up to the meter board. GI pipe will be fixed to the wall with suitable clamps. The supporting GI wire will be suitably tied to the GI pipe. Coil earthing is to be done with GI lead wire to main switch.

## 2.5 **House Wiring**

For all the households, the contractor shall carry out complete works of house wiring.

ISI marked Double Pole 16Amp main switch shall be used.

ISI marked PVC conduit with single core 2.5 sq mm. aluminium wire shall be used for house wiring.

Two point wiring for lighting points shall include two piano type ISI marked 5A switch, Bakelite/plastic holder, 2Nos. LED Lamp (18W & 11W).



The wooden box shall be fixed in the consumer premises at a suitable height and shall house

- i) 16Amp. DP Main Switch
- ii) Earthing terminal
- iii) One 5 Amp. Switch
- iv) One 18W LED bulb with holder

Another wooden distribution board shall be fixed in the consumer premises at a suitable height and shall house

- i) 5 Amp switch
- ii) 11 Watt LED lamp with holder
- iii) A 5 Amp socket

### **03. Erection of Pole, PSC footing and compaction of soil**

Pits are to excavated to a size of 0.6 meter x 1.2 meter with its longer axis in the direction of the line. In case bidder employs Earth augers, the Pit size can be considered 0.6 meter dia with 1.5 meter depth.

For hard rock locations, 1 meter deep hole of diameter 20% in excess of the longest dimension of the bottom most portion of pole shall be excavated. The pole shall be grouted in the pit with 1:2:4 nominal concrete mix at the time of pole erection. The planting depth of pole over the base precast concrete slab shall be 1500 mm in the ground except in wet soil and black cotton soil where depth shall be increased by 0.2 mtr. to 0.3 mtr. with reduced wind span.

### **04. PROVIDING OF GUYS/STRUT POLES TO SUPPORTS**

Strut poles/flying guys wherever required shall be installed on various pole locations as per REC construction standards. For selection of guying locations REC guidelines & construction practices shall be followed.

The stay rod should be placed in a position so that the angle of rod with the vertical face of the pit is 300/450 as the case may be.

G.I. stay wires of size 7/3.15 mm (10 SWG) with GI turn buckle rod of 16 mm dia & 16 mm dia GI stay rods, shall be used for 11KV & LT line.

G.I. stay wires of size 7/4 mm with GI turn buckle rod of 20 mm dia & 20 mm dia GI stay rods, shall be used for 33 KV line.

For double pole structure (DP), four stays along the line, two in each direction and two stays along the bisection of the angle of deviation (or more) as required depending on the angle of deviation are to be provided. Hot dip galvanised stay sets are to be used.

The anchor plate shall be fixed to 200mm x 200mm MS plate of 6mm thickness. M.S. rod with a bolt arrangement at one end and other end is given shape of 40mm dia circle to bind one end of the stay wire.

#### **05. STRINGING OF CONDUCTOR**

The works include spreading of conductors or LT AB Cables without any damage and stringing with proper tension without any kinks/damage including binding of conductor at pin points, jumpering at cut points etc. The ground & line clearances at road crossings along roads, L.T. crossings & other crossings shall be as per the relevant I.E. rules.

All the joints or splices shall be made at least 15 meters away from the pole. No joints or splices shall be made in spans crossing over main roads, railways and small river spans. Not more than one joint per sub-conductor per span shall be allowed. The compression type fittings shall be of the self centring type. After compressing the joint, the aluminium sleeve shall have all corners rounded; burrs and sharp edges removed and smoothened.

The empty conductor drums, available after laying of conductor, shall be disposed of by the contractor at his cost. These drums may be used for rewinding of Conductor removed from the line at the later stage of Re-conducting work.

**PRICE BID (Sample format)**

**(Note : The price bids are to be submitted on OREDA e-tender portal only)**

**For Mini-grid Package- 1-4**

**Price Bid PSC Pole**

S. No.	District	Village	Cost of Solar PV Power Plant	Cost of Civil Work Including Structure, Control Room & Fencing	Cost of LT Line with PSC Pole	Cost of Service Connection & House wiring	Cost of Spare Parts and consumables for 5 years	Annual Maintenance Charges for 5 years Year wise						Grand Total	
								1st	2nd	3rd	4th	5th	Total		

**Price Bid RS Joist**

S. No.	District	Village	Cost of Solar PV Power Plant	Cost of Civil Work Including Structure, Control Room & Fencing	Cost of LT Line with RS Joist	Cost of Service Connection & House wiring	Cost of Spare Parts and consumables for 5 years	Annual Maintenance Charges for 5 years Year wise						Grand Total	
								1st	2nd	3rd	4th	5th	Total		

**List of Authorised Test Centres of MNRE, GOI**

Lab/ Organis ation	PV Module	Lighting System		Batter y	Inverter >100W		Charge Controller	
		As per MNRE Specification	Enviro nment al		Efficiency	Environ mental	Protecti ons	Environ mental
SEC	Yes (IEC61215up to100WP) NABL Accredited	Yes MNRE Accredited	Yes (Includ ing IP) MNRE Accred ited	Yes MNRE Accred ited	Yes (up to 100KVA)MN RE Accredited	Yes (Including IP) MNRE Accredita ted	Yes MNRE Accredita ted	Yes (Includ ing IP) MNRE Accredita ted
ERTL (East)	STC Test Facility MNRE Accredited	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accred ited	Yes upto 1000 AH	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accredita ted	Yes NABL/ MNRE Accredita ted
ETDC (B)	Yes (IEC61215)unde r ICEEECB, IEC 61701 (upto100WP) NABL Accredited	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accred ited	Yes upto 100 AH	Yes (up to 3 KVA) NABL/ MNRE Accredited	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accredita ted	Yes NABL/ MNRE Accredita ted
CPRI (B)	No	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accred ited	Yes upto 1000 AH	Yes (up to 10 KVA) NABL/ MNRE Accredited	Yes NABL/ MNRE Accredited	Yes NABL/ MNRE Accredita ted	Yes NABL/ MNRE Accredita ted
ERTL (N)	No	Only Electronics & luminaire NABL Accredited	Yes NABL Accred ited	No	Yes Upto 5 KVA NABL Accredited	Yes NABL Accredita ted	Yes up to 5 KW (NABL Accredita ted)	Yes NABL Accredita ted
UL (B)	Yes (IEC61215 IEC 61730 Pt.II and IEC 61701) upto 400WP NABL Accredited	Yes Except Battery NABL Accredited	Yes NABL Accred ited	No	Yes Upto 6 KVA NABL Accredited	Yes NABL Accredita ted	Yes up to 6 KW (NABL Accredita ted)	Yes NABL Accredita ted
TUV Rhinela nd	Yes (IEC61215 IEC 61730 Pt.II upto 400WP NABL Accredited	No	Yes NABL Accred ited	No	Yes Upto 10 KVA NABL Accredited	Yes NABL Accredita ted	Yes up to 10 KW (NABL Accredita ted)	Yes NABL Accredita ted
Inter Tek	No	Only Electronics & luminaire NABL Accredited	Yes NABL Accred ited	No	Yes Upto 5 KVA NABL Accredited	Yes NABL Accredita ted	Yes up to 5 KW (NABL Accredita ted)	Yes NABL Accredita ted

## Annexure-I

### Model Bank Guarantee format

#### **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

**Annexure-II**

**SAMPLE FORMAT FOR C.M.C**

(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 Ist. 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 2<sup>nd</sup> party shall appraise the 1<sup>st</sup> party about the requirements and supply of spares during warranty as well as CMC period.
10. The 2<sup>nd</sup> 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 1<sup>st</sup> party in consultation and cost sharing with the 2<sup>nd</sup> 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 2<sup>nd</sup> party to 1<sup>st</sup> 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 1<sup>st</sup> party to cross check the systems maintained by the 2<sup>nd</sup> party. Random verification of the maintenance may be carried out by the 1<sup>st</sup> party wherever

necessary.

15. The 2<sup>nd</sup> party may continue to maintain the gadgets after expiry of the maintenance period of 10 years , provided the beneficiaries/ 1<sup>st</sup> 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 2015 and shall come into force from the date of its signature(s).

For and on behalf of Orissa Renewable  
Energy Development Agency, Bhubaneswar  
( 1<sup>st</sup> Party)

For and on behalf of M/S  
.....  
.....  
( 2<sup>nd</sup> party)  
with Seal



## Annexure-III

### Model Bank Guarantee format for Furnishing EMD

Whereas ..... (herein after called "tenderer") has submitted their offer dated ..... for the supply of -----  
----- (herein after called "tenderer") against the purchaser's tender enquiry No.  
.....

KNOW ALL MEN by this present that we ..... of .....  
having registered office at ..... are bound onto ..... (herein  
after called "Purchaser") in the sum of ..... for which payment will and truly  
to be made to the said purchaser, the bank binds itself, its successors and assigns by this  
presents.

Sealed with the

Common Seal of the said Bank this .....day of .....20.....

THE CONDITIONS OF THIS OBLIGATIONS ARE

- 1) If the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.
- 2) If the tenderer having been notified of the acceptance of his tender by the purchaser during the period of its validity;-
  - a. If the tenderer fails to furnished the performance security for the due performance of the contract.
  - b. Fails or refuses to accept / execute the contract.

We undertake to pay the purchaser up to the above amount upon receipt of its first written demand, without the purchaser having to substantiate its demand, provided that in its demand the purchaser will note that the amount claimed by it due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force upto and including 45 days after the period of tender validity and any demand in respect thereof should reach the bank not later than the above date.

Our ..... branch at .....\* (Name and address of the  
.....\* branch) is liable to pay the guaranteed amount depending on the filling 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 if the authorized officer of the bank

.....

.....

Name and Designation of the officer

.....

Seal, Name and address of the Bank and the Branch

\* Preferably at the head quarter of the authority competent to sanction the expenditure for  
purchase of goods or at the concerned district headquarter or the state headquarter.

## Annexure-IV

Battery Capacity for 2V Battery Voltage		
Capacity of Plant (kWp)	Battery Bank Voltage (V)	Battery Capacity (Ah) @ 7.2 VAh/Wp
6	96	450
7	96	525
7.5	96	562.5
8	96	600
8.5	96	637.5
9	96	675
10	120	600
11	120	660
12	120	720
13	120	780
13.5	120	810
14	120	840
15	240	450
16	240	480
17	240	510
18	240	540
19	240	570
20	240	600
21	240	630
22	240	660
23	240	690
24	240	720
25	240	750
26	240	780
27	240	810
28	240	840
29	240	870
30	240	900
31	240	930
32	240	960
33	240	990
35	240	1050
36	240	1080
40	240	1200
41	240	1230
43	240	1290
44	240	1320
48	240	1440
52	240	1560
56	240	1680
63	240	1890
71	240	2130
81	240	2430
150	240	4500