ODISHA RENEWABLE ENERGY DEVELOPMENT AGENCY
BHUBANESWAR

BID DOCUMENT

TENDER CALL NOTICE No. 3266/OREDA DTD- 18/07/2019


<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Hoisting of the bid document on Website</td>
<td>18-07-2019</td>
</tr>
<tr>
<td>Date &amp; time of pre-bid meeting</td>
<td>26-07-2019 at 11:00 AM in OREDA Conference Hall</td>
</tr>
<tr>
<td>Date of hoisting of final revised bid document</td>
<td>31-07-2019</td>
</tr>
<tr>
<td>Date and time of last submission of online bid document</td>
<td>13-08-2019 upto 01:00 PM</td>
</tr>
<tr>
<td>Date and time of last submission of hard copy of bid document</td>
<td>14-08-2019 upto 01:00 PM</td>
</tr>
<tr>
<td>Opening of Techno-Commercial bid</td>
<td>14-08-2019 at 03:00 PM</td>
</tr>
<tr>
<td>Date of opening of the price bid</td>
<td>To be informed to the technically qualified bidders.</td>
</tr>
</tbody>
</table>

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
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.

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars</th>
<th>Tender processing fee Non-refundable (in Rs)</th>
<th>Earnest Money Deposit (in Rs.)</th>
<th>Non-refundable Cost of Bid document (in Rs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2*40 kW Grid connected Rooftop Solar PV Plant at IDCOL Ferrochrome &amp; Alloys Ltd</td>
<td>1966/-</td>
<td>45,000/-</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>90 kW Grid connected Rooftop Solar Plant at STSC Urban Educational Complex, Pokhariput, Bhubaneswar</td>
<td>1966/-</td>
<td>50,000/-</td>
<td>10,500/-</td>
</tr>
<tr>
<td>3</td>
<td>70 kW Grid connected Rooftop Solar Plant at STSC Urban Educational Complex, Kalinga Vihar, Bhubaneswar</td>
<td>1966/-</td>
<td>40,000/-</td>
<td></td>
</tr>
</tbody>
</table>

1. **SCOPE OF WORKS**

The broad scope of the work includes Design, Supply, Installation, Commissioning and Maintenance of GCRTS power systems for a period of 5 years at Select Government Buildings

**1.1 DESIGN**

a. The bidder is required to design the complete system as per requirement of the customer as well as connectivity needs using the solar PV modules/PCUs and BOS. Any change or modification, if needed, may be made with prior approval of OREDA.
b. The connectivity of all the systems must be as per Latest Order of OERC on Net Metering vide No. OERC-Engg. 02/2010/(Vol-IV)/1131 Dated :19.08.2016 as amended up to 17.01.2018 (refer Annexure K).

c. Remote communication facility must be provided in the Generation Meter & Net Meter to monitor Generation/Export Data. The login credentials must be shared with OREDA.

d. The Module Mounting Structure must be designed to be completely Non-Invasive (without any grouting/chipping) on the roof. (An indicative design is given at Page 19- Technical Specifications of MMS)

1.2 SUPPLY

a. Supply of complete systems, including all necessary components, sub-components, spares, tools, tackles etc. as per BOQ and technical specifications given in this tender document.

b. Supply should also include packing, forwarding, safe storage and handling of all plants and equipments including insurance coverage- all FOR Customer.

1.3 PRE-INSTALLATION OBLIGATIONS

a. All structural drawings duly certified by a chartered engineer for their strength, stability and capability to withstand wind velocities up to 200KM/hr must be submitted before proceeding for installation.

b. Single Line Diagrams for all power plants indicating all wiring details, connectivity details etc. must be submitted.

c. Consumer should Apply for Net Metering at respective Distribution Utility to obtain the Approval/Permission for Net metering. The successful bidder should facilitate the User Agency for obtaining NOC for Net Metering and getting the project connected to utility end through Net meter. The Application Fees, Cost of Net Meter, Meter Testing Charges,... shall be borne by the successful bidder/implementing firm.

d. Before submission of the Bid, Bidders in their own interest should visit the sites. Refer Annexure J for Contact person name & contact no.

e. The installation process should be documented step by step in the mobile installation app developed by OREDA. The successful bidders before going for installation should collect the app from OREDA Customer Relationship Centre.

1.4 INSTALLATION

a. Installation of all plants and equipments has to be done as per the design criteria and SLDs.

b. There should not be any invasion/damage what so ever to the roof top due to setting up of the mounting structure of the solar power plant so that on a later day there is any leakage of rain water, etc. from the roof top.

c. While cabling the array care must be taken such that no loose cables lie on the rooftops. The roof top should look clean and tidy after installation of the array.

d. Display boards, danger boards etc. as mentioned in the tender should be prominently fixed in appropriate locations.

e. As far as possible PCUs & Control Panels should be wall mounted.
f. Care should be taken such that earthing flats do not touch the roof/walls at any place. Sufficient insulators should be provided for the same.
g. Providing Remote Monitoring Systems in each of the inverters of the solar PV power plants and sharing the RMS protocol as well as log-in ID and pass word of each system with the designated person from the Customer, as well as concerned division of OREDA.
h. Providing necessary protection devices to protect the power plant from lightening, sudden surges in voltage and current and to ensure safety of the grid to which the plant is connected.
i. The Bidder should ensure installation of Net Meter in coordination with Division/Sub Divisional offices of respective Distribution Utility.
j. The bidder should also ensure protection of life and property likely to be endangered due to the installed solar power plant.

1.5 COMMISSIONING & TESTING:

a. After completion of installation work the plants have to be tested and commissioned in presence of the Asst. Director, OREDA, RE Cell, DRDA of the respective District as well as the designated representative of the Customer.
b. The date & time for testing and commissioning must be decided in consultation with the AD(T) of the concerned district. On the date of such testing & commissioning the commissioning certificate has to be taken into account.
c. The testing and synchronisation of Net Meter shall be ensured by the Bidder in coordination with MRT & Divisional office of respective Distribution Utility before Commissioning of the system. Net-meter if supplied by the Bidder, must be tested & approved by respective Distribution Utility.
d. The process of documentation of installation details & loading of pictures has to be done through Resolve App in consultation with concerned person from OREDA-CRC.

1.6 MAINTENANCE

a. To ensure proper maintenance of the installed systems the bidder is required to appoint a technically qualified person at the site to look after day-to-day maintenance and upkeep of the plant. Sufficient Spare should also be kept with the service personnel so as to attend to any breakdown forthwith.
b. The bidder must enter in to a Comprehensive Maintenance Contract for a period of 5 years as per the format given in Annexure A.
c. The date of commencement of CMC shall be reckoned from the date of commissioning of the system in presence of a representative of the Customer & AD(T), RE Cell, OREDA/Representative of OREDA.
d. The bidder is required to submit the monthly generation reports of each power plant as per Annexure B.
e. The bidder is also required to undertake maintenance as and when required upon receipt of service request from customer.
f. The bidder must adhere to maintenance procedure by OREDA from time to time.
g. The bidder is required to train at least two designated persons from the organization for
day to day operation, maintenance and upkeep of the system.
h. The bidder if required, should agree to undertake extended maintenance services beyond
5 years on mutually agreed terms and conditions.
i. The Maintenance guidelines & Corrective Maintenance procedure must be strictly
adhered to. Scheduled maintenance must be complied every quarter through Mobile App
as per the protocol at Annexure C.

2 IMPORTANT INFORMATION:

a. The Price Bids (Annexure E, F & G) are to be submitted online only.
b. Bidders desirous of participating in the Price Bidding have to pay the tender cost as
mentioned in shape of Demand draft only, drawn in favour of Chief Executive, OREDA
payable at Bhubaneswar. The tender cost is inclusive of taxes and is non-refundable.
c. All participating bidders shall have to deposit non-refundable tender processing fee as
mentioned in TENDER SCHEDULE, in e-payment mode only. The processing fee is
inclusive of taxes.

   NOTE: For tender processing fee to K.S.E.D.C. Ltd. Bangalore, the bidder can use
   various modes of e-payment facility available through Tender wizard Portal, i.e.
   by Credit Card, Debit Card and Net Banking).
d. The bidders shall have to scan the Demand Draft / Bank guarantee towards EMD, Tender
Cost as required in the tender and upload the same in the prescribed form in .pdf or .jpg
format in addition to sending the originals.
e. Any clarifications regarding the scope of work and technical features of the project can
be had from the undersigned during office hours.

3 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 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 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**

i. Submission of emd and tender cost:

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

ii. Submission of techno-commercial bids:

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

iii. Submission of price bids:
• The bidder should fill up price schedule in the given bid sheets in .xls format and upload the same without changing the file name. The bid will be rejected if the schedule of price is submitted in incomplete form.
• After completing all the formalities, Bidders will have to submit the tender as specified in NIT and must take care of all instructions. Prior to submission, verify whether all the required documents have been attached and uploaded to the particular tender or not.

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

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

E. MODIFICATION AND WITHDRAWAL OF BIDS:
  a. Bidder may modify or withdraw their bids through the relevant provisions on the portal www.tenderwizard.com/OREDA up to due date and time of submission of bid indicated in tender notification.
b. The Bidders may modify and resubmit their bids as per the provisions given in the portal.

c. Bidders may withdraw their bids through the relevant provisions of mentioned in the portal.

d. **No bid shall be modified/ withdrawn after the dead line for submission of bids.** Withdrawal/modification of bid 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 Indexes.
  
  **No loose/ separate paper or spiral bound documents will be accepted.**

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

1) Demand draft towards cost of bid document
2) Copy of acknowledgement of tender processing fee.
3) EMD in shape of “Demand Draft/ Bank guarantee”
4) Signed copy of “Confirmation to Technical Specifications”
5) Signed copy of “Certificate of Unconditional Acceptance of the tender”
6) Technical Bid document in **hard bound form** with each page legibly numbered comprising of the following:
   - All Test certificates from MNRE/NABL approved laboratories as prescribed.
   - Technical Specifications of all materials to be supplied
   - Income Tax return, PAN card and GST 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.
   - Experience Certificate confirming to Eligibility criteria.
   - Organizational profile
   - Balance sheets and profit & loss accounts
   - Certificate and proof as per qualification criteria
   - Brochure, literature etc. if any

*The Hard bound copy must be submitted in OREDA office at S-57, Mancheswar Industrial Estate, Bhubaneswar 751010 on or before the stated date in the manner prescribed elsewhere in the document. Submission extra/ unrelated documents may be avoided. Price bid to be only filled up in the specified bid sheet and to be uploaded.*

G. **TECHNICAL BID:**

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

H. **FINANCIAL BID:**

- 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 or in Bank Guarantee (BG). This shall not apply to those who are eligible for exemption from depositing EMD under NSIC etc. subject to submission of such exemption certificates.
  
  Note: EMD against previous Tenders, if any, will not be adjusted towards EMD against this Tender.

ii) Complete Technical details are not enclosed.

iii) Tender is received after the last date for whatever reasons.

iv) Hard copy of the tender is submitted loose or spiral bound.

J. PROCEDURE FOR OPENING THE BIDS:

The procedure of opening of the bid shall be as under
  a. The TECHNICAL BID shall be opened at the time & date mentioned in the bid notice by OREDA in the presence of bidders, who choose to be present. If necessary, the firms may be called for Technical Presentation the schedule for which will be intimated by OREDA.

  b. The Price bid shall be opened after evaluation of technical suitability of the offers. The date for opening of Price bid shall be communicated subsequently. The Price Bid of only those bidders shall be opened who qualify in the technical bid.

4. COMMERCIAL TERMS & CONDITIONS

1. RATE:
The offer should indicate the unit cost of the system, Installation & Commissioning charges, CMC Charges separately as per Annexure E, F & G. The unit cost must be inclusive of packing, forwarding, loading & unloading charges, cost of insurance and transportation to destination where the system will be installed as per the work order. The prices quoted should be firm, fixed and reasonable.

2. TAXES & DUTIES ETC.:
   All Taxes and duties as prescribed under GST norms shall be applicable.

3. EARNEST MONEY DEPOSIT:
   i) Earnest money deposit of

A. Rs 45,000/- (for 2*40 kW GCRTS Plant at IDCOL Ferrochrome & Alloys Ltd, Jajpur)
AND/OR

B. Rs 50,000/- (for 90 kW GCRTS Plants at STSC Urban Educational Complex, Pokhariput, Bhubaneswar AND/OR

C. Rs 40,000/- (for 70 kW GCRTS Plants at STSC Urban Educational Complex, Kalinga Vihar, Bhubaneswar

for which the bidder is applying has to be deposited in the form of Bank Draft or Bank Guarantee along with the bid without which the bid will not be accepted. No interest will be payable for the EMD amount under any circumstances.

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

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

iv) 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.

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

*Forfeiture of security deposit/performance Bank Guarantee

The said deposit would be forfeited in the following cases

a. If the systems are not installed and commissioned as per given schedules.

b. If the systems are not properly maintained and the performance of the systems do not meet the standards mentioned in the work orders.

5. ELIGIBILITY CRITERIA

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

a. The bidder must be manufacturer of any or all of the 3 major components of the solar PV power plant namely Solar PV panels, Inverters or an Integrator of solar PV power plants. In either case the bidders must submit the valid test reports of all major components issued by any of the authorized test centres of MNRE/NABL in favour of the OEM. The bidder must have valid GST registration certificate.

b. The bidder must have a minimum cumulative turnover of Rs. 2 Crores over last three years (2016-19) exclusively in the business of solar PV. As proof of the same a certificate to that effect duly signed and stamped by a registered chartered accountant in the letter head of the CA’s firm must be included in the tender document.

c. The bidder must have experience as follows:

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars</th>
<th>Required Experience (during last 3 years (2016-19) in Govt dept/ PSUs/ Govt agency/ Govt institutions)</th>
</tr>
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<tbody>
<tr>
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</tbody>
</table>
The firm must have installed on grid solar plant of **40 kW (cumulative) capacity with 10 kW (individual) capacity**

The firm must have installed on grid solar plant of **90 kW (cumulative) capacity with 30 kW (individual) capacity**

The firm must have installed on grid solar plant of **70 kW (cumulative) capacity with 20 kW (individual) capacity**

The bidders have to submit Copy of Certificates/ work completion reports against the experience signed/ authorised by Designated Public Officer and mention the details in the given format to be attached.

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Name of the Organization</th>
<th>Capacity Commissioned (kW)</th>
<th>Certificates attached</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2*40 kW Grid connected Rooftop Solar PV Plant (without Net Metering) at IDCOL Ferrochrome &amp; Alloys Ltd</td>
<td>The firm must have installed on grid solar plant of <strong>40 kW (cumulative) capacity with 10 kW (individual) capacity</strong></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>90 kW Grid connected Rooftop Solar Plant (with Net Metering) at STSC Urban Educational Complex, Pokhariput, Bhubaneswar</td>
<td>The firm must have installed on grid solar plant of <strong>90 kW (cumulative) capacity with 30 kW (individual) capacity</strong></td>
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<td>3</td>
<td>70 kW Grid connected Rooftop Solar Plant (with Net Metering) at STSC Urban Educational Complex, Kalinga Vihar, Bhubaneswar</td>
<td>The firm must have installed on grid solar plant of <strong>70 kW (cumulative) capacity with 20 kW (individual) capacity</strong></td>
<td></td>
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</table>

**d.** The firm must have adequate capacity to design, manufacture, test, supply, erection, and commission the power plant within the given time schedule.

**e.** The products must confirm to minimal technical requirements specified under the National Jawaharlal Nehru Solar Mission. (refer Annexure Q)

**f.** The bidder’s company/firm must have established quality assurance systems and organization in line with the requirements under ISO 9001:2015 and ISO 14001:2015 certification. However ISO 14001:2015 certificate can be submitted in the name of OEM along with the bid.

**g.** The firm 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.

**6. CHECKLIST OF DOCUMENTS TO BE SUBMITTED:**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars</th>
<th>Complied</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cost of Tender document for Rs.10,500/- or exemption proof as admissible with proof.</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Acknowledgement for tender processing fee.</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>EMD in shape of Bank draft/Bank Guarantee</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Forwarding letter duly signed and stamped by the bidder (as per Annexure R)</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Undertaking duly signed and stamped by the bidder (as per Annexure L)</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Document stating the status of the bidder as manufacturer /systems integrator</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Copy of the PAN card of the bidder’s firm</td>
<td>Bank, No, Dt</td>
<td></td>
</tr>
</tbody>
</table>
Copy of the TIN No. of the bidder’s firm

Tax return, Odisha VAT/STCC/E-submission

Annual turnover in solar business, audited report

<table>
<thead>
<tr>
<th>Year</th>
<th>Turnover</th>
</tr>
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<tbody>
<tr>
<td>2016-17</td>
<td></td>
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<tr>
<td>2017-18</td>
<td></td>
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<td>2018-19</td>
<td></td>
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<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

No of Solar PV Power plant installation

Proof of Quality assurance systems

Valid Test report of Solar PV module (>=300 Wp) (refer Annexure H)

Valid test report of Grid Tied Inverter (40 kW, 90 kW & 70 kW) (refer Annexure H)

Willingness- Opening of service centre in the state

Undertaking to supply Indigenous items as per relevant guidelines of MNRE, GoI

Undertaking to unconditionally accept all terms and conditions of the bid document with copy of Board Resolution (refer Annexure O & P)

Power of attorney to sign the agreement on behalf of bidder

Organizational profile containing the original documents defining the constitution or legal status, place of registration and principle place of business.

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

8. WORK EXECUTION SCHEDULE:
   a. All ordered systems must be installed and commissioned in all respects within 60 days of receipt of firm work order from OREDA.
   b. Under exceptional circumstances the period of execution can be extended reasonably only upon written request by the vendor.
c. Upon intimation about installation of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, OREDA and User organization.

d. The issuance of a JCC shall, in no way relieve the executing firm of it’s responsibility for satisfactory operation of the power plant.

9. Allocation of Supply / Installation & Execution:
The entire work will be allotted only to a single bidder quoting L1 price.

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

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

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

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

14. **INSPECTION:**

i. 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.

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

15. **PAYMENT:**

a. 90% of the cost of system and installation charge along with all applicable tax shall be released upon commissioning of the systems with or without Net Meter 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 | PCR & JCC (acc to MNRE approved format) (refer Annexure S) |
| Web enabled generation report | GPS based photograph |
| Operation manual | I-V Curves |
| Conducting training programme | Dos &Don't’s in the form of a booklet |
| Login Credentials of Generation Meter, Net Meter & PCU | Critical Documents (Annexure I) |

b. Balance 10% cost of the supplied materials, Installation & Commissioning charges will be released after installation, testing and charging of Net Meter.

16. **EXECUTION:**

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

a. Under normal circumstances all ordered systems must be installed and commissioned in all respects within 60 days of receipt of firm work order from OREDA.

b. Under exceptional circumstances Chief Executive, OREDA may consider to extend the execution period by a maximum of 30 days upon written application of the vendor stating justified reasons for delay which should be supported by the concerned customer and recommended by the concerned AD(T) of OREDA.
c. Upon intimation about commissioning of the systems by the executing firm a joint inspection will be carried out by the representatives of the executing firm, OREDA and User organization.

d. The issuance of a JCC shall, in no way relieve the executing firm of it’s responsibility for satisfactory operation of the power plant.

e. The bidder must securitize the execution schedule by providing bank guarantee equal to 10% of the ordered value from any nationalized bank with validity of 200 days from the date of issue of the work order. In case of delay beyond the approved period the bank guarantee will be encashed and retained by OREDA. Additionally penalty may be imposed / order may be terminated as per provisions in the tender.

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

i. **Comprehensive Maintenance Contract (Annexure A)**

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

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

ii. **BG for Performance Guarantee (Annexure D)**

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

a. The Performance Bank Guarantees will be returned after completion of 1st, 2nd, 3rd, 4th and 5th year maintenance and submission of reports thereon.

b. Annual Maintenance Charges (AMC) will be paid annually upon successful maintenance of the systems and submission all necessary reports thereon.

**Note:**

Execution of CMC and submission of Performance Bank Guarantees (Format at Annexure A & D) are pre conditions for release of 1st payment of 90%.
18. **Limitation of Liability:**
OREDA, will, in no case be responsible for any accident fatal or non-fatal, caused to any worker or outsider in course of transport or execution of work. All the expenditure including treatment or compensation will be entirely borne by the Executants. The Executants shall also be responsible for any claims of the workers including PF, Gratuity, ESI & other legal obligations.

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

Sd/-

CHIEF EXECUTIVE

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

**Signature of Bidder with Seal**

**For any assistant, Contact:**

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

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

1. **Solar Photovoltaic Modules:**
   a. The PV modules to be used should be made in India.
   b. The PV modules should qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules shall conform to IEC 61730 Part-2- requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS. The module should also confirm to IEC 61701 (Salt Mist Corrosion Testing)
c. The total solar PV array capacity should not be less than the required capacity and should comprise of solar crystalline modules of minimum 300 Wp and above wattage with 72 cells. String Voltage should not be more than 600 V DC.

d. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.

e. PV modules will be tested and approved by one of the MNRE/IEC authorized test centers.

f. The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.

g. Other general specification for the PV modules and subsystems shall be the Following as

i. The rated output power of any supplied module shall have tolerance of +/-3%.

ii. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

iii. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-21/20 rated.

iv. I-V & P-V curves at STC will be provided after installation.

v. PV modules used in solar power plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

h. Modules should have a RF identification tag. The following information will be mentioned in the RFID used on each modules (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).

i. Name of the manufacturer of the PV module

ii. Name of the manufacturer of Solar Cells.

iii. Month & year of the manufacture (separate for solar cells and modules)

iv. Country of origin (separately for solar cells and module)

v. I-V curve for the module Wattage, Im, Vm and FF for the module

vi. Unique Serial No and Model No of the module

vii. Date and year of obtaining IEC PV module qualification certificate.

viii. Name of the test lab issuing IEC certificate.

ix. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.
2. **ARRAY/MODULE MOUNTING STRUCTURE:**
   
i. Hot dip galvanized MS/Aluminum mounting structures shall be used for mounting the modules/panels/arrays. Each structure will have angle of inclination as per the site conditions to take maximum insolation.

   ii. The Mounting structure must be Non-invasive and any sort of penetration of roof to be avoided. The design details are as follows:
       
a. The inclination of module should not be more than 24 degrees.
       
b. Each module should be loaded with 8 Non-Invasive blocks with 4 on each side.
          (2 blocks below the module & 2 blocks at both ends)
       
c. The upper edge of the module must be covered with metal sheet so as to avoid bulk air ingress below the module. Slight clearance must be provided on both edges (upper & lower) to allow air for cooling.

   d. Each block should be of 25 Kg weight & should be cuboidal shaped reinforced concrete with dimensions of 1.5 feet (length) * 6 inch (breadth) * 6 inch (height) with a cut-out of 100 mm * 60 mm across the breadth to encompass the 100 mm base channels.

   iii. The mounting structure should be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.

   iv. The fasteners should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

   v. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m². The load shall be well distributed so that point loads are well within the limits.

   vi. The minimum clearance of the structure from the roof level should be 150 mm.
vii. The structures should be laid on the rooftop on weather resistant FRP mountings which should be non-penetrating type and proper drainage of rain water over terrace through the installation area should be maintained.

viii. The structures should be suitably loaded with reinforced concrete blocks of appropriate weight made out of M25 concrete mixture.

ix. Special care should be taken while designing all structures for modules to cater to heavy rainfall.

x. The array shall be located sufficiently inside the boundary wall of the terrace (parapet wall) and should not be projecting out. PV array shall be installed in the terrace space free from any obstruction and/or shadow. PV array shall be installed utilizing optimum terrace space to minimize effects of shadows due to adjacent PV panel rows.

xi. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.

xii. Additional waterproofing shall be provided in the areas where RCC blocks are placed on the terrace.

xiii. The minimum clearance between lower edge of PV panel and terrace ground level shall be 150 mm to allow ventilation for cooling, also ease of cleaning and maintenance of panels as well as cleaning of terrace.

xiv. The PV array structure design shall be appropriate with a factor of safety of min. 1.5.

xv. Each PV panel structure shall incorporate one bird repellent spike at a level higher than the panel upper edge. The location of the spike should be selected for minimum shadow effect.

xvi. The support structure shall be free from corrosion when installed.

xvii. PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames. Module fasteners/clamps shall be adequately treated to resist corrosion.

xviii. Adequate spacing shall be provided between any two modules secured on PV array for improved wind resistance.

xix. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

xx. The structure should be appropriately designed to withstand high wind velocities up to 180-200 km per hour. (The bidder is required to submit a certificate from an authorized chartered engineer with regards to the strength and durability of the structure)

3. ARRAY/ MAIN JUNCTION BOXES (JBs):

   a) The J. Boxes (JBs) made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement shall be provided. All wires/cables shall be terminated through Copper cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.
b) Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands.

c) Fuse protection should be provided for each string for +ve cables.

d) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

e) Suitable markings should be provided on the bus bar for easy identification and suitable cable glands with ferrules must be fitted at the cable termination points for identification.

f) Array Junction Box should be IP 65(for outdoor)/ IP 54(for indoor) as per IEC 60529 and should be provided with fuses and Isolators of suitable ratings.

g) ACDB should have surge protection device of class 2 as per IEC 60947/60364-5-53, to protect inverters from surges in the AC line.

h) **AJBs/MJB may be kept below the modules. In case of need this can be installed on wall or rooftop.** ACDB should be put at safe distance from DCDB/AJBs/MJBs to avoid Eddy current interference.

4. **DC DISTRIBUTION BOARD:**

a) Dust & vermin proof Enclosures of Polycarbonate/GRP/FRP/Powder coated Aluminium/Cast Aluminium Alloy & should have IP 65(outdoor)/54(indoor) compliant to IEC 60529.

b) The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

c) Suitable cable entry points with cable glands and ferrules should be provided.

d) DC SPD of type 2 compliant to IEC 60497 with fuse should be provided.

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

5. **AC DISTRIBUTION PANEL BOARD:**

a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary overcurrent & surge protection.

b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.

c) All the Panel’s should be metal clad, totally enclosed, rigid, floor mounted, air-insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz.

d) Suitable cable entry points with cable glands and ferrules should be provided.

e) DC SPD of type 2 compliant to IEC 60497 with fuse should be provided.

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

g) The panels should be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
h) All indoor panels should have protection of IP20 or better. All outdoor panels will have protection of IP21 or better.

i) Should confirm to Indian Electricity Act & rules (till last amendment)

j) All the 415 V or 230 V devices/equipment like bus support insulators, circuit breakers, SPDs, VTs, etc... mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

<table>
<thead>
<tr>
<th>Variation in Supply Voltage</th>
<th>+/−10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variation in Supply frequency</td>
<td>+/−3 Hz</td>
</tr>
</tbody>
</table>

6. **GRID TIED POWER CONDITIONING UNIT/INVERTER:**

i. As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels before powering equipment designed for nominal mains AC supply. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the “Power Conditioning Unit” OR simply PCU. PCU refers to combination of charge controller, inverter and AC charger and shall be supplied as integrated unit or separate units.

ii. The inverter should be highly efficient. The inverter should confirm IEC 61683, IEC 60068 & IEC 62116 (Anti Islanding Protection) i.e. it should island the Solar PV System in case the Grid shuts down. It should be based on MPPT design. Beyond the maximum load the inverters should trip. The inverters should be designed to be completely compatible with the distribution panels and are of integrated design.

iii. Salient features of the Inverters shall be as follows:

a. The PCU should be designed to be completely compatible with the SPV array voltage.

b. Grid tied Inverter with inbuilt MPPT should be used.

c. The sine wave output of the inverter shall be 415 V, 3 phase, 50 HZ AC.

d. The peak inverter efficiency inclusive of built in isolation transformer shall exceed 85% at full load

e. Inverter shall provide display of PV array DC voltage & current, Inverter Voltage & Current, Grid voltage, Current and required parameters when fault occurs. Remote monitoring of inverter parameters must be facilitated.

f. Operating temperature Range shall be 0 to 55 deg C

g. Maximum Power Point Tracker (MPPT) shall be integrated in the power conditioner unit to maximize energy drawn from the Solar PV array.

h. The charge controller/ MPPT units should qualify to IEC standards.

i. It should be equipped with Online microprocessor based Data Acquisition Systems and Remote Monitoring facility for 365 days with data Recovery from remote location.

- **Detailed Specifications are:**

<table>
<thead>
<tr>
<th>Total output power (AC)</th>
<th>To match solar PV plant capacity while achieving optimum system efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input DC voltage range DC input</td>
<td>As required for the solar grid inverter</td>
</tr>
<tr>
<td>Maximum power point Tracking (MPPT)</td>
<td>Inbuilt</td>
</tr>
<tr>
<td>Number of independent MPPT Inputs</td>
<td>1 or more</td>
</tr>
</tbody>
</table>
Output AC voltage | Three phase 415 (+12.5%,-20%)
Operating Frequency range | 47.5 – 52.5 Hz
Nominal frequency | 50 Hz
Power factor of the inverter | >0.98 at nominal power
Total harmonic distortion | Less than 3%
Built-in Protection | AC high / low voltage; AC high /low Frequency
Anti-islanding protection | As per VDE 0126-1-1 or IEC 60255.5 or IEC 62116 or equivalent standards
Operating ambient temperature range | -10 degC - +60 degC
Humidity | 0 – 95% Rh
Inverter efficiency | >=95%
weighted efficiency | 94%
Protection degree | IP 65 for outdoor mounting, IP 54 for indoor mounting
Communication interface RS 485 / RS 232 and RJ45 Safety compliance | IEC 62103, IEC 62109-1, IEC 62109-2 Galvanic Isolation
Cooling Convection Display type | LCD for data display. LCD / LED for status display
Display parameters to include | Output power (W), cumulative energy (Wh), DC voltage (V), DC current(A), AC voltage(V), AC frequency(Hz), AC current(A); cumulative hours of operation,
Compliance with standards and codes | IEC6163/ IS 61683, IEC 60068- 2 (1,2,14,30)

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

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

b. Earthing
   a. Earthing should confirm to IS 3043.
   b. Earth Continuity wire/conductor should be 3-8 SWG. Thickness of Conductor should be more than half of the thickest wire used in Electric wiring. Total resistance of continuity conductor should be less than 1 ohms.
c. Earthing lead can be of GI/Copper Strip. For each Earth Electrode 2 Leads must be provided.

d. Earth Electrode can be of GI Pipe/Plate. Pipe Electrode should be of 40 mm dia, 4.75 m length (for rocky soil)/2.75 m (for ordinary soil). Plate Electrode should be of 60 cm*60 cm at a depth of 3 m. Thickness of Plate should be 3.18 mm (copper)/6.35 mm (GI). Moistened land should be preferred for Earthing.

d. Charcoal along with Salt and Lime mixture/ Bentonite in granular form mixed with water/ Marconite/ Chemical Earthing (Bentonite based/ Graphite based with Aluminium Silicates & Metal Powder) should be provided. The mixture should be inserted into the pipe or put around the plate. The Electrode system should be covered with cast iron cover plate with locking arrangement. (Marconite is recommended due to its Very Low resistivity)

e. No. of Earthing points to be used:
   1. One Earthing for all the Structural Conducting Parts
   2. One Earthing for Inverter with ACDB, Array JB & Main JB.
   3. One Earthing for Lightening Arrester.

f. Each array structure of the SPV yard will be grounded properly. The array structures and the lightning conductors are to be connected to earth through 25 mm X 5mm GI strip.

g. The inverters and all equipment inside the control room shall be connected to earth through 25 mm X 5mm tinned copper strip including supplying of material and soldering. Earth bus should be provided inside the control room with 25 mm X 5mm tinned copper strip.

h. In compliance to Rule 61 of Indian Electricity Rules, 2004 (as amended up to date), all non-current carrying metal parts should be earthed with two separate and distinct earth continuity wires.

8. SURGE PROTECTION DEVICES (SPD):

   a. Surge protection device should be provided on both the DC side and the AC side of the solar PV system. It should have protection voltage of 2.5 kV & Nominal Discharge current of 5 kA (8/20) μ sec.

   b. The DC surge protection devices (SPDs) should be installed in the DC distribution box adjacent to the solar inverter.

   c. The AC SPDs shall be installed in the AC distribution box adjacent to the solar inverter.

   d. The SPD’s earthing terminal should be connected to earth through the abovementioned dedicated earthing system.

9. CABLES & WIRINGS:

   a. The Cable & Wires should comply to IEC60227 or IS694 & IEC60502 or IS1554 BSEL50618 (for DC cables for PV systems).

   b. All copper flexible cables should comply to IS651 and make should be Polycab, Havells or equivalent.

   c. Colour code should be followed for over all wiring i.e, red for positive, black for
negative, green for earth.

d. All cable should run in suitable PVC Conduits. No cable should be directly exposed to sunlight.

e. Cable Sizes should be as per the given Current and Voltage ratings.

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

11. **REMOTE MONITORING SYSTEM:**
For better appreciation, the Solar PV Power plant must be provided with remote monitoring system. In case of mobile network is not available, the same may be provided with data dumping system. These systems should work using GSM/GPRS data communication service (GSM/GPRS service shall be provided by the Vendor for 5 years including data charges) or SMS (Short Message Service). They must provide data on power generation every 15 minutes indicating all spikes, dips etc.

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

*Monthly Report has to be submitted to OREDA.

12. **DRAWINGS & MANUALS:**
Two copies of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization and distribution for street lighting system along with protection equipment. Approved ISI and reputed makes for equipment be used. For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to OREDA before progressing with the installation work.

13. **NET METER: TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE LT STATIC TRI-VECTOR BIDIRECTIONAL ENERGY METER DLMS CATEGORY ‘B’,**

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Particulars</th>
<th>Technical Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type &amp; make</td>
<td>3 Phase 4 Wire</td>
</tr>
<tr>
<td>3</td>
<td>(i) Accuracy class</td>
<td>0.5s</td>
</tr>
<tr>
<td></td>
<td>(ii) Rated voltage</td>
<td>230V (P-N)</td>
</tr>
<tr>
<td></td>
<td>(iii) Rated current</td>
<td>Secondary 5A</td>
</tr>
<tr>
<td></td>
<td>(iv) Rated frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td>4</td>
<td>Starting current (Min) at which meter shall run &amp; continue to run</td>
<td>0.2% of Ib</td>
</tr>
<tr>
<td>5</td>
<td>Communication port</td>
<td>Two communication port</td>
</tr>
<tr>
<td></td>
<td>• One galvanically isolated optical port (1107). For Local Reading</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Additional RS 232 port (RJ 11 connector) for modem communication</td>
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<tr>
<td>---</td>
<td>--------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Battery backup</strong> Two Lithium battery inside the meter. One for RTC backup &amp; other for mains off operation.</td>
<td></td>
</tr>
</tbody>
</table>
| 7 | **Materials to be used**  
   (i) **Base** Engineering Plastic.  
   (ii) **Terminal block** Engineering Plastic.  
   (iii) **Meter cover** Engineering Plastic with display window of UV stabilised polycarbonate.  
   (iv) **Terminal cover** Engineering Plastic.  
   (v) **Screw** electroplated Brass  
   (vi) **Screw size** M - 4 × 6mm |
| 9 | **Type of display**  
   (i) **No. of Digits display** 7 digit 7 segment LCD display (High resolution display for the energy will be provided, in which minimum four digit after decimal will be provided).  
   (ii) **Character size of display** 10x5 mm |
| 10 | **(i) Fixing of meter** 3 Fixing holes (One at top & two at bottom terminal block)  
    **(ii) Sealing provision** At terminal cover, MD Button, Communication port, Meter Body |
| 11 | **Event record on meter in tamper condition** Should be capable as per relevant standards. |
| 12 | **Size of calibration LED and colour** 3mm Red |
| 13 | **Relative humidity** 95% (some time approaches to saturation). |
| 14 | **Ref. Temperature** 27°C |
| 15 | **Temperature range of operation** -5 to 55°C |
| 16 | **Drift in accuracy of measurement with time** No appreciable drift in accuracy in measurement with time. |
| 17 | **Fixing arrangement of name plate** Secured and indelibly marked name plate (rating plate) will be fixed to the meter under display window. |
| 18 | **Approximate weight of meter** *1.6 Kg ± 0.2 Kg.* |
| 19 | **Type of body** Projection type |
| 20 | **Demand Integration Period** 15min |
| 21 | **MD Reset** Auto Reset at 24:00 hrs at the end of each billing cycle |
| 22 | **Marking** The marking of the meters shall be IS 14697/1999 (Reaffirmed 2004) DLMS- Category B as per IS 15959 |
| 23 | **Apparent calculation** Lag + Lead |
| 24 | **TOD timing (Both MD & Energy)** 00 : 00 Hrs to 06 : 00 Hrs  
    06 : 00 Hrs to 24 : 00 Hrs  
    There will be a provision of at least 8 TOD zones for Active & Apparent Energy & Demand |
| 25 | **Non-volatile memory to record history** HISTORY  
    TOD MD – 6 months  
    All Energy – 6 months |
| 26 | **Compliance** OERC Order on Net Metering (Aug 2016 as amended upto 17-01-2018) |
| 27 | **Acceptance** Same type of meter tested at Standard Testing Laboratory, Bhubaneswar  
    Same type of meter tested at CESU MRT Laboratory, Bhubaneswar |
| 28 | **MODEM** GPS/GPRS suitable for above meter  
    **Capability** Remote Data reading (RMR)  
    **Facility** Sealing provision  
    **Status** Through LED  
    **Provision** SIM CARD slot |
14. GENERATION METER- TECHNICAL PARTICULARS FOR 3 PHASE 4 WIRE LT STATIC TRI-VECTOR ENERGY METER FPR GENERETION MONITORING, DLMS CATEGORY ‘C’

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Particulars</th>
<th>Technical Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Type &amp; make</td>
<td>3 Phase 4 Wire</td>
</tr>
<tr>
<td>2</td>
<td>Standard Applicable</td>
<td>IS:13779(1999), DLMS IS: 15959 Category C / CBIP report – 88 (with latest amendment)</td>
</tr>
<tr>
<td>3</td>
<td>(i) Accuracy class</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>(ii) Rated voltage</td>
<td>230V (P-N)</td>
</tr>
<tr>
<td></td>
<td>(iii) Rated current</td>
<td>20-100A Direct</td>
</tr>
<tr>
<td></td>
<td>(iv) Rated frequency</td>
<td>50Hz</td>
</tr>
<tr>
<td>4</td>
<td>Starting current (Min) at which meter shall run &amp; continue to run</td>
<td>0.2% of Ib</td>
</tr>
<tr>
<td>5</td>
<td>Communication port</td>
<td>Two communication port</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• One galvanically isolated optical port (1107). For Local Reading</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Additional RS 232 port (RJ 11 connector) for modem communication</td>
</tr>
<tr>
<td>6</td>
<td>Battery backup</td>
<td>Two Lithium battery inside the meter. One for RTC backup &amp; other for mains off operation.</td>
</tr>
<tr>
<td>7</td>
<td>Materials to be used</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(i) Base</td>
<td>Engineering Plastic.</td>
</tr>
<tr>
<td></td>
<td>(ii) Terminal block</td>
<td>Engineering Plastic.</td>
</tr>
<tr>
<td></td>
<td>(iii) Meter cover</td>
<td>Engineering Plastic with display window of UV stabilised polycarbonate.</td>
</tr>
<tr>
<td></td>
<td>(iv) Terminal cover</td>
<td>Engineering Plastic.</td>
</tr>
<tr>
<td></td>
<td>(v) Screw</td>
<td>electroplated Brass</td>
</tr>
<tr>
<td></td>
<td>(v) Screw size</td>
<td>M - 4 x 6mm</td>
</tr>
<tr>
<td>8</td>
<td>Type of display</td>
<td>7 segment LCD</td>
</tr>
<tr>
<td></td>
<td>(i) No. of Digits display</td>
<td>7 digit 7 segment LCD display (High resolution display for the energy will be provided, in which minimum four digit after decimal will be provided).</td>
</tr>
<tr>
<td></td>
<td>(ii) Character size of display</td>
<td>10x5 mm</td>
</tr>
<tr>
<td></td>
<td>(i) Fixing of meter</td>
<td>3 Fixing holes (One at top &amp; two at bottom terminal block)</td>
</tr>
</tbody>
</table>

Compliance Class 10

Power supply 240VAC, 50Hz

SERVER WEB

Monitoring over Client PC Check healthiness of Plant, Total & Plant wise generation – daily, weekly, monthly. Profile data, Comparison between plants, Generated and Consumed energy, Power factor, Maximum demand, Power on-off time and duration, Events, Auto email reports

Billing requirements : Import, Export and Net Energies, Active, Reactive, Apparent, PF, Demand, Support of different tariff structure like Flat & TOD.

Analysis & Services Customized dashboard, Plant load factor, ROI tracking, Tracking per day expected revenue v/s actual revenue, Loss, Best performing plants, Best day, Carbon footprint reduction, Time to payback, Promised capacity & delivered.

LTCT Specification 200/5A, 4 nos Resin cast Ring type LTCT, Burden : 5VA

Accuracy : 0.5, having ID : 35mm & mounting clamp to fix in Box

Box Double Door SMC Box (size 810mm x 350mm x 230mm) to mount meter, CT & Modem
<table>
<thead>
<tr>
<th></th>
<th>(ii) Sealing provision</th>
<th>At terminal cover, MD Button, Communication port, Meter Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Event record on meter in tamper condition</td>
<td>Should be capable as per relevant standards.</td>
</tr>
<tr>
<td>12</td>
<td>Size of calibration LED and colour</td>
<td>3mm Red</td>
</tr>
<tr>
<td>13</td>
<td>Relative humidity</td>
<td>95% (some time approaches to saturation).</td>
</tr>
<tr>
<td>14</td>
<td>Ref. Temperature</td>
<td>27°C</td>
</tr>
<tr>
<td>15</td>
<td>Temperature range of operation</td>
<td>-5 to 55°C</td>
</tr>
<tr>
<td>16</td>
<td>Drift in accuracy of measurement with time</td>
<td>No appreciable drift in accuracy in measurement with time.</td>
</tr>
<tr>
<td>17</td>
<td>Fixing arrangement of name plate</td>
<td>Secured and indelibly marked name plate (rating plate) will be fixed to the meter under display window.</td>
</tr>
<tr>
<td>18</td>
<td>Approximate weight of meter</td>
<td>*2 Kg ± 0.2 Kg.</td>
</tr>
<tr>
<td>19</td>
<td>Type of body</td>
<td>Projection type</td>
</tr>
<tr>
<td>20</td>
<td>Demand Integration Period</td>
<td>15min</td>
</tr>
<tr>
<td>21</td>
<td>MD Reset</td>
<td>Auto Reset at 24:00 hrs at the end of each billing cycle</td>
</tr>
<tr>
<td>22</td>
<td>Marking</td>
<td>The marking of the meters shall be IS 13779 DLMS- Category C as per IS 15959</td>
</tr>
<tr>
<td>23</td>
<td>Apparent calculation</td>
<td>Lag Only</td>
</tr>
<tr>
<td>24</td>
<td>TOD timing (Both MD &amp; Energy)</td>
<td>00:00 Hrs to 06:00 Hrs 06:00 Hrs to 24:00 Hrs There will be a provision of at least 8 TOD zones for Active &amp; Apparent Energy &amp; Demand</td>
</tr>
<tr>
<td>25</td>
<td>Non volatile memory to record history</td>
<td>HISTORY TOD MD – 6 months All Energy – 6 months</td>
</tr>
<tr>
<td>27</td>
<td>Acceptance</td>
<td>Same type of meter tested at Standard Testing Laboratory, Bhubaneswar Same type of meter tested at CESU MRT Laboratory, Bhubaneswar</td>
</tr>
<tr>
<td>28</td>
<td>MODEM Capability</td>
<td>GPS/GPRS suitable for above meter</td>
</tr>
<tr>
<td></td>
<td>Facility</td>
<td>Remote Data reading (RMR)</td>
</tr>
<tr>
<td></td>
<td>Status</td>
<td>Sealing provision</td>
</tr>
<tr>
<td></td>
<td>Provision</td>
<td>Through LED</td>
</tr>
<tr>
<td></td>
<td>Compliance</td>
<td>SIM CARD slot</td>
</tr>
<tr>
<td></td>
<td>Power supply</td>
<td>Class 10</td>
</tr>
<tr>
<td></td>
<td>SERVER</td>
<td>Power supply</td>
</tr>
<tr>
<td></td>
<td>Monitoring over Client PC</td>
<td>240VAC, 50Hz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WEB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check healthiness of Plant, Total &amp; Plant wise generation – daily, weekly, monthly. Maximum demand, Power on-off time and duration, Events, Auto email reports</td>
</tr>
<tr>
<td>29</td>
<td>Billing requirements :</td>
<td>Generated and Consumed energy, Active, Reactive, Apparent, PF, Demand, Support of different tariff structure like Flat &amp; TOD.</td>
</tr>
<tr>
<td>30</td>
<td>Analysis &amp; Services</td>
<td>Customized dashboard, Plant load factor,ROI tracking, Tracking per day expected revenue v/s actual revenue, Loss, Best performing plants, Best day, Carbon footprint reduction, Time to payback, Promised capacity &amp; delivered</td>
</tr>
<tr>
<td>31</td>
<td>Box</td>
<td>Polycarbonate Box (size 380mm x 310mm x 117mm) to mount meter, &amp; Modem</td>
</tr>
</tbody>
</table>
ANNEXURES

SAMPLE FORMAT FOR C.M.C (Annexure A)

(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 1st. party and M/S …………………………………………………………………………. …………………………………………………

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

The 2nd 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 1st 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 2nd party is fully responsible for their trouble free maintenance and the 2nd party is liable to rectify / remove any defect noticed within the aforesaid period free of cost.

2. The 2nd 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 2nd party will ensure a formal training of such identified youth (2 from each village) at a cluster level of villages in consultation with the 1st 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 2nd 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 2nd party will setup a state level office at Bhubaneswar duly headed by a Service Engineer.

7. The 2nd party shall undertake the periodical maintenance work of these ………. sets prescribed formats attached herewith ( Format I ) on the 10th of every succeeding quarter duly countersigned by the concerned Assistant Director ( Tech), / Authorized Officer, R.E. Cell , DRDA ……………………..
8. The 2nd party should be in readiness to attend to the defects of any system (out of these .......... Sets) as and when required by the beneficiary/ 1st party and ensure rectification of defects and restore functionality within seven days of lodging the complaints. The 2nd party shall furnish the status report after the maintenance work are over, which shall invariably bear the signature of the beneficiaries as per the format annexed herewith (format- II).

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

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

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

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

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

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

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

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

17. In case, there will be no amicable settlement of the issues, the matter can be referred to the court of law having jurisdiction at Bhubaneswar only. The Annual Maintenance contract is signed jointly between the two parties today i.e on dated ................. 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

( 1st Party) .........................
( 2nd party) ......................... with Seal
Format of Monthly Generation Report (Annexure B)

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

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

Signature of bidder with stamp & date
## Periodic Maintenance Protocol for Solar power plants/packs (Annexure C)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Task</th>
<th>Quarterly</th>
<th>Semi-annual</th>
<th>Annual</th>
<th>Bi-annual</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PV Array</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Inspect each PV modules for damage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Observe PV array shading and take corrective measures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Clean array with water and remove debris around array</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Inspect array mounting structure, check for loose fasteners, corrosion, broken/ damaged concrete footings etc. and take corrective measures, if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e</td>
<td>Check array junction box, all wires and cables and take corrective measures if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f</td>
<td>Adjust tilt angle , if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>g</td>
<td>Check array current &amp; voltage. If required each module current, voltage &amp; bypass diode condition.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>h</td>
<td>Check for any loose contacts in the string connection(+ve/-ve MC4 connectors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PCU</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Check inverter and/or charge controller for correct settings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Check Inverter capacity and max allowable load using dummy load.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Ventilation fan condition/filter cleaning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Check all the parameters (I/P &amp; O/P) as per Manufacturer datasheet for any Malfunctioning</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Protection devices</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a</td>
<td>Check for continuity of lightening arrestor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b</td>
<td>Check system earthing</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c</td>
<td>Check all SPDs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d</td>
<td>Check all bypass/ blocking diodes and take corrective measures if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Model Bank Guarantee Format for Performance Security (Annexure D)

Annexure-II of Finance Department Office Memorandum 4939 dtd 13.2.12, Govt of Odisha
[Ref Para 22(i1)]

To
WHEREAS---------------------------------------- (name and address of the supplier)
(hereinafter called "the supplier") has undertaken, in pursuance of contract no-----------------
dated---------------- to supply -------------------------------- (description of goods and
services) (herein after called "the contract")' AND WHEREAS it has been -stipulated by you in
the said contract that the supplier shall furnish you with a bank guarantee by a scheduled
commercial bank recognized by you for the sum specified therein, as security for compliance
with its obligations in accordance with the contract;
AND WHEREAS we have agreed to give the supplier such a bank guarantee; NOW THEREFORE
we hereby affirm that we, are guarantors and responsible to you on behalf of the supplier.
upto a total of -----------------(Amount of the guarantee in words and figures).and we
undertake to pay you. Upon your first written demand declaring the supplier to be in default
under the contract and without cavil or argument, any sum or sums within the limits of
(amount of guarantee) as 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
**PRICE BID for 2*40 kWp Grid connected Rooftop Solar PV Plant at IDCOL Ferrochrome & Alloys Ltd, Jajpur (Annexure E)**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars*</th>
<th>Price in INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design &amp; Supply of equipments for 2*40 kWp Grid connected Rooftop Solar Plant as per the technical specification given in the tender along with Generation Meter &amp; Net Meter as per OERC guidelines</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cost of Installation and commissioning of the system</td>
<td></td>
</tr>
</tbody>
</table>
| 3     | CMC for 5 years from the date of Commissioning  
1st year  
2nd year  
3rd year  
4th year  
5th year | | 3 |

*Quoted Price should be exclusive of Taxes. GST shall be levied based on Applicable rates

**PRICE BID for 90 kWp Grid connected Rooftop Solar PV Plant through Net Metering at STSC Urban Educational Complex, Pokhariput, Bhubaneswar (Annexure F)**

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars*</th>
<th>Price in INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design &amp; Supply of equipments for 90 kWp Grid connected Rooftop Solar Plant as per the technical specification given in the tender along with Generation Meter &amp; Net Meter as per OERC guidelines</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cost of Installation and commissioning of the system</td>
<td></td>
</tr>
</tbody>
</table>
| 3     | CMC for 5 years from the date of Commissioning  
1st year  
2nd year  
3rd year  
4th year  
5th year | | 3 |

*Quoted Price should be exclusive of Taxes. GST shall be levied based on Applicable rates
## PRICE BID for 70 kWp Grid connected Rooftop Solar PV Plant through Net Metering at STSC Urban Educational Complex, Kalinga Vihar, Bhubaneswar (Annexure G)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Particulars*</th>
<th>Price in INR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design &amp; Supply of equipments for 70 kWp Grid connected Rooftop Solar Plant as per the technical specification given in the tender along with Generation Meter &amp; Net Meter as per OERC guidelines</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cost of Installation and commissioning of the system</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>CMC for 5 years from the date of Commissioning 1(^{st}) year 2(^{nd}) year 3(^{rd}) year 4(^{th}) year 5(^{th}) year</td>
<td></td>
</tr>
</tbody>
</table>

*Quoted Price should be exclusive of Taxes. GST shall be levied based on Applicable rates

### Component wise Test Reports (Annexure H)

<table>
<thead>
<tr>
<th>S/N</th>
<th>Major Component</th>
<th>Test Certificates Required</th>
<th>Test description</th>
<th>Designated Test Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crystalline Silicon Terrestrial PV Modules</td>
<td>IEC 61215, IEC 61730, IEC 61701</td>
<td>Design qualification, Safety Qualification, Salt Mist Corrosion Test</td>
<td>UL India, TUV Rheinland, NISE, ERTL, ETDC, CPRI, ERTL North, Intertek</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Power Conditioning Units(PCU)/ Inverter*</td>
<td>IEC 61683, IEC 60068, IEC 62116, IP 65/56</td>
<td>Efficiency Test, Environmental Test, Anti Islanding Protection, Ingress Protection for Outdoor/Indoor Enclosure</td>
<td>UL India, TUV Rheinland, NISE, ERTL, ETDC, CPRI, ERTL North, Intertek, TUV Rheinland, NISE</td>
</tr>
</tbody>
</table>

*All Test reports must be authorized by MNRE designated Test Labs*
### Critical Documents required (Annexure I)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Project Name</th>
<th>Contact Person Name</th>
<th>Contact No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2*40 kW Grid connected Rooftop Solar PV Plant at IDCOL Ferrochrome &amp; Alloys Ltd</td>
<td>Purushottam Das</td>
<td>7008918493</td>
</tr>
<tr>
<td>2</td>
<td>90 kW Grid connected Rooftop Solar Plant (with Net Metering) at STSC Urban Educational Complex, Pokhariput, Bhubaneswar</td>
<td>RK Achari, AD(T), Khurda</td>
<td>8093574407</td>
</tr>
<tr>
<td>3</td>
<td>70 kW Grid connected Rooftop Solar Plant (with Net Metering) at STSC Urban Educational Complex, Kalinga Vihar, Bhubaneswar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Customer Relationship Centre, OREDA</td>
<td></td>
<td>1800-345-7135</td>
</tr>
</tbody>
</table>

*These documents may be submitted after completion of work along with JCC.

### Contact Person Name & Contact No. of Consumers (Annexure I)

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Project Name</th>
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<td>Customer Relationship Centre, OREDA</td>
<td></td>
<td>1800-345-7135</td>
</tr>
</tbody>
</table>
Overview of a basic grid interactive Photo Voltaic system

System side

Solar Panels

SPD

DC Isolator Switch

PCU

SM

Grid Side

Distribution Transformer

SPD

AC Isolator Switch

CM

Main consumer panel

CONSUMER LOAD

SPD- Surge Protective Device, PCU- Power Conditioning Unit, SM-Solar Generation Meter, CM- Consumer Meter (Net meter or Bi-directional meter)
UNDERTAKING BY THE BIDDER (Annexure L)

I/we here by undertake that

1. We have thoroughly read and examined the notice inviting tender and the tender document along with all its schedules, annexure etc.

2. The rates quoted by us are firm and final and are meant for execution of the allotted supply / installation within the time frame stipulated in the tender/supply / installation order.

3. All terms and conditions of the tender including the rates quoted by us shall remain valid for a period of min one year from the date of opening of the technical bids.

4. In case our tender is incomplete in any respect or we violate any of the prescriptions given in the tender for submission of the same OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the earnest money deposited by us.

5. In case of award of supply / installation in our favour OREDA shall have the right to convert the EMD deposited by us in to full or part (as the case may be) of the security deposit to be deposited by us against award of the supply / installation.

6. In case we fail to commence or complete the supply / installation as per the time schedules or fail to fulfill any of the terms and conditions given in the tender OREDA shall , without prejudice to any other right or remedy , be at liberty to forfeit the security deposit made by us against the award of the supply / installation.

7. I/We hereby declare that I/We shall treat the tender documents, specifications and other records connected with the supply / installation as secret/confidential and shall not communicate information derived there-from to any person other than a person to whom I/We have authorized to communicate the same or use the information in any manner prejudiced to the safety of OREDA/the State Govt.

8. I/We shall abide by all the laws prevailing at the time of the execution of the supply / installation and shall be responsible for making payments of all the taxes, duties, levies and other Govt. dues etc. to the appropriate Govt. departments.

9. The entire tender document has been discussed in the Board meeting and a resolution has been concurred for participation in the tender (copy enclosed)

10. We are not blacklisted / debarred / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.

11. In case any false documents submitted and found any time in future the firms shall be liable to be proceeded against as per prevailing laws.

12. Our state commercial tax / TIN registration no. is ________________________________ and CST registration No. __________________________________________

   The PAN No. under the Income Tax Act is ________________________________ and GST Registration No. is ________________________________

13. I/We shall be responsible for the payment of the respective taxes to the appropriate authorities and should I/we fail to do so, I/we hereby authorize OREDA to recover the taxes due from us and deposit the same with the appropriate authorities on their demand.

Signature of bidder with stamp & date
Letter of Authorization (Annexure M)

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

To,

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

Sub: Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of
Grid connected Rooftop Solar Projects at various Government Buildings

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. _____________________

Yours faithfully

Head of the organization

Name and designation of the attesting officer with stamp.

DECLARATION (Annexure N)
(To be submitted on the letter head of the company)

To,

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

Sub:- Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of Grid connected Rooftop Solar Projects at various Government Buildings

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

Sir,

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

a) The entire tender document has been discussed in the Board meeting and a resolution has been passed for participation in the tender (copy enclosed)

b) We are not involved in any litigation that may have an impact of affecting or compromising the delivery of services as required under this tender

c) We are not blacklisted / defaulted in any manner by any Central / State Government / Public Sector Undertaking in India.

d) In case any false documents submitted and found in future the firms shall be liable to be proceeded against as per prevailing laws.

Yours faithfully,

Authorised signatory

(Stamp).
Certificate of Unconditional Acceptance of the tender (Annexure O)

(to be submitted on the letter head of the company by Board Resolution)

We ________________________________________________________________
__a prospective bidders for the work of “Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of Grid connected Rooftop Solar Projects at various Government Buildings” here by certify that we have carefully studied and understood the contents of the entire bid document hoisted on the website of OREDA as well as tenderwizard.com/OREDA on ____________ and hereby confirm our unconditional acceptance to each and every line of the said bid document.

Date: ....................

(Signature) ..........................................................................................

Place: ....................

(Printed Name) ..................................................................................

(Designation) ..................................................................................

(Common Seal) ..................................................................................
BOARD RESOLUTION (Annexure P)
(To be submitted on pre-printed Corporate Letter Head)

CERTIFIED TRUE COPY OF THE RESOLUTION PASSED IN THE MEETING OF THE BOARD OF DIRECTORS
OF M/S…………………………………………………………………………………………………………………….
HAVING ITS REGISTERED OFFICE AT…………………………………………….HELD ON DD/MM/YY AT…. HRS

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

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

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

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

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

For ……………………………………………………………………………..

Chairman/Company Secretary

Name of the Authorized person

Specimen Signature of Authorized person

The above signature to be attested by the person signing the resolution
Confirmation to Technical Specifications (Annexure Q)

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

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

Date:....................

(Signature).................................................................

Place:....................

(Printed Name).............................................................

(Designation).............................................................

(Common Seal)...........................................................
Forwarding Letter (Annexure R)
(To be submitted in the letter head of the applicant)

To,

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

Sub:- Submission of tender for Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of Grid connected Rooftop Solar Projects at various Government Buildings

Sir,

Having studied the bid document carefully I/we, the undersigned, offer to submit our bid for Design, Supply, Installation, Commissioning and Maintenance for a period of 5 years of Grid connected Rooftop Solar Projects at various Government Buildings

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

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

We hereby declare that all the information and statements made in this proposal are complete, true and correct and also accept that any misinterpretation contained in it may lead to our disqualification.
We hereby declare that our application has been submitted in good faith and the information contained is true and correct to the best of our knowledge and belief.

Yours faithfully,

Signature of bidder with seal