

# ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY

## BHUBANESWAR

### BID DOCUMENT

DETAILS OF TENDER CALL NOTICE No-5042. /OREDA DTD- 29.11.2016

FOR

Supply, Installation, Commissioning and Maintenance for a period of 5 years of different solar PV systems in the state of Odisha

<b>Date of Hoisting of the bid document on Website</b>	<b>30.11.2016</b>
<b>Date &amp; time of pre-bid meeting</b>	<b>8.12.2016 on 3.00 PM at OREDA Conference hall</b>
<b>Hoisting date of final revised bid document</b>	<b>12.12.2016</b>
<b>Date and time of last submission of online bid document</b>	<b>27.12..2016 up to 1.00 P.M</b>
<b>Date and time of last submission of hard copy of bid document</b>	<b>31.12.2016 up to 1.00 P.M.</b>
<b>Opening of Techno-Commercial bid</b>	<b>31.12.12.2016 at 3.00 P.M.</b>
<b>Date of opening of the price bid</b>	<b>To be informed to the technically qualified bidders.</b>

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

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

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

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## **Disclaimer**

Kindly Note:

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



**ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY**  
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**Website: [www.oredaorissa.com](http://www.oredaorissa.com), Email: [ceoreda@oredaorissa.com](mailto:ceoreda@oredaorissa.com)**

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

ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY invites e-tenders for

Supply, installation, commissioning and maintenance for a period of 5 years of LED based SPV street lighting , lantern and Home lighting system as per the technical specification and description given in the tender document on standard rate contract basis in the state of Odisha.

<b>Particulars</b>	<b>Earnest Money Deposit (Rs)</b>	<b>Tender processing fee Non refundable (in Rs.)</b>	<b>Non refundable Cost of Bid document (in Rs.)</b>
Supply, installation, commissioning and maintenance for a period of 5 years of LED based SPV street lighting, lantern and Home lighting system in the state of Odisha.	1,00,000	2300	10,500/-

## 1. SCOPE OF WORKS

- The broad scope of the work includes supply, installation, testing, commissioning & maintenance for a period of 5 yrs including warrantee period of LED based SPV street lighting, lantern and Home lighting system in different places of the state.
- Supply of the complete systems, including all necessary components, sub-components, spares, tools, tackles etc. as per technical specifications given in this document including packing, forwarding, safe storage, handling, commissioning, trial and performance testing and handing over, insurance coverage, operation & maintenance with 5 years warranty including CMC (Annexure-C) for corresponding period.
- Submission of all details of the installed systems 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.
- Execution of Comprehensive Maintenance Contract (CMC) of the complete system for five years warranty period. The date of commencement of CMC shall be reckoned from the date of commissioning of the system.
- Open a local office at Bhubaneswar so as to deliver uninterrupted and sustainable maintenance services. Must be having service center/keeping servicing personnel and making available all essential spares in the vicinity of the SPV systems/gadgets. The center will give the desired performance with least interruption.
- Submission of quarterly performance reports and other information as per the MIS prescribed by OREDA
- Adequate training has to be provided to the persons to be designated by OREDA in day to day maintenance and upkeep of the installed system. The bidder must also provide a detailed operation and maintenance manual specific to the installed systems.

## **2. IMPORTANT INFORMATION:**

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

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

- The bidders shall have to scan the Demand Draft towards **EMD, Tender Cost , signed copy of tender document (signed on all pages)** as token of unconditional acceptance of all terms and conditions of the tender and all **other documents as required in the tender** and upload the same in the prescribed form in .pdf or .jpg format in addition to sending the originals.
- 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**".
- Any clarifications regarding the scope of work and technical features of the project can be had from the undersigned during office hours

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

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

- Valid TIN / VAT/ Sales tax clearance certificate duly attested must be submitted along with the bid.
- The Firm must have registered under NSIC and Micro and Small Enterprises (MSEs)

- Deviations in terms and conditions, Specification of material, Inspection clause etc. will not be accepted under any condition.
- The bidders should furnish the information on all past supplies and satisfactory performance.
- The bidder shall submit copies of documents defining the constitution or legal status, place of registration and principle place of business of company or firm or partnership.
- The bidder shall furnish a brief write up backed with adequate data, explaining his available capacity and experience (both technical and commercial) for the manufacture and supply of the systems, equipments within the specified time of completion after meeting all their commitments.
- The bidders shall submit reports on financial standing of the bidder such as audited profit and loss statements, balance sheets and auditor's reports for the past, bankers' certificates. All accounting statements submitted should be duly audited and with proper auditor's note on accounts and accounting standards.
- Earnest money as specified in bid should be deposited shape of Demand Draft drawn in favour of the Chief Executive, OREDA payable at Bhubaneswar from any nationalized bank.
- **Bids without E.M.D will not be accepted (other than NSIC certificate holder).**
- Hard copies of the bids received late due to postal delay or otherwise **will not be considered.**
- Since timely execution of works is of paramount importance, requests for extension of time shall not be ordinarily entertained.
- Canvassing in any manner shall not be entertained and will be viewed seriously leading to rejection of the bid.
- Certificate to the effect that the systems to be supplied are indigenous & not fully imported must be furnished.
- Power of attorney to sign the agreement on behalf of bidders & partnership deed articles, if any, should be enclosed along with original bid documents.
- Notice inviting tender, bid documents, prescribed Technical bid, price bid, terms & conditions will form the part of the tender.
- Bids will be accepted & will be opened as per information mentioned in the notice-inviting tender. No receipt against submission of bid shall be issued by OREDA.
- **If due to any reason the due date is declared as a holiday the bid will be opened on next working day at the same time.**
- All Taxes applicable at the time of supply will admissible.
- In case of supply of any defective material or substandard material, the materials will be rejected & it will be the responsibility of the supplier for taking back & replacing the rejected materials at their own cost. In case of non-lifting of such rejected materials

within a reasonable time offered by the office it will have the right to suitably dispose off the same and forfeit the amount.

- The supplied materials should strictly comply with the specifications as mentioned in the bid, otherwise the material would be liable for rejection.
- Any clarification on the technical specification and commercial terms and conditions may be clarified in writing from OREDA.
- Deviation of any commercial terms and condition and technical specification shall not be entertained under no circumstances.
- 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.
- The Chief Executive, OREDA shall award the contract to the successful bidder whose bid shall be qualified after evaluation in terms of the responsiveness and lowest rate determined on the basis price bids.
- On award of contract the qualified bidder shall be termed as contractor / supplier / executor /turnkey operator.

### **SUBMISSION OF BIDS:**

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

- i) The bidder shall submit the bid in Electronic Mode only i.e. in [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) portal. The bidder must ensure that the bids are received in the specified website as per the date and time indicated in the Tender notice.
- ii) The OREDA reserves the right to reject any bid, which is not submitted in electronic mode and according to the instruction, stipulated above.

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

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

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

#### *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.

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

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

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

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

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

The bidders shall have to scan the Demand Draft towards **EMD, Tender Cost, signed copy of tender document (signed all pages)** as a token of unconditional acceptance of all terms and

conditions of the tender and **other documents** as required for the tender and **upload** the same in the prescribed form in .pdf or .jpg format in addition to sending the original **except bid sheets (.xls)** prior to last date and time of receipt of bids as specified in tender Notice. Tender processing fees is mandatory & to be paid on **e-payment** mode as stated elsewhere in the document.

*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.**

- 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**

- Tender Opening event can be viewed online.

(iii) Competitors bid sheets are available in the website for all participated bidders.

**NOTES:**

**For any assistant, Contact:**

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

**OREDA Help Desk- 91-8895911236**

*C. DEAD LINE FOR SUBMISSION OF BIDS*

- Soft copy of the bid shall be uploaded through the portal [www.tenderwizard.com/OREDA](http://www.tenderwizard.com/OREDA) on or **before the online submission time and date as stipulated in the bidding document.**

**DD towards Tender cost, DD towards EMD, tender processing fee acknowledgement & a set of all uploaded documents must be received by OREDA at the address specified not later than the time and date stated in the tender notification.**

- 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.
- 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*

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

- Ñ 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**
- Ñ The Bidders may modify and resubmit their bids as per the provisions given in the portal.
- Ñ Bidders may withdraw their bids through the relevant provisions of mentioned in the portal.
- Ñ **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 EMD.**

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

- Along with the e-tender, bidders must also submit their bids for all items as stated above in the form of a **single hard bound** book properly page numbered and Indexed. **No loose/ separate paper or spiral bound documents will be accepted.**
- The bidders must sign at the bottom of each page of the bid documents at the time of submission in token of unconditional acceptance of the departmental terms and conditions, technical specifications etc.

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

1. Demand draft towards cost of bid document
2. Copy of acknowledgement of tender processing fee.
3. EMD in shape of Demand Draft.
4. Technical Bid document in **hard bound form** with each page legibly numbered comprising of the following:
  - **All Test certificates from MNRE approved laboratories issued in the name of the bidding firm on its products.**
  - Technical Specifications of all materials to be supplied
  - Valid VAT / Sales tax clearance certificate ,Income Tax return, PAN card, Service Tax Registration Certificate
  - Bid documents duly signed & sealed on every page as token of unconditional acceptance of all Terms and conditions mentioned in the bid document.
  - Indignity Certificate
  - Organizational profile
  - Balance sheets and profit & loss accounts
  - Certificate and proof as per qualification criteria
  - Brochure, literature etc. if any

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

**Price bid to be only filled up in the specified bid sheet and uploaded.**

**G. TECHNICAL BID:**

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

#### *H. FINANCIAL BID:*

- The Electronic Form/Template of the Price bid (as available on the portal) shall be duly filled in.
- Prices quoted must be firm and fixed. No price variation / escalation shall be allowed during process of completion of the project.
- **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.

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

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

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

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

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

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

The procedure of opening of the bid shall be as under

- 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.
- 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.

**Check list of documents to be submitted along with the hard copy of the bid**

<b>Sl. No</b>	<b>Particulars</b>	<b>Complied</b>	<b>Page No.</b>
1	Cost of Tender document for Rs.10,500/- or exempt as admissible with proof.	Bank No Dt	
2	Acknowledgement for tender processing fee.	Bank No Dt	
3	Bank draft for <b>Rs.1,00,000/-Rupees one lakh only</b> towards EMD in shape of Bank draft	Bank No Dt	
4	Forwarding letter duly signed and stamped by the bidder		
5	Undertaking duly signed and stamped by the bidder		
6	Document stating the status of the bidder as manufacturer /systems integrator		
7	Copy of the PAN card of the bidder's firm		
8	Copy of the TIN No. of the bidder's firm		
9	Tax return, VAT/ STCC/E-submission, VAT clearance certificate		
10	Annual turnover and turn over in solar business, audited report		
	2013-14		
	2014-15		
	2015-16		
	Total		
11	No of Solar PV system supplied /installed , cumulative capacity proof		
12	Proof of production capacity of SPV system		
13	Test reports of on SPV systems issued in the name of the bidding firm by any of the accredited test centers of MNRE, GOI.		
14	Willingness- Opening of service centre in the state		
15	Undertaking to supply Indigenous items as per relevant guidelines of MNRE, GoI		
16	Undertaking to unconditionally accept all terms and		

	conditions of the bid document with copy of Board Resolution		
17	Power of attorney to sign the agreement on behalf of bidders		
18	Filled in bid document duly signed and stamped at the bottom of each page except the price bid format.		
19	Organizational profile containing the original documents defining the constitution or legal status, place of registration and principle place of business.		
20	Signed Technical bid in sealed envelop		
21	ICRA/CRISIL Certification		
22	Proof of Quality assurance systems, organisation (ISO 9001:2008 certification)		
23	A self certification by an authorized person duly notarized to this effect that the firm have not been debarred / blacklisted by any Govt. Deptt, agency, PSUs / institution / agencies / autonomous organisations		

**Signature of bidder with seal**

## **UNDERTAKING BY THE BIDDER**

I/we here by undertake that

1. We have thoroughly read and examined the notice inviting tender and the tender document along with all its schedules, annexure etc.
2. The rates quoted by us are firm and final and are meant for execution of the allotted supply / installation within the time frame stipulated in the tender/supply / installation order.
3. All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of min one year from the date of opening of the technical bids.
4. In case our tender is incomplete in any respect or we violate any of the prescriptions given in the tender for submission of the same OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the earnest money deposited by us.
5. In case of award of supply / installation in our favour OREDA shall have the right to convert the EMD deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of the supply / installation.
6. In case we fail to commence or complete the supply / installation as per the time schedules or fail to fulfill any of the terms and conditions given in the tender OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the security deposit made by us against the award of the supply / installation.
7. I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the supply / installation as secret/confidential and shall not communicate information derived there-from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudiced to the safety of OREDA/the State Govt.
8. I/We shall abide by all the laws prevailing at the time of the execution of the supply / installation and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.
9. The entire tender document has been discussed in the Board meeting and a resolution has been concurred for participation in the tender (copy enclosed)



10. We are not blacklisted / debarred / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.
11. In case any false documents submitted and found any time in future the firms shall be liable to be proceeded against as per prevailing laws.
12. Our state commercial tax / TIN registration no. is \_\_\_\_\_ and  
CST registration No. \_\_\_\_\_.  
The PAN No. under the Income Tax Act is \_\_\_\_\_ and  
Service Tax Registration No. is \_\_\_\_\_
10. I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize OREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

**Signature of bidder with stamp & date**

**Letter of Authorization**

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

To,

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

Sub: Submission of tender for the supply / installation of LED based SPV systems

Ref: Tender Call **Notice No.** -----/ **OREDA, dtd** -----.

Sir,

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

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

Signature of the authorise persons

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

2. ....

Signature

attested

Name and designation of the attesting officer with stamp.

**Yours faithfully**  
**Head of the organization**

## DECLARATION

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

To,

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

Sub:- Submission of tender for the supply / installation of LED based SPV systems

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

Sir,

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

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

Yours faithfully,

Authorised signatory

(Stamp).

#### 4 ELIGIBILITY CRITERIA:-

1. The bidder must be a manufacturers of composite systems and must have got its products tested and qualified recently by any of the accredited test centers of MNRE, GOI and must submit such test certificates along with the technical bid .
2. The bidder must have a minimum cumulative turnover **of Rs 3.00 crore** during last three years. Out of which **Rs 1 crore** must be from of solar PV business alone. Copy of audited balance sheet for **2013-14, 2014-15 and 2015-16** clearly indicating the turnover from solar PV business duly certified and signed by a Chartered Accountant must be submitted along with the technical bid.
3. The bidder must have supplied/ installed different MNRE approved SPV systems with an aggregate capacity **of 5 kWp** to different SNAs/ Government organizations in any part of the country **during last 3 years** under JNNSM .Copies of relevant certificates from the authorized officer of the concerned SNA/ Dept must be submitted along with the technical bid.
4. **The farm must not have been debarred / blacklisted by any Govt. Dept, agency, PSUs / institution / agencies / autonomous organisations. The bidder shall submit a self certification by an authorized person duly notarized to this effect.**
5. The bidder must have ICRA/CRISIL Certification.
6. The firm must have established quality assurance systems and organization in line with the requirements under ISO 9001:2008.
7. The bidder must have valid STCC/VAT clearance certificate.
8. Clause no- 2,3 and 5 is not applicable in case of local Small and Medium Entrepreneurs but in such cases maximum 10 % of the ordered can be considered.

#### 5. ACCEPTANCE/ REJECTION OF THE BID DOCUMENTS:

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

Chief Executive

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

Signature of Bidder with Seal

#### 6. COMMERCIAL TERMS & CONDITIONS:

#### *Rate:*

The offer should indicate the unit cost of the system, Installation & Commissioning charges, CMC Charges and taxes & duties separately. The unit cost must be inclusive of packing, forwarding, loading & unloading charges, cost of insurance and transportation FOR destination where the system will be installed as per the work order.

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

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

#### *Earnest Money Deposit:*

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

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

The successful bidders must deposit **two numbers of bank guarantees** (Annexure-B) towards Security cum Performance Guarantee fees with the Chief Executive, OREDA, Bhubaneswar along with bills, challans and all other documents as per payment clause before processing of payment as follows

- i) 7.5 % of the ordered value in shape of irrevocable Bank Guarantees with **5½ years validity** from the date of supply, installation and commissioning till the completion of respective warranty and CMC period of the composite system.
- ii) 2.5 % of the ordered value in shape of irrevocable Bank Guarantees with **10½ years validity** from the date of supply, installation and commissioning till the completion of respective warranty

## **7. WORK EXECUTION SCHEDULE:**

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

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

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

- All successful bidders conveying acceptance to L1 prices for different SPV systems under this tender shall be duly empanelled and arranged in the order of their quoted prices as L1, L2, L3, .....Ln. **The vendor should have willingness to execute the work even for single system at L-1 price.**
- Depending upon the quantum of materials required as well as the geographical spread of the installations the first batch of the order will be placed on one or more empanelled bidders basing on the order of their empanelment.
- Placement of subsequent orders on the same bidders will be subject to timely execution and performance in respect of the previous work order.
- Placement of subsequent work orders on bidders who have not received any order will be subject to the quantum of materials required as well as geographical spread of the work
- The vendors is to submit acceptance of the work order/purchased order within 15 days from the date of issue of work/purchase order failing which the order is treated to be cancelled. The vendor will be debarred from the empanelment list.

## **9. VALIDITY OF OFFER:**

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

#### **10. VAT:**

The bidders must submit attested copy of valid up to date VAT/STCC 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. Subsequent to selection, all bidders are required to register under OVAT if not registered earlier.

#### **11. WARRANTY:**

- The complete system should be warranted against any manufacturing defect or bad workmanship at least for a period of 5 (five) years from the date of supply/commissioning of the systems.
- SPV modules must be warranted against any manufacturing defect or bad workmanship for a period of 10 years.
- Warranty certificate to the above effect must be furnished along with the commissioning reports. Any defect noticed during warranty period should be rectified / replaced by the supplier free of cost upon due intimation by OREDA.

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

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

#### **13. FORCE MAJEURE:**

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

#### **14. INSPECTION:**

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

#### **15. PAYMENT:**

- **90 %** of the cost of system and installation charge along with all applicable tax shall be released upon commissioning of the systems at the location specified in the purchase order upon due verification by authorised officers and submission of following documents
  - Performance report signed by the Assistant Director, OREDA
  - JCC
  - Warranty
  - GPS based photograph
  - I-V Curves
  - Operation manual
  - Dos & Don'ts in the form of a booklet
  - Conducting training programme
- Balance **10%** cost of the supplied materials, Installation & Commissioning charges will be released after 3 months successful performance of the systems and submission of performance reports thereon.

#### **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 - C ).
- The scope of CMC must cover supply of spare parts (including wherever necessary) / services during the contract in force. Order shall be placed on bidders who agree to offer such CMC. The CMC charges quoted by the bidder must be realistic in view of actual rendering of after sale services. The payment of annual maintenance charges under the Comprehensive Maintenance Contract shall depend upon the functionality of the system duly certified by the concerned Authorised officials of OREDA.

**18. LIMITATION OF LIABILITY:**

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

**19. DISPUTE:**

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

Chief Executive

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

SIGNATURE OF BIDDER WITH SEAL

**TECHNICAL WHITE-LED (W-LED) BASED SOLAR STREET LIGHTING SYSTEM, MODEL-I (ANNEXURE-A)**

A standalone solar photovoltaic street lighting system (SLS) is an outdoor lighting unit used for illuminating a street or an open area. The Solar Street Lighting System consists of solar

photovoltaic (SPV) module, a luminaire, storage battery, control electronics, inter-connecting wires/cables, module mounting pole including hardware and battery box. The luminaire is based on White Light Emitting Diode (W-LED), a solid state device which emits light when electric current passes through it. The luminaire is mounted on the pole at a suitable angle to maximize illumination on the ground. The PV module is placed at the top of the pole at an angle facing south so that it receives solar radiation throughout the day, without any shadow falling on it. A battery is placed in a box attached to the pole.

Electricity generated by the PV module charges the battery during the day time which powers the luminaire from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

### **Model- I**

(Dusk to Dawn, Full Light Level)

#### **BROAD PERFORMANCE SPECIFICATIONS**

PV Module	40 Wp under STC
Battery	Lead acid Tubular Flooded or Tubular GEL / VRLA , 12V- 40 AH @ C/10
Light Source	White Light Emitting Diode (W-LED) 7 Watt (Max.), W-LED luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser
Light Out put	Minimum 16 Lux when measured at the periphery of 4 meter diameter from a height of 4 meter. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred.
Mounting of light	Minimum 4 metre pole mounted
Electronics Efficiency	Minimum 85% total
Duty Cycle	Dusk to dawn
Autonomy	3 days or Minimum 42 operating hours per permissible discharge

## 1. PV MODULE

- Indigenously manufactured PV module should be used.
- The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.
- The power output of the module(s) under STC should be a minimum of 40 Wp at a load voltage\* of  $16.4 \pm 0.2$  V.
- The open circuit voltage\* of the PV modules under STC should be at least 21.0 Volts.
- **The module efficiency should not be less than 12 %.**
- The terminal box on the module should have a provision for opening it for replacing the cable, if required.
- There should be a Name Plate fixed inside the module which will give:
  - Name of the Manufacturer or Distinctive Logo.
  - Model Number
  - Serial Number
  - Year of manufacture
- **A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.**

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

## 2. BATTERY

- VRLA /GELType.
- The battery will have a minimum rating of 12V, 40 Ah at C/10 discharge rate.
- 75 % of the rated capacity of the battery should be between fully charged and load cut off conditions.
- Battery should conform to the latest BIS/ International standards.

## 3. LIGHT SOURCE

- The light source will be a white LED type.
- The colour temperature of white LED used in the system should be in the range of  $5500^{\circ}\text{K}$ – $6500^{\circ}\text{K}$ .
- W-LEDs should not emit ultraviolet light.
- The light output from the white LED light source should be constant throughout the duty cycle.
- The lamps should be housed in an assembly suitable for outdoor use.
- The temperature of heat sink should not increase more than  $20^{\circ}\text{C}$  above ambient temperature during the dusk to dawn operation.

#### **4. ELECTRONICS**

- Ñ The total electronic efficiency should be at least 85%.
- Ñ Electronics should operate at 12 V and should have temperature compensation for proper charging of the battery throughout the year.
- Ñ No Load current consumption should be less than 20 mA.
- Ñ The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
- Ñ The PCB containing the electronics should be capable of solder free installation and replacement.
- Ñ Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

#### **5. ELECTRONIC PROTECTIONS**

- Adequate protection is to be incorporated under “No Load” conditions e.g. when the lamp is removed and the system is switched ON.
- The system should have protection against battery overcharge and deep discharge conditions.
- Fuse should be provided to protect against short circuit conditions.
- Protection for reverse flow of current through the PV module(s) should be provided.
- Electronics should have temperature compensation for proper charging of the battery throughout the year.
- Adequate protection should be provided against battery reverse polarity.
- Load reconnect should be provided at 80% of the battery capacity status.

#### **6. MECHANICAL COMPONENTS**

- A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.
- The frame structure should have provision to adjust its angle of inclination to the horizontal, so that it can be installed at the specified tilt angle.
- The pole should be made of Galvanised Iron (GI) pipe.
- The height of the pole should be 4 metres above the ground level, after grouting and final installation.
- The pole should have the provision to hold the luminaire.
- The lamp housing should be water proof and should be painted with a corrosion resistant paint.
- A vented, acid proof and corrosion resistant metallic box with a locking arrangement for outdoor use should be provided for housing the battery.

#### **7. INDICATORS**

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

## **8. QUALITY AND WARRANTY**

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

## **9. OPERATION AND MAINTENANCE MANUAL**

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

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

## **2. WHITE-LED (W-LED) BASED SOLAR HOME LIGHTING SYSTEMS**

A solar home lighting system (SHS) provides a comfortable level of illumination in one or more rooms of a house. The SHS consists of a PV module, control electronics, battery, and luminaire(s). There are several SHS models featuring one, two, or four luminaires based on White Light Emitting Diode (W-LED). The system could also be used to run a small DC fan or a 12-V DC television along with the W-LED Lamps.

PV module converts sunlight into electricity, which powers the luminaire(s). White Light Emitting Diode (W-LED) is a solid state device which emits light when electric current passes through it.

### **BROAD PERFORMANCE SPECIFICATIONS**

The broad performance specifications of a W-LED light source based solar home lighting system are given below:

Module	6-40 Watt peak under STC
Battery	Lead acid sealed maintenance free, tubular flooded or Gel / VRLA or NiMH or Lithium-Ion, or Lithium-Ferro Phosphate
Light Source	2.5 Watts (max.) White Light Emitting Diode (W-LED)
Light Out put	Minimum 15 Lux when measured at the periphery of 2.5 meter diameter from a height of 2.5 meter. At any point within area of 2.5mtr diameter periphery the light level should not be more than three limes of the periphery value. The illumination should be uniform without Dark Bands or abrupt variations and soothing to the eyes. Higher output would be preferred.
Multiple Light Levels	To take care of different lighting needs as per user's requirement. The lamp should have multiple levels of light (at least two levels) to take care of different lighting needs during the night.
Mounting of light	Wall or ceiling
Electronics	Min 85 % efficiency
Average duty cycle	5 hours a day under average daily insolation of 5.5 kWh/ sq.m. on a horizontal surface.
Autonomy	3 days or Minimum 15 operating hours per permissible discharge.

OR

Minimum 6 operating hours per permissible discharge at full light level  
(In case of NiMH or Lithium-Ferro Phosphate)

**Four models of W-LED home lighting systems are considered for implementation. The configuration of each model is as follows:**

**2(a) Model- II Two White LED luminaire**

PV Module 12 Wp under STC

Battery Lead acid Tubular flooded or Gel / VRLA, 12V - 12AH @ C/20

**2(b) Model –III Two White LED luminaires and one DC fan of wattage up to 10 W**

PV Module 24 Wp under STC

Battery Lead acid Tubular flooded or Gel / VRLA, 12V- 20AH @ C/20

It should have a socket to provide power for a 12V DC TV set which can be purchased separately.

## TECHNICAL DETAILS

### PV MODULE (S)

- j. Indigenously manufactured PV modules should be used
  - k. The PV modules up to 12 Wp capacity should have crystalline silicon solar cells, and should have humidity, freeze and damp heat tests certificate conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.
  - l. The PV modules more than 12 Wp capacity should be made up of crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.
  - m. The power output of the module(s) under STC should be a minimum of 6 Wp or 12 Wp or 24 Wp or 40 Wp.
  - n. The Load voltage\* of 16.40 V for 12 V battery or appropriate voltage for charging of battery used, under the standard test conditions (STC) of measurement.
  - o. **The module efficiency for PV modules up to 12 Wp capacity should not be less than 10%. The module efficiency for PV modules 24 Wp / 40 Wp capacity should not be less than 12%.**
- (vii) The terminal box on the module should have a provision for opening, for replacing the cable, if required.

- (viii) There should be a Name Plate fixed inside the module which will give:
  - a. Name of the Manufacturer or Distinctive Logo.
  - b. Model Number
  - c. Serial Number
  - d. Year of manufacture

**(ix) A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.**

\*The Load voltage conditions of the PV modules are not applicable for the system having MPPT.

### BATTERY

- For Models – II & III battery should have a minimum rating of 12V, 12 Ah or 12V, 20 Ah at C/20 rate of discharge or 12 V, 40 Ah at C/10 rate of discharge, depending on the Model.
- 75 % of the rated capacity of the battery should be between fully charged & load cut off conditions.
- Battery should conform to the latest BIS/ International standards.



## LIGHT SOURCE

- The light source will be of white LED type.
- The colour temperature of W-LEDs used in the system should be in the range of 5500<sup>o</sup>K–6500<sup>o</sup>K.
- LEDs should not emit ultraviolet light.
- The light output from the W-LED light source should be constant throughout the duty cycle.
- The lamps should be housed in an assembly suitable for indoor use.

## ELECTRONICS

- The total electronic efficiency should be at least 85 %.
- Electronics should have temperature compensation for proper charging of the battery throughout the year. The idle current should be less than 1 mA for **Models-II** and for **Models-III** it should be less than 2mA.
- The voltage drop from module terminals to the battery terminals should not exceed 0.6 volts including the drop across the diode and the cable when measured at maximum charging current.
- The PCB containing the electronics should be capable of solder free installation and replacement.
- Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.
- The system should have a USB port for mobile charging

## ELECTRONIC PROTECTIONS

- (iii) Adequate protection is to be incorporated under “No Load” condition, e.g. when the lamps are removed and the system is switched ON.
- (iv) The system should have protection against battery overcharge, deep discharge condition.
- (v) Load reconnect should be provided at 80% of the battery capacity status.
- (vi) Adequate protection should be provided against battery reverse polarity.
- (vii) Fuses should be provided to protect against short circuit conditions.
- (viii) Protection for reverse flow of current through the PV module(s) should be provided.

## MECHANICAL COMPONENTS

- a. Corrosion resistant metallic frame structure should be provided to hold the SPV module.
- b. The frame structure should have provision to adjust its angle of inclination to the horizontal, so that it can be installed at the specified tilt angle.
- c. Light source should be either for wall mounted or ceiling mounted or can be hung from the ceiling in a stable manner, as per site requirements.
- d. A vented plastic/ wooden/ metallic box with acid proof corrosion resistant paint for

housing the storage battery indoors should be provided.

#### **INDICATORS**

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

#### **QUALITY AND WARRANTY**

7. **The Solar home lighting system will be warranted for a period of five years from the date of supply.**
8. **The PV module(s) will be warranted for a minimum period of 25 years from the date of supply.** PV modules used in Solar Home Lighting System must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
9. The battery for **Models– II& III** warranted for a **period of 5 years.**
10. The Warranty Card to be supplied with the system must contain the details of the system. The manufacturers can also provide additional information about the system and conditions of warranty as necessary.

#### **OPERATION and MAINTENANCE MANUAL**

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

Basic principles of Photovoltaics.

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

Significance of indicators.

Type, Model number, voltage & capacity of the battery, used in the system.

The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system must be indicated in the manual.

Clear instructions about mounting of PV module(s).

Clear instructions on regular maintenance and trouble shooting of the Solar Home Lighting System.

DO's and DONT's.

Name and address of the contact person for repair and maintenance

### 3. WHITE LED (W-LED) BASED SOLAR LANTERN

A Solar Lantern is a portable lighting device consisting of a PV module, battery, lamp, and electronics. Battery, lamp, and electronics are placed in a suitable housing, made of metal or plastic or fiber glass. The Solar lantern is suitable for either indoor or outdoor lighting, covering a full range of 360 degrees.

PV module converts sun light into electricity, charges the battery which powers the luminaire. Luminaire consists of White Light Emitting Diode (W-LED), a solid state device which emits light when an electric current passes through it.

#### **BROAD PERFORMANCE SPECIFICATIONS**

The broad performance specifications of a W-LED light source based solar lantern system are given below:

PV Module	4 Wp under STC
Battery	Sealed Maintenance Free (SMF) lead acid battery OR NiMH or Lithium-Ion or Lithium Ferro Phosphate Battery
Light Source	2.0 Watts (max.) W-LED luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser
Light Output	<b>Multiple Light levels</b> The lamp should have two levels of light (operation at 100 % power and 60% power) to take care-of the different lighting needs, as per the User requirements.

Minimum level of illumination from W-LED lantern (at full brightnesslevel) should be as follows:

S. No.	Distance in feet	Illumination level when detector is in horizontal to center point of bottom of light source in Lux	Illumination level When detector is at an angle of 90° to the center point of the bottom of light source in Lux
1	1	50.0	160.0
2	2	10.0	50.0
3	3	04	22.0
4	4	2.5	15.0
5	5	1.5	08

**There are two MODELS of WHITE LED (W-LED) Based Solar Lantern. The configuration of each model is as follows:**

**1(a) Model-I**

PV Module                    4 Wp under STC  
 Battery                        Lead acid Sealed maintenance free, 6V- 10 AH @ C/20 rate of discharge or NiMH or Lithium-Ion of requisite capacity  
 Duty cycle                    4 hours a day (at full brightness level), under average daily insolation of 5.5 kWh/ sq.m.on a horizontal surface.  
 Autonomy                     Minimum of 3 days or 12 operating hours per permissible discharge

**1(b) Model-IA**

PV Module                    4 Wp under STC  
 Battery                        **Lithium-Ferro Phosphate of 3 x 3.2V, 1450 mAh (or requisite) capacity**  
 Duty cycle                    4 hours a day (at full brightness level), under average daily insolation of 5.5 kWh/ sq.m.on a horizontal surface.  
 Autonomy                     Minimum of 6 operating hours per permissible discharge

## TECHNICAL DETAILS

### PV MODULE

20. Indigenously manufactured PV modules should be used in the solar lantern.
21. The PV module should have crystalline silicon solar cells, and should have humidity, freeze and damp heat tests certificate conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.
22. The PV module must have a minimum of 4 Wp at a load voltage\* of 8.6 V for 6 volt battery or appropriate voltage for charging of battery used, under the standard test conditions (STC) of measurement.
23. **The module efficiency should not be less than 10%.**
24. The terminal box on the module should have a provision of opening it for replacing the cable, if required.
25. There should preferably be an arrangement (stand) for mounting the module at an optimum angle in the direction facing the sun.
26. A foil/ strip containing the following details should be fixed inside the module so as to be clearly visible from the front side:-
  - Name of the Manufacturer and/ or distinctive Logo
  - Model and/ or Type No.
  - Serial No.
  - Year of manufacture
- (vii) **A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.**

\*The load conditions of the PV module are not applicable for the system having MPPT.

### BATTERY

#### Model-I

- (i) Sealed maintenance free lead acid battery with a capacity of up to 10 AH, at voltages of up to 6 V @ C/20 rate of discharge  
OR  
NiMH or Lithium-Ion of requisite capacity
- (ii) Battery should conform to the latest BIS/ International standards.

#### Model-IA

- (i) **Lithium-Ferro Phosphate of 3X 3.2V, 1450mAh (or requisite) capacity**
- (ii) Battery should conform to the latest BIS/ International standards.

## LIGHT SOURCE

- I. The light source will be of White Light Emitting Diode (W-LED) type.
- II. The colour temperature of W-LED(s) used in the system should be in the range of  $5500^{\circ}\text{K}$  –  $6500^{\circ}\text{K}$ .
- III. W-LED(s) should not emit ultraviolet light.
- IV. The light output from the W - LED should be constant throughout the duty cycle.
- V. The housing should be suitable for indoor as well as outdoor use.

## ELECTRONICS

- I. Efficiency of the electronic system should be at least 85%.
- II. Electronics should have temperature compensation for proper charging of the battery throughout the year.
  - a. The idle current should be less than 1 mA
- IV. The PCB containing the electronics should be capable of solder free installation and replacement.
- V. Necessary lengths of wires/ cables, switches suitable for DC use and other protections should be provided.
- VI. The system should have a USB port for mobile charging

## ELECTRONIC PROTECTIONS

- I. Adequate protection is to be incorporated for “No Load” condition, e.g. when the lamp is removed and the lantern is switched ON.
- II. The system should have protection against battery overcharge and deep discharge conditions.
- III. The load reconnect should be provided at around 80% of the battery capacity status.
- IV. Adequate protection should be provided against battery reverse polarity.
- V. A fuse should be provided to protect against short circuit conditions.
- VI. Protection for reverse flow of current through the PV module should be provided.
- VII. During the charging, lamp cannot be switched “ON”.

## INDICATORS

The system should have two indicators, green and red.

The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.

- b) Red indicator should indicate the battery “Load Cut Off” condition.

## QUALITY AND WARRANTY

- I. The complete Solar Lantern with W-LED will be warranted for five years.
- II. The **battery** must be warranted for a minimum period of Two (2) years for Model – I **and FIVE (5) years for Model – IA**
- a. The Warrantee/ Guarantee Card to be supplied with the Solar Lantern must contain the details of the system supplied.

## OPERATION and MAINTENANCE MANUAL

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

Basic principles of Photovoltaics.

A small write-up (with a block diagram) on Solar Lanterns - its components, PV module, battery, electronics and luminaire and expected performance.

Significance of indicators.

Type, Model number, Voltage, capacity of the battery, used in the system.

The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system.

Clear instructions on mounting, operation, regular maintenance and trouble shooting of the Solar Lantern.

Instructions on replacement of battery.

DO's and DONT's.

Name and address of the contact person for repair and maintenance during the warranty.

**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 afore said without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

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

We further agree that no change or addition to or other 'modification of the terms of the contract to be performed there under or of any of the contract documents --which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change. Addition or modification.

This guarantee shall be valid until the day of-----20----- Our branch at \* (Name & Address of the \_\_\_\_ \* branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our----- \* branch a written claim or demand and received by us at our \_\_\_\_ \* branch on or before Dt.-----otherwise bank shall be discharged of all liabilities under this guarantee thereafter.

(Signature of the authorized officer of the Bank)

Name and designation of the officer

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



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

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

Comprehensive Maintenance Contract (CMC) for maintenance of SPVm System supplied and install by M/S .....

.....  
for five years.

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

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

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

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

2 The 2<sup>nd</sup> party should conduct at least two training programmes for the users/technical personnel and field functionaries of OREDA, on day-to-day repair and maintenance of the system.

3. 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 2016 and shall come into force from the date of its signature(s).

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

For and on behalf of M/S

( 1<sup>st</sup> Party) .....

( 2<sup>nd</sup> party) .....with Seal