Bid Specifications for

Design, Manufacture, Testing, Supply, Installation & Commissioning of Solar Photovoltaic Solar Power Plants and associated work for Village Electrification including five years CMC on Turnkey basis of Different Capacities in Eight Villages of Jharkhand

Under

Integrated Rural Energy Programme

For Financial Year 2012-13

Sponsored By

Ministry of New & Renewable Energy, New Delhi

&

JREDA, Government of Jharkhand

Jharkhand Renewable Energy Development Agency (JREDA)

328/B, Road No. 4, Ashok Nagar, Ranchi. Ph.: 0651-2246970, 2247049, 2240692; Fax: 0651-2240665, e-mail: info@jreda.com;

Website: www.jreda.com

CONTENTS

Notice Inviting Bid

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

Preamble

As a part of Solar Photovoltaic Programme, JREDA invites bid for "Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand" for short listing of experienced & eligible bidders to whom work shall be allocatedfor successful execution of the projectin a defined time frame.

Part –I Technical Bid:

The bidder should fulfill the following minimum technical and eligibility conditions. The bidder should submit the check list for this purpose as per the Performa given at **Annexure-2.**

1. The bidder should be MNRE approved Channel Partner/ MNRE approved Manufacturer/ MNRE approved PV System Integrator/A registered manufacturing company/Firm/Corporation in India (Including MSME of Jharkhand) of at least one of the major sub systems namely SPV Cells/ Modules or Battery or PV System Electronics (Conforming to relevant National/ International Standards. The bidder shall furnish either relevant MNRE certificate or concerned Industry Department certificate clearly indicating that they are manufacturers of SPV Systems including SPV Cells/ Modules or Battery or PV System Electronics as applicable. **Authorized dealers and sub-contractors are not eligible to participate. Bidder can offer for Solar Photovoltaic Power Plants and associated work for minimum one village.**
2. The bidder should be a functional organization. To substantiate this claim, the bidder should submit the copy of balance sheet for last 3 years or from the date of establishment to 31.03.2012/ 2013, whichever is applicable indicating clearly the sale and turnover of SPV systems. These balance sheets should be duly certified by the Statutory Auditor with his stamp.
3. Registered Micro, Small & Medium Enterprise (MSME) of Jharkhand should submit the attested copy of Registration given by Industry Department.
4. **Experience Requirement:**

   For General Bidder: Bidder should have cumulative experience of executing contracts of at least **25%** of bid capacity (of respective villages) of SPV Systems to any SNA / Govt. Organization / PSU in the last seven years ending up to date of advertisement of this tender.

   For MSME of Jharkhand: Bidder should have cumulative experience of executing contracts of at least **10%** of bid capacity (of respective villages) of SPV Systems from any SNA / Govt. Organization / PSU in the last seven years ending up to date of advertisement of this tender. The copy of order and certificate indicating its successful execution should be enclosed with the check list as at **Annexure-2**.

5. The offered PV Modules should be Crystalline Silicon PV Modules as per IEC 61215 Standards or IS14286 and having test certificates prescribed by MNRE. In addition, the modules must conform to IEC 61730 part I – requirement for construction and part – II requirement for testing, for safety qualification or equivalent IS. The valid test certificate should be enclosed along with the check listas at **Annexure-2**.

6. Electronics should conform to relevant Standard for efficiency measurement and should also conform to relevant BIS standard for environmental testing.The inverter should be from Indian Manufacturer. The valid test certificate should be enclosed along with the check listas at **Annexure-2**.

7. Batteries should conform to relevant IEC / IS specifications and should fulfil the requirement as per specification given at Technical Specification for Capacity Test Charge/Discharge efficiency Self-Discharge as per MNRE requirements and valid test reports to be submitted along with the check listas at **Annexure-2**. The certificate should be in a form of an undertaking letter from the manufacturer complying all the technical specifications of battery.

8. The Bidder should have valid CST/State VAT/ TIN registration certificate. A copy of which should be enclosed in the check listas at **Annexure-2**.

9. The bidder should confirm that they have the resources and capability to supply the offered quantity within the scheduled period in the form of an undertaking. The Performa for undertaking is given at **Anneuxre-3**.

10. **Turnover Requirement:**

For General Bidder: Bidder should have the minimum average Annual Turnover of **25%** of estimated cost of the offered project derived from the last three financial years ending on 31.03.2012/2013 on the basis of audited annual accounts.

For MSME of Jharkhand: Bidder should have the minimum average Annual Turnover of **10%** of estimated cost of the offered project derived from the last three financial years ending on 31.03.2012/2013 on the basis of audited annual accounts.

The certificate should be as per the Performa given at **Annexure-12**.

11. **Net worth Requirement:**

For General Bidder: Bidder should have the minimum Net worth of **10%** of estimated cost of the offered project as on 31.03.2012/2013 on the basis of audited annual accounts.

For MSME of Jharkhand: Bidder should have the minimum Net worth of **5%** of estimated cost of the offered project as on 31.03.2012/2013 on the basis of audited annual accounts.

Net worth certificate should be as per the Performa given at **Annexure-13**.

12. The bidder should either purchase the bid document from JREDA office by submitting a demand draft of Rs. 10,000/- (Rupees Ten thousand only) in favour of "Director, JREDA" on any Indian Nationalized Bank/Scheduled Bank, payable at "Ranchi" or download the bid document from JREDA website (www.jreda.com) and submit the cost of the bid document of requisite value in the form of Demand Draft, as applicable along with Part – I (Technical Bid).

13. Bidders should submit in Part – I (Technical Bid) the earnest money in the form of Bank Guarantee/ Demand Draft of requisite value as mentioned in "Particulars of Tender". The Bank Guarantee/DD shall be made in favour of "Director, JREDA" payable at Ranchi from any Indian Nationalized bank/Scheduled bank. The bank guarantee shall remain valid for 12 months.

Particulars of Bid

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Eligible and prospective Bidders may quote their offers as per details mentioned below:

<table>
<tr><td>1.</td><td>Name of work</td><td>Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.</td></tr>
<tr><td>2</td><td>Tentative Quantity</td><td>Solar Photovoltaic Solar Power Plants: 148.50 kWp.
<table>
<tr><th>S. N.</th><th>Village</th><th>District</th><th>Capacity (In kWp)</th><th>Estimated Project Cost as per DPR (Rs. Lakh)</th></tr>
<tr><td>1</td><td>Mohanpur</td><td>Koderma</td><td>37.50</td><td>133.48</td></tr>
<tr><td>2</td><td>Koyenardih</td><td>Ranchi</td><td>23.75</td><td>88.44</td></tr>
<tr><td>3</td><td>Gomiadih</td><td>Saraikela Kharsawan</td><td>28.75</td><td>104.61</td></tr>
<tr><td>4</td><td>Amarpur</td><td>Godda</td><td>37.50</td><td>133.81</td></tr>
<tr><td>5</td><td>Kendar Kutti</td><td>Saraikela Kharsawan</td><td>5.00</td><td>24.25</td></tr>
<tr><td>6</td><td>Raijama</td><td>Saraikela Kharsawan</td><td>5.00</td><td>24.25</td></tr>
<tr><td>7</td><td>Holong</td><td>Ranchi</td><td>5.00</td><td>24.25</td></tr>
<tr><td>8</td><td>Budha Gujju</td><td>Ranchi</td><td>6.00</td><td>28.00</td></tr>
<tr><td></td><td></td><td>Total</td><td>148.50</td><td>561.09</td></tr>
</table>
The estimated project cost as per the DPR is about Rs.561.09 Lakh.</td></tr>
<tr><td>3</td><td>Cost of Bid document (Non-refundable)</td><td>❖ Rs.10, 000/- (Rupees Ten Thousands only) for General Bidder.
❖ Rs. Nil for MSME of Jharkhand.</td></tr>
<tr><td>4</td><td>Earnest Money Deposit</td><td>For General Bidder: 2% of estimated cost of offered Project.
For MSME of Jharkhand: Nil.</td></tr>
<tr><td>5</td><td>Time of completion</td><td>Twelve months from the date of issue of purchase order/ intimation.</td></tr>
<tr><td>6</td><td>Validity of offer for acceptance</td><td>Six months from the last date of submission of Bid.</td></tr>
<tr><td>7</td><td>Date of commencement and time of Issue of bid documents</td><td>From 01.07.2013.</td></tr>
<tr><td>8</td><td>Last date & time of submission of bids document</td><td>06.08.2013 up to 2.00 PM.</td></tr>
<tr><td>9</td><td>Date & time of opening of Technical bid Part-I</td><td>06.08.2013 at 2.30 PM.</td></tr>
<tr><td>10</td><td>Date & time of opening of Financial bid Part-II</td><td>Shall be intimated in due course on website & letter.</td></tr>
<tr><td>11</td><td>Place of issue and submission of bid documents and address for communication</td><td>Jharkhand Renewable Energy Development Agency(JREDA)
Plot No. 328/B, Road No.4,Ashok Nagar
Ranchi- 834002.
Ph.No: 2246970,Fax No: 0651-2240665
Web site: www.jreda.com
E-mail: info@jreda.com</td></tr>
</table>

Instruction to Bidder

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Jharkhand Renewable Energy Development Agency (JREDA), Ranchi invites offers from eligible Indian bidders for the tender for the mentioned work with your best bidding price offer as per our specifications and terms & conditions mentioned in the bid document. Salient features of the bid document are given below:

1. Bid Document

1.1 This bid document comprises of total **42 Pages**. In addition, any other documents/ instructions/amendments/revisions issued by JREDA to the bidder till the due date of opening of the bids shall also be deemed to be integral part of the bid document. Failure to furnish all the information as per the bid document in every respect will be at the bidder's risk.

2. Cost of Bid Document

2.1 Bid document can be purchased from JREDA office by submitting a Demand Draft of Rs. 10,000/- only drawn in favor of "Director, JREDA" on any Indian Nationalized Bank/Scheduled Bank, payable at "Ranchi" of requisite value, as applicable, during the time and period mentioned in "Particulars of Bid".

2.2 Bidders may also download the bid document from JREDA website (www.jreda.com) and submit the cost of the bid document of requisite value in the form of Demand Draft, as applicable along with **Part – I (Technical Bid).**

2.3 Bid applications without the cost of bid document will be rejected.

3. Earnest Money

3.1 Bidders shall submit in **Part – I (Technical Bid)** the earnest money in the form of Bank Guarantee/DD of requisite value as mentioned in "Particulars of Tender". The Bank Guarantee/DD shall be made in favor of "Director, JREDA" payable at Ranchi from any Indian Nationalized bank/Scheduled bank.

3.2 The Bank Guarantee shall remain valid for 12 months.

3.3 Bidders seeking concession/exemption from submission of cost of bid document and/or earnest money, shall have to submit an attested photocopy of relevant MSME of Jharkhand certificate as applicable, in Part – I of the bid application. ***Non submission of relevant certificate may lead to rejection of bid.***

3.4 The earnest money shall be returned to all unsuccessful bidders, within thirty days from the date of placement of LOI/LOA to the successful bidder(s).

3.5 The earnest money shall be forfeited if –

a. Any bidder withdraws his bid or resiles from his offer during the validity period.

b. The successful bidder fails to furnish his Acceptance of the order within fifteen days of placement of LOI/LOA by JREDA.

c. The bidder fails to successfully complete the work within the stipulated time frame. Delay in completion due to extreme and unavoidable situations shall have to get approved by Director, JREDA. This approval shall also have a cut-off date by which the entire work shall have to be completed.

4. Security Deposit:

4.1 Successful General bidders shall submit a security deposit @10% of the allotted work order value in the form of Bank Guarantee/DD on or before 20 days from issuing work order.

4.2 Successful MSME bidders are exempted from submission of security deposit.

4.3 The 50% Security Deposit shall be refunded / released to the bidder after expiry of 60 days from the actual date of successful Supply, Installation & Commissioning. The balance 50% Security Deposit will have to be maintained by the bidder with JREDA as Performance Guarantee till the completion of warrantee period of complete system.

5. Performance Guarantee:

5.1 50% Security deposit of successful General bidders shall be treated as performance guarantee after Supply, Installation & Commissioning as mentioned at clause 4.3.

5.2 Successful MSME bidders shall submit a Performance Guarantee @2.5% of the allotted work order value in the form of bank guarantee before release of any payment.

5.3 The Performance Guarantee will have to be maintained by the bidder with JREDA till the completion of Guarantee period/ CMC period.

5.4 The Security Deposit/Performance Guaranteeshall be submitted in the form of bank guarantee in favour of "Director, JREDA" payable at Ranchi from any Indian Nationalized bank/Scheduled bank.

5.5 Non submission of Security Deposit/Performance Guaranteewithin the time frame, may lead to forfeiture of EMD and cancellation of LOI/LOA.

5.6 If Bidder/MSME unit fails to carry out the work allotted to him as per the provisions of the tender documents then such Bidder/MSME unit may be black listed for future awards of work.

6. Submission of Bids:

6.1 Bidders are advised to submit their bids strictly based on the specifications, terms and conditions contained in the bid document and subsequent revisions/amendments, if any. The bid should be submitted along with covering letter as given at **Annexure-1.**

6.2 The bid shall be prepared and submitted by typing or printing in English on white paper in consecutively numbered pages duly signed by the authorized signatory with company seal affixed on each page. Any part of the bid, which is not specifically signed by the authorized signatory and not affixed with company seal, may not be considered for the purpose of evaluation. The bidder shall also enclose the information about bidding firm as per **Annexure-6**.

6.3 Original copy of bid document, amendments/revisions to bid document preferably with one soft copy, including minutes of meeting(s), issued by JREDA, if any, shall be signed and submitted along with the bid.

6.4 All the Proforma must be on the bidder's official letterhead (if specified). Any change in wording of the Performa will not be allowed. The bidder shall submit a declaration as given at **Annexure-7**.

6.5 The offer shall contain no erasures or overwriting except as necessary to correct errors made by bidder. The person signing the offer shall initial such corrections.

6.6 Complete bid document including all enclosures should preferably be submitted in hard bond or spiral binding and all pages should be numbered (except leaflet/catalogue) and must be signed by the company's authorized signatory with seal of the company.

6.7 The bidders should submit the bid in two envelopes, The **Part–I (Technical bid)** and the **Part – II (Price Bid)** should be sealed in separate envelopes and both envelopes should be sealed in a third envelope. The Part – II (Price Bid) of only such bidders would be opened who qualify in the **Part – I (Technical Bid).**The **Part–I (Technical Bid)** should be sealed in an envelope super scribed with (i) NIT NO.(ii) "**Part–I Technical Bid**", (iii) Name and address of the bidding firm, and (iv) should be addressed to Director, JREDA.

6.8 **Part –I (Technical Bid)** should not contain price of any item. Such cases, even if found anywhere, shall not be given any cognizance.

6.9 The **Part–II (Price Bid)** should be sealed in an envelope super scribed with NIT No., "Part – II Price Bid", Name and address of the bidding firm, and should be addressed to Director, JREDA. This envelope should contain the following :

a. It should contain only Performa as prescribed at **Annexure-5** duly filled, signed and stamped by authorized signatory of the bidder.

b. In case of any contradictions between the prices mentioned in figures and words, the prices mentioned in words shall be considered final. Also, in case of any arithmetical error in regard to the total amount and individual rates, the individual rates shall be taken as final and the total amount shall be adjusted accordingly.

c. The price bid should not contain any technical matter or other matter except price. The date of opening of the price bid will be notified after opening of Technical bid.

6.10 **Part-I and Part –II** of the bid document should be sealed in a third envelope. The third envelope should be sealed and super scribed (i) NIB No., (ii) "Offer for SPV PP IREP Eight Villages" (iii) Name and address of the bidding firm, and (iv) Should be addressed to Director, JREDA, Plot No. 328 B, Road No. -4, Ashok Nagar, Ranchi-834002.

7.0 Authority of Person Signing the Documents

A person signing the bid document or any document forming part of the bid document shall be deemed to warrant that he has authority to bid such offer/ document and if on enquiry it appears that the person signing the document had no authority to do so, JREDA may, without prejudice to other civil and criminal remedies, cancel the bid/contract and hold the signatory liable for all costs and damages. For this purpose Power of Attorney in the Performa as prescribed at **Annexure-11**shall be submitted.

8.0 No Claim or Compensation for Submission of Tender

The bidder whose bid is not accepted shall not be entitled to claim any costs, charges or expenses in connection with his submission of bid, even though JREDA may decide to withdraw the Notice Inviting Tender.

9.0 Validity of Offer

Unless otherwise specified, the bidder shall keep his offer valid initially for a period of Six months from the last date of submission of the bid.

10 Other Terms & Conditions

10.1 Insertion, post-script, addition and alteration shall not be recognized unless confirmed by bidder's signature and stamp.

10.2 Incomplete tender or tenders not submitted as per requirement as indicated in the NIT are likely to be rejected.

10.3 Bidders shall submit their offer strictly as per terms and conditions of the tender document without any deviation.

10.4 If at any time any of the documents/information submitted by the bidder is found to be incorrect, false or untruthful, the bid and/or the resultant order may be summarily rejected/ cancelled at the risk of the bidder.

10.5 Failure to furnish all information and documentary evidence as stipulated in the bid document or submission of an offer that is not substantially responsive to the bid document in all respects shall be summarily rejected.

10.6 All bids will be received in duly sealed cover within the due date and time. Bids received after the due date and time is liable for outright rejection.

10.7 JREDA reserves the right to reject part or whole of the bid/order without assigning any reason thereof, postpone the date of receipt and opening of the bids or cancel the bid without bearing any liability, whatsoever, consequent upon such decision.

10.8 No postal transaction shall be entertained for obtaining bid documents.

10.9 Issuance of bid documents shall not construe that the bidders would be automatically considered qualified.

10.10 For any clarification with respect to the specification and other allied technical details of the article included in the tender enquiry document SH. Sudhakar Pandey, Project Director JREDA may be contacted during office hours through written request latest by 18.07.2013. Request made after 18.07.2013 will not be considered.

General Terms & Conditions

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

1.0 Introduction

The instruction/information contained in the bid documents are for guidance and compliance of the intending bidder. Bidders are advised to obtain clarification from JREDA, if any, prior to submission of their bid, failing which it will be deemed that the stipulation made in the bid documents have been read, understood and are acceptable to the bidder.

Bidder shall bear all costs associated with the preparation and submission of the bid, journeys undertaken by them and subsequent bidding process till the award of the order to successful bidder and the JREDA shall in no case, shall be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

2.0 Scope of work

The Scope of work for Solar Photovoltaic Power Plant includes Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand complete set in all respects. The scope of work under village electrification is as follows:

a. Electricity will be supplied by Solar Power Plant for all the Households, Community Building, Drinking Motor-Pump Set, Irrigation Motor-Pump Set, RO Plant, Rice Hauler, Flour Mill and Street Lights of the villages. Bidder has to make necessary arrangement of Transmission/Distribution network & House wiring for above purpose.
b. Lighting for households & community building will be provided by **two light points** (**9W CFL each**), one plug point for TV and Street Lighting by **11 W CFL based Street Light** of 4 meter height fed by centralized Solar Power Plant as mentioned above.
c. For four villages (**Mohanpur, Koyenardih, Gomiadih and Amarpur)** bidder has to provide RO Plant (1000 Ltrs per Hr capacity) with Motor-Pump Set for water lifting (AC submersible/ centrifugal of 2HP as per site requirement) with overhead PVC tank of 1000Ltr. and pump house for Drinking purpose; Irrigation Motor-Pump Set (AC Motor of 5HP with Centrifugal Pump) with Pump House; Rice Hauler, Flour Mill of 20 to 25 kg per Hr. capacity (AC Motor of 5HP common for both Rice Hauler and Flour Mill) with room of adequate capacity to accommodate both Rice Hauler and Flour Mill and Colour TV Set of 32" LED - based of reputed make With Dish for Community Building.
d. For another four villages (**Kendar Kutti, Raijama, Holong and Budha G**ujju) bidder has to provide separate Solar Water Pumping System of **1800 Wp** capacity (submersible) for drinking purpose.
e. Construction of control/battery room is included in all eight villages. Control room shall be of RCC construction of suitable size.

Bidders are requested to visit work site before submission of bid for assessment of actual work involved. Brief information for Village Electrification of the proposed eight villages through SPV Systems of different capacities is as follow:

S. N.	Village	Capacity (kWp)	Nos. of House holds	Nos. of Street Lights	Drinking Motor-Pump Set	Irrigation Motor-Pump	Rice Hauler	Flour Mill	RO Plant	Colour TV With Dish
1	Mohanpur	37.50	200	28 Sets	2 HP	5HP	1	1	1	1
2	Koyenardih	23.75	103	16 Sets	2 HP	5HP	1	1	1	1
3	Gomiadih	28.75	136	20 Sets	2 HP	5HP	1	1	1	1
4	Amarpur	37.50	201	20 Sets	2 HP	5HP	1	1	1	1

5	Kendar Kutti	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
6	Raijama	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
7	Holong	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
8	Budha Gujju	6.00	50	8 Sets	1800 Wp	-	-	-	-	-

3.0 Bid documents

Tender documents shall comprise of all the documents mentioned in the table of contents of this documents. In addition to these any other documents/amendments/revisions or instructions issued by JREDA from time to time to bidders till due date of opening of the offers, shall also be deemed to be integral part of the bid document.

4.0 Price

The bidder shall quote his price as per schedule of items of work. The contract price rates shall be firm and binding and shall not be subject to any variation except for statutory variation of taxes and duties during the contractual completion period. ***The price shall be inclusive of all taxes, duties and levies including Jharkhand Vat etc. as on the opening date of tender.*** The price shall also include designing, manufacturing, inspection, supply, transport, insurance, handling etc. All applicable charges for taking necessary clearance such as commercial tax, road permit etc. wherever required are also deemed to be included in the contract price.

5.0 Inspection of the factory and Tests

JREDA reserves the right to inspect manufacturer's works/factory to ascertain the capability/availability of necessary equipment and infrastructure required for manufacture of the items offered. JREDA shall have the access and right to inspect the work or any part thereof at any stage and to test the goods to confirm their conformity to the technical specifications. Successful bidder shall inform JREDA at least 15 days in advance of schedule dispatch for technical sample audit.

6.0 Payment terms and conditions

Subject to any deduction which JREDA may be authorized to make under this contract, the contractor shall be entitled to payment as follows:

(a) **60%** of the Contract Price shall be paid against supply and delivery of goods in full and in good condition as certified by Consignee & JREDA Officials after submission of following documents:

i. Original Commercial invoice raised from the state of Jharkhand for the supply made in triplicate (1+2).

ii. Copy of duly raised delivery challan/ transportation challan/lorry receipt.

iii. Duly filled **Annexure–10** should be submitted in three sets (one for Consignee record, one for JREDA Hq. and one for JREDA's field Executive Engineer).

iv. Photographs of all the equipment (materials) at destination with signature& seal of Consignee & JREDA Officials.This record should be kept in the office of Consignee for verification.

(b) **30%** of the Contract Price shall be paid against Installation, Testing & Commissioning after submission of following documents:

i) Copy of Original Commercial invoice raised at the time of supply in triplicate (1+2).

ii) Duly filled **Annexure–10.**

iii) Certificate for minimum seven days of satisfactory performance.

(c) Rest **10%** of the Contract Price shall be paid @**2%** of the Contract Price on completion of every one year period of the 5 year Operation and CMC period, after submission of following documents:

i) Copy of Original Commercial invoice raised at the time of supply in triplicate (1+2).

ii) Submission of quarterly reports of Operation and CMC undertaken by the manufacturer (In the format at **Annexure-14**).

7.0 Dispatch Instructions

All items/equipments shall be subject to pre-dispatch inspection by JREDA or its authorized representatives before their dispatch. The manufacturer will submit test report with regard conformity to technical specifications for the items to be dispatched to JREDA. However, equipments will be dispatched only after the receipt of "Dispatch Clearance" from JREDA after acceptance of test report. No consignment shall be dispatched without the receipt of dispatch clearance from JREDA.

8.0 Liquidated Damages for Delay in Completion

If the supplier fails in the due execution of the contract to deliver any part of the equipment or complete the work within the time fixed under the contract or any extension thereof granted to him by JREDA and/or to fulfill his obligations in time under the contract, he shall be liable to pay to JREDA @0.5% per week maximum up to 10% of work value delayed beyond contract period.

9.0 Risk & Cost:

If the contractor fails to complete the awarded work up to the scheduled date of completion then JREDA will be at liberty to cancel the said work order and will get the full or part of left over work completed by way of engaging alternate contractor and completion of the said work shall be got completed at risk & cost of the failed contractor and failed contractor shall be liable to pay all the dues to JREDA.

10.0 Insurance

The supplier shall arrange for transit and erection insurance of the materials & equipments for setting up of Solar Photovoltaic Systems.

11.0 Assignment/ Sub-letting

The Manufacturer shall not assign or sublet the work and its obligations to any third party to perform under the order/contract.

In the event the manufacturer contravenes this condition, JREDA reserves the right to reject the equipment/work contract and procure the same from elsewhere at manufacturer's risk and cost. The

Manufacturer shall be solely liable for any loss or damage which JREDA may sustain in consequence or arising out of such replacing of the contract work.

12.0 Completeness of Tender

All fittings, assemblies, accessories, hardware items etc. & safety and protection devices as required shall be deemed to have been included in the tender, whether such items are specifically mentioned in the BoM or not.

13.0 Compliance with Regulations

The supplier/contractor shall comply with all applicable laws or ordinances, codes approved standards, rules and regulations and shall procure all necessary municipal and/or other statutory bodies and government permits & licenses etc. at his own cost. The contractor shall leave the purchaser, Director, JREDA harmless as a result of any infractions thereof.

14.0 Agreement

The successful qualified suppliers shall have to enter into an agreement in the office of the Director, JREDA, in prescribed format before commencement of supply.

15.0 Income Tax

Without prejudice to the obligations of the supplier under law, any income tax which JREDA may be required to deduct by law/statute, shall be deducted at source and shall be paid to income tax authorities on account of the supplier. JREDA shall provide the supplier a certificate for such deductions of tax.

16.0 Five Years Operation and Comprehensive Maintenance Contract (CMC)

16.1 The **Solar Photovoltaic Solar Power Plants** contract price includes the provision of 5 years mandatory Comprehensive Maintenance Contract (CMC). To ensure long term sustainability of the system, the bidder should provide his representatives name, full address, mobile number and photographs to JREDA with one hard copy as well as the names and contact details of all technicians should also be provided.

16.2 The Comprehensive Maintenance Contract shall include ensuring servicing, repair & replacement guarantee for parts and components (such as battery, electronics, Inverter, PV modules and other hardware) of **SPV PP** for five years from the date of installation. For PV modules, the replacement guarantee is for Twenty five (25) years. Battery should be warranted for a minimum life of 5 years as per terms of order. The date of CMC maintenance period shall begin on the date of actual commissioning of **SPV PP**. It is mandatory for the contractor to carry out CMC regularly and submit report to JREDA quarterly. CMC documents should be certified by Consignee.

17.0 Preventive/Routine Maintenance

This shall be done by the supplier/contractor at least once in every three months and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, topping up of batteries, tightening of all electrical connections, regular checks to identify any leakage of electricity, changing of tilt angle of module mounting structure, cleaning & greasing of battery

terminals and any other activity that may be required for proper functioning of the **SPV SPP.** The maintenance record should be kept properly and to be submitted at JREDA office time to time.

18.0 Breakdown/Corrective Maintenance

18.1 Whenever a complaint is lodged by the user, the bidder shall attend the same immediately. It is clarified that effective CMC means that, the bidder should ensure 24 hours smooth working of all the **SPV SPP** throughout the CMC period and therefore, if any complaint in this level of service is found by the JREDA officials and if the bidder does not attend the rectification of any such defects within three days of communication of such complaint to the bidders, the bidder will be liable for a penalty of Rs. 200 per day beyond three days of reporting of such complaint.

18.2 For carrying out the CMC effectively, the Bidder/Manufacturer shall establish Common Service Centre (CSC) at the district headquarter.

19.0 Force Majeure conditions

In the event of either party being rendered unable by force majeure to perform any obligation required to be performed by them under this agreement, relative obligation of the party affected by such force majeure shall be treated as suspended during which force majeure condition last.

The term force majeure shall have herein mean riots (other than among the contractor's employee), civil commotion, war (whether declared or not), invasion, act of foreign enemies hostilities, rebellion, insurrection, military coup to usurp power, act of god such as earthquake, lightening, floods, fires not caused by contractor's negligence and other cause which the contractor has no control and accepted as such by the Director, JREDA, whose decision shall be final and binding.

If the work is suspended by force majeure conditions lasting for more than 45 days, the purchasers shall have the option of canceling this contract in whole or part thereof, at its discretion. The contractor shall not claim for compensation for force majeure conditions.

20.0 Jurisdiction of the Court

All disputes would be settled within Ranchi jurisdiction of court of law only.

TECHNICAL SPECIFICATION

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Technical Specifications for Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

General Description & Configuration:

The Solar Photovoltaic Power Plant shall have capacity of **5.00 kWp to 37.50 kWp** to cater the electricity demand of 5-6 hours duration/day. The system should have the autonomy of 2 consecutive sunless days and shall have the provision of charging battery bank through mains as well. It should be designed such that during sunny hours the loads are fed from SPV Power Plant in addition to battery charging. If the power produced from the Power Plant is not sufficient to feed the loads then the balanced power will be taken from the grid and battery simultaneously according to the available source. The Power Plant shall provide a reliable and independent power supply at a voltage and frequency levels to suit the grid voltage and frequency.

Brief Technical Specifications of the proposed SPV Systems of different capacities eight villages are as follow:

S. N.	Location		Capacity	PCU Rating			Battery Bank Size		
	Village	District	kWp	KW	Input V	Output V	AH	V	Nos.
1	Mohanpur	Koderma	37.50	40	240	Three Phase (400 V)	1250	240	120
2	Koyenardih	Ranchi	23.75	25	240	Three Phase (400 V)	750	240	120
3	Gomiadih	Saraikela Kharsawan	28.75	30	240	Three Phase (400 V)	1000	240	120
4	Amarpur	Godda	37.50	40	240	Three Phase (400 V)	1250	240	120
5	Kendar Kutti	Saraikela Kharsawan	5.00	10	120	Single Phase (230 V)	280	120	60
6	Raijama	Saraikela Kharsawan	5.00	10	120	Single Phase (230V)	280	120	60
7	Holong	Ranchi	5.00	10	120	Single Phase (230 V)	280	120	60
8	Budha Gujju	Ranchi	6.00	10	120	Single Phase (230 V)	320	120	60
		Total	**148.50**						

A typical Solar Photovoltaic Power Plant comprises of PV module for charging the battery, solar deep charging battery for storage, a Charge Controller for intelligent charging, discharging and protection of the battery, an Inverter for conversion from DC to AC and complete set of hardware for proper performance and functioning of the system.

The scope of work under village electrification is as follows:

f. Electricity will be supplied by Solar Power Plant for all the Households, Community Building, Drinking Motor-Pump Set, Irrigation Motor-Pump Set, RO Plant, Rice Hauler, Flour Mill and Street Lights of the villages. Bidder has to make necessary arrangement of Transmission/Distribution network & House wiring for above purpose.

g. Lighting for households & community building will be provided by **two light points** (**9W CFL each**), one plug point for TV and Street Lighting by **11 W CFL based Street Light** of 4 meter height fed by centralized Solar Power Plant as mentioned above.

h. For four villages (**Mohanpur, Koyenardih, Gomiadih and Amarpur)** bidder has to provide RO Plant (1000 Ltrs per Hr capacity) with Motor-Pump Set for water lifting (AC submersible/ centrifugal of 2HP as per site requirement) with overhead PVC tank of 1000Ltr. and pump house for Drinking purpose; Irrigation Motor-Pump Set (AC Motor of 5HP with Centrifugal Pump) with Pump House; Rice Hauler, Flour Mill of 20 to 25 kg per Hr. capacity (AC Motor of 5HP common for both Rice Hauler and Flour Mill) with room of adequate capacity to accommodate both Rice Hauler and Flour Mill and Colour TV Set of 32" LED - based of reputed make With Dish for Community Building.

i. For another four villages (**Kendar Kutti, Raijama, Holong and Budha G**ujju) bidder has to provide separate Solar Water Pumping System of **1800 Wp** capacity (submersible) for drinking purpose.

j. Construction of control/battery room is included in all eight villages. Control room shall be of RCC construction of suitable size.

Bidders are requested to visit work site before submission of bid for assessment of actual work involved. Brief information for Village Electrification of the proposed eight villages through SPV Systems of different capacities is as follow:

S. N.	Village	Capacity (kWp)	Nos. of House holds	Nos. of Street Lights	Drinking Motor-Pump Set	Irrigation Motor-Pump	Rice Hauler	Flour Mill	RO Plant	Colour TV With Dish
1	Mohanpur	37.50	200	28 Sets	2 HP	5HP	1	1	1	1
2	Koyenardih	23.75	103	16 Sets	2 HP	5HP	1	1	1	1
3	Gomiadih	28.75	136	20 Sets	2 HP	5HP	1	1	1	1
4	Amarpur	37.50	201	20 Sets	2 HP	5HP	1	1	1	1
5	Kendar Kutti	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
6	Raijama	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
7	Holong	5.00	40	6 Sets	1800 Wp	-	-	-	-	-
8	Budha Gujju	6.00	50	8 Sets	1800 Wp	-	-	-	-	-

1. Major components and sub-systems of Solar PV Power Plant

a. Solar PV modules and array

The Crystalline Silicon PV modules must be manufactured indigenously & confirm to the latest editions of IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 part I – requirement for construction and part – II requirement for testing, for safety qualification or equivalent IS. The bidder shall submit appropriate IEC/equivalent BIS certificate. Each Solar module shall have the Peak Power rating of not less than 125Wp. Each PV module must use a RF identification tag (RFID) and shall be placed inside the module laminate, which must contain the following information:

i. Name of the manufacturer of PV module.
ii. Name of the manufacturer of Solar cells.
iii. Month and year of the manufacture (separately for solar cells and module).
iv. Country of origin (separately for solar cells and module)
v. I-V curve for the module.
vi. Peak Wattage, Im, Vm and FF for the module.
vii. Unique Serial no. and model no. of the module.
viii. Date and year of obtaining IEC PV module qualification certificate.
ix. Name of the test lab issuing IEC certificate.
x. Other relevant information on traceability of solar cells and module as per ISO 9000 series.

PV modules used in solar power plants/systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

The following details shall be screen printed in indelible ink or thermal sticker on the back side of

each PV module so as to be clearly visible from the back side:

(a) Solar Photovoltaic Power Plant 2012-13.

(b) **NIIB NO: 10/JREDA/SPV/SPP/IREP/2013-14**

(c) Not for sale or transfer

(d) Statutory action would be taken by JREDA, if it found sold or transferred under different Sections of IPC.

b. Module Mounting Structure

Array support structure shall be fabricated using corrosion resistant GI (40 mm x 40 mm x 5 mm) or anodized aluminium or equivalent metal sections. Minimum thickness of galvanization should be 80 microns. The vendor shall produce a third party certificate in proof. Test Certificate from approved laboratory shall be provided

i) Array support structure fabricated with alternate material shall have equivalent degree of protection
ii) Array support structure welded joints and fasteners shall be adequately treated to resist corrosion.
iii) The support structure shall be free from corrosion when installed.
iv) PV modules shall be secured to support structure using screw fasteners and/or metal clamps. Module fasteners/clamps shall be adequately treated to resist corrosion.
v) The support structure shall withstand wind loading of up to 150 km/hr.
vi) Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance.
vii) The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

The structures shall be compatible for on roof and on ground installation (Bidder awarded with Work-order for specific location shall visit where the installation is to be done).

c. Junction Box: The junction boxes shall be as per MNRE specifications IP54 (for outdoor) as per IEC 529.

d. **Power Conditioning Unit (PCU)**

Power Conditioning Unit (PCU) provides an un-interrupted AC power using battery bank. Array output will be fed to PCU which consists of MPPT based Charge Controller, Inverter, Voltage Stabilizer and distribution panel along with necessary Displays, Indicators and Alarms and major protections and should conforming to IEC 61683/ IS 61683 Standard for efficiency measurement should conform to IEC 60068-2(1, 2, 14, 30) or equivalent BIS standard for environmental testing. The power conditioning unit shall convert DC Power by SPV modules and store in battery bank and good quality AC Power output is delivered. Bidders should enclose an undertaking that the PCU supplied conform the performance as per MNRE requirements/specifications.

Common Technical Specification:

- Switching device IGBT/MOSFET Type MPPT based charger to charge 120V and 240 V(nominal as per system specification)battery bank with >90% solar charge controller efficiency
- Input voltage from PV array 120V, 240V (nominal as per system specifications)
- It shall have MCB of suitable rating for connection and disconnection of PCU from load.

Protections:

- Short circuit protection
- Input under voltage / Deep discharge of battery
- Input surge voltage protection
- Over current
- Battery reverse polarity protection
- Solar array reverse blocking diode (provided in array junction box)

- DC rated fuse at input and AC rated fuse at output with suitable contactor/solid-state switches for safe start-up & shutdown of system
- Ambient operation (max) 50 degree Celsius
- Relative humidity 95% maximum
- Finish Epoxy powder coating
- Load test at factory minimum 6 hours at full load

Features

- Bi-directional type inverter
- Stand-alone and hybrid mode of operation.
- High quality with high efficiency and reliability
- Microprocessor based intelligent controller
- Self monitoring capability and status monitoring through GPRS.
- Highly reliable & efficient solid-state switching devices
- Rated for continuous operation at full load
- High over-load capability of 200% surge for 10 seconds
- Inverter output power factor of 0.8 lag
- Efficiency : ≥ 90% at rated load and normal operating conditions
  83% (min) at 25% load and nominal input voltage with UPF load
- THD : Sine wave output, with less than 4% THD at full load UPF and nominal input voltage
- Output voltage 230V, single phase for 10 KW PCU and 415 V, three phase for PCU of capacity 25 KW to 40 KW.
- Output frequency 50Hz ± 0.5Hz
- Indications :
  -Inverter ON
  - Grid ON
  -Array ON
  -Inverter Under Voltage /Over Voltage
  -Inverter Overload /Inverter Over Temperature
  - Battery Low

- Enclosure IP 30 (For indoor application)
- Temperature compensated battery charging feature

e. **Battery Bank**

The batteries shall be for SPV application Lead Acid type AGM-VRLA or Tubular Gel.
The batteries shall use 2V battery capacity to be designed for C10 rate. Charging instructions shall be provided along with the batteries. A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank. Battery shall conform as per IEC 61427and / relevant IS specifications as per MNRE requirements. Undertaking letter of complying the above specifications must be submitted along with the bid. The Battery should be warranted for a period of 5 years.

Features:

- The batteries shall be for SPV application and shall be Lead Acid type AGM-VRLA or tubular Gel.
- The batteries shall use 2V battery capacity designed for C10 rate.
- Charging instructions shall be provided along with the batteries.
- A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank.
- The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
- Battery interconnecting links shall be provided for interconnecting the battery in series and in parallel as needed and shall be Lead coated heavy duty copper strips.
- Connectors for inter cell connection (series / parallel) shall be maintenance free screws. Front covers shall be provided for each battery bank.
- Operating range: 0ºC to +60°C.
- AH Efficiency: >95% and WH Efficiency: >85%
- Recombination Efficiency shall be >98%

- Self-Discharge of battery shall be <0.5% per week at 27ºC.
- Container of battery shall be Poly Propylene Co Polymer.
- **The minimum life of the Battery should be 5 years**.

Undertaking letter from the manufacture complying the above specification must be submitted along with the Bid,

f. AC Distribution Board and DC Distribution Board

An ACDB shall be provided in between PCU and Loads. It shall have MCB of suitable rating for connection and disconnection of PCU from load. It shall have MCB's to supply power to control room loads such as fans, lighting loads and power plug sockets etc. It shall have energy meter to record energy supplied to loads

DCDB shall consist MCCBs of suitable specifications which can withstand respective flow of current, with the purpose of providing the option for isolating the battery bank & SPV arrays. Best quality Ah meter has to be installed to measure the cumulative charging & discharging status of battery bank. .

g. Earthing and Lightning Arrestor

The SPV Power Plant should be provided with lightning and over voltage protection. The principal aim in this protection is to reduce the over voltage to a tolerable value before it reaches the PV or other sub-systems components. The source of over voltage can be lightning or any other atmospheric disturbances.

The array structure of the PV yard shall be grounded properly using adequate number of earthing kits. All metal casing / shielding of the plant shall be thoroughly grounded to ensure safety of the power plant.

h. Cables and Accessories

All the cables and accessories including switches / circuit breakers / connectors shall be as per MNRE specification i.e. cables should conform to IEC 60227/ IS 694 and IEC 60502/ IS 1554 (Part – I & II) and switches / circuit breakers / connectors should conform to IEC 60947 (Part-I, II & III) or IS 60947 (Part-I, II & III) EN 50521.

3. Transmission & Distribution Voltage

For the power plant: The output voltage shall be 230 V, I-Phase, 50 Hz supplied by Single Inverter.

4. Battery room and control room

The control room & the battery room shall be provided by the end users.

5. Spares & Inventory

- After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the contractor for maintenance purpose. A list of tools supplied must also be furnished by the contractor.
- A list of requisite spares to keep the system in operation without any breakdown shall be supplied along with equipments.
- A minimum set of spares shall also be maintained for the entire period of warranty and operation & maintenance.
- Any other items for smooth & proper functioning of the system.

6. Quality and adaptability of the equipment

Interested Companies must verify the grid behavior, solar insolation levels and general site conditions on their own before bidding. The bidder shall accordingly ensure that the equipment and the design submitted shall be able to perform as per guaranteed performance levels in the available site conditions. The design of the plant and the equipment offered shall be evaluated for its quality and adaptability to the site conditions.

7. Manpower Training

The supplier/contractor shall train the users for the operation & maintenance of the plant.

I. DEFINITION

A solar photovoltaic **(SPV)** water pumping system consists of a PV array, a DC/AC surface mounted/ submersible/ floating motor pump set, electronics, if any, interconnect cables and an "On-Off" switch. PV Array is mounted on a suitable structure with a provision of tracking. Electronics could include Maximum Power Point Tracker (MPPT), Inverter and Controls/Protections. Storage batteries will not constitute a part of the SPV Water Pumping System.

Components and parts used in the SPV water pumping system including the PV modules, pumps, metallic structures, cables, junction box, switch, etc. should conform to the BIS/ IEC/ international specifications, wherever such specifications are available and applicable.

II. PROFORMANCE SPECIFICATIONS AND REQUIREMENTS (DUTY CYCLE)

The Solar PV Water Pumping System should provide a minimum of 85 liters of water per watt peak of PV array used per day under average daily solar radiation conditions of 5.5 KWh/sq. m. on a horizontal surface, from a total head of 10 meters (Suction head up to a maximum of 7 meters).

For Deep Well Pumps, the water discharge should be a minimum of 28 liters of water per watt peak of PV array capacity used per day from a total head of 30 meters. In case of High Head, Deep Well Pumps, the water discharge should be a minimum of 17 liters of water per watt peak of PV array capacity used per day from a total head of 50 meters.

Use of a tracking system to enhance the availability of solar radiation to lift desired quantity of water is desirable. It should be specified whether the minimum water output is achieved directly or through tracking of PV Array. The actual duration of pumping of water on a particular day and the quantity of water pumped could vary depending on the location, season, etc.

PV ARRAY

The SPV water pumping system should be operated with a PV array capacity in the range of 200 Watts peak to 5000 Watts peak, measured under Standard Test Conditions (STC).

Sufficient number of modules in series and parallel could be used to obtain the required PV array power output. The power output of individual PV modules used in the PV array, under STC, should be a minimum of 100 Watts peak, with adequate provision for measurement tolerances. Use of PV modules with higher power output is preferred.
Indigenously produced PV module (s) containing mono/ multi crystalline silicon solar cells with following features should be used in the PV array for the SPV Water Pumping systems:

- Modules supplied with the SPV water pumping systems should have certificate as per IEC 61215 specifications or equivalent National or International/ Standards.

- Modules must qualify to IEC 61730 Part I and II for safety qualification testing.
- The efficiency of the PV modules should be minimum 13% and fill factor should be more than 70%.
- The terminal box on the module should have a provision for "Opening" for replacing the cable, if required.
- Each PV module must use a RF identification tag (RFID), which must contain the following information:

  (i) Name of the manufacturer of PV Module

  (ii) Model or Type Number

  (iii) Serial Number

  (iv) Month and year of the manufacture

  (v) I-V curve for the module

  (vi) Peak Wattage of the module at 16.4 volts

  (vii) Im, Vm and FF for the module

  (viii) Unique Serial No and Model No of the module

RFID shall be mandatorily placed inside the module laminate

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

Monogram of JREDA along with following details translated into Hindi language in Devnagari script shall be screen printed in indelible ink or paint on the back side of PV module:

- Solar Photovoltaic Programme-2012-13
- Not for sale or transfer
- Statutory action would be taken by JREDA, if it found sold or transferred under different Sections of IPC.

III. MOTOR PUMP-SET

Following types of motor pump sets could be used in the SPV water pumping systems:

I. Submersible DC motor pump set

II. Submersible AC motor pump set

III. Any other type of motor pump set after approval from Test Centers of the Ministry.

The "Motor Pump Set" should have the following features:

- The mono block DC/ AC centrifugal motor pump set has its driving unit and impeller mounted on a common shaft, thereby giving it a perfect alignment. The pump should be provided with specially developed mechanical seals which ensure zero leakage.
- The motor is of 2-5 HP having spring loaded carbon brushes in case of D.C. Motor Pump Sets. The suction and delivery head will depend on the site specific condition of the field.
- Submersible pumps could also be used according to the technical need of the particular case. .

- The suction/ delivery pipe (GI/HDPE), electric cables, floating assembly, civil work and other fittings required to install the system.
- The following details should be marked indelibly on the motor pump set

  (a) Name of the Manufacturer or Distinctive Logo.

  (b) Model Number.

  (c) Serial Number.

IV. MOUNTING STRUCTURES and TRACKING SYSTEM

To enhance the Performance of SPV water pumping systems, it is desirable to use a tracking system. Manual, passive and auto tracking are permitted. The PV modules will be mounted on metallic structures of adequate strength and appropriate design, which can withstand load of modules and high wind velocities up to 150 km per hour. The support structure used in the pumping system will be hot dip galvanized iron (G.I).

Facilities to be provided in the structure:

- Seasonal tilt angle adjustment and
- Three times manual tracking in a day

The G.I. structures for mounting the Solar panels could be so designed, that these can be manually/ auto adjusted for optimal tilt throughout the year. A simple provision is to be provided so that the panel can be manually adjusted three times a day (East-South-West) to face the sun optimally. This adjustment could be done in the early morning, noon time and afternoon to increase the total input solar radiation on the solar panel surface substantially. This provision helps the motor pump set to start early in the morning and function efficiently till late in the afternoon, thereby increasing the total output of the pumping system.

The "Mounting Structure" should have the following features:

- The modules support structure shall be mild steel, hot dipped galvanized (120 micron) iron for holding the PV modules. The size of angle iron should not be less than 50x50x5 mm.
- Each panel frame structure shall be so fabricated as to be grouted on ground or roof on its legs. It will withstand severe cyclone/ storm with the speed of 150 Km/Hr.
- Each panel frame structure shall have provision to adjust its angle of inclination to the horizontal between 10 to 40 degrees with a step of 10 degree, so that the inclination can be adjusted at the specified tilt angle whenever required.
- Each panel frame shall be complete with a weatherproof junction box as per the relevant BIS specifications, where the module terminals shall be interconnected and output taken.
- All nuts and bolts should be made of very good quality and should be corrosion resistant.
- The structure should 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. ELECTRONICS AND PROTECTIONS

- Use of Maximum Power Point Tracker (MPPT) is encouraged to optimally use the Solar panel and maximize the water discharge.
- Inverter could be used, if required, to operate an A.C. Pump.
- Adequate protections should be incorporated against dry operation of motor pump set, lightning, hails and storms. Full protection against open circuit, accidental short circuit and reverse polarity should be provided.

VI. ON/OFF SWITCH

A good reliable switch suitable for DC / AC use is to be provided with the motor pump set. Sufficient length of cable should be provided for inter-connection between the PV array and the motor pump set.

VII. O/M MANUAL

An Operation and Maintenance Manual, in English and Hindi language, should be provided with the solar PV pumping system.

The following minimum details must be provided in the Manual:

(a) About Photovoltaics

(b) About solar pump

(c) About PV module

(d) About motor pump set

(e) About tracking system

(f) Clear instructions about mounting of PV module.

(g) About electronics used in AC motor pump sets, if any

(h) DO's and DONT's,

(i) Clear instructions on regular maintenance and Trouble Shooting of the pumping system.

(j) Name & address of the person or Centre to be contacted in case of failure or complaint.

VIII. INDICATIVE TECHNICAL SPECIFICATIONS

General Information:

The information given here under is indicative only and the designer must satisfy himself regarding quantity and quality wise supply of Solar Modules / panel, Solar Photovoltaic (SPV) Pump, and GI support structure as well as all aspects of commissioning of solar infrastructural facility.

The scope of work includes supply, installation & commissioning **of Solar PV Water Pumps** on bore-well of minimum 4" diameter (**to be provided by the user**) at various sites as per the technical specification mentioned below. The whole system including submersible/ surface pumps shall be **warranted for 5 years**, The PV Modules 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.

TECHNICAL SPECIFICATIONS OF SOLAR DEEPWELL PUMPING SYSTEM

Description	Model II
Solar PV array	1800 Wp
Motor pump set type	Submersible with electronic controller
Max. total dynamic head	50 meters
Module mounting structure	MS hot dipped galvanised, three times manual tracking facilities
Required shadow free area	75 sq. Metres
Water Output *	51,000 liters per day from a total head of 30 meters

*. Water output figures are on a clear sunny day with three times tracking of SPV panel when solar radiation on horizontal surface is: 5.5 KWH/ sq. m/day

Note: For 1800 Wp 2 HP pump required water lift should be up to 70 Metres.

Annexure-1

Format for Covering Letter

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

(To be submitted in the official letter head of the company)

To,

The Director,
Jharkhand Renewable Energy Development Agency
Plot No. 328/B, Road No. 4, Ashok Nagar,
Ranchi- 834002.

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

Sir,

We are hereby submitting our offer in full compliance with the terms and condition of the above NIB No. A blank copy of the tender, duly signed on each page is also submitted as a proof of our acceptance of all specifications as well as terms & Conditions. We have submitted the requisite amount of "Earnest Money" in the form of Bank Guarantee, valid for twelve months.

We confirm that, we have the capability to supply and install the required no of systems within scheduled period.

The tender is submitted in two separate and sealed envelopes marked **Part-I & Part-II**.

(Signature of Authorized Signatory)
Name:
Designation:
Company Seal:

Annexure-2

Check List of Technical bid

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

S. No.	Particulars	Yes / No	Flag No.*	Page No.
1	Covering Letter as per **Annexure-1**.		I	
2	Information about the Bidder as per **Annexure-6**.		II	
3	The bidder is registered PV System Integrator or Manufacturing company of SPV cells or PV Modules or Battery or PV System Electronics conforming to relevant National/International Standards (Attach relevant certificates of Industry Department or MNRE).		III	
4	To indicate the functionality of the firm attach the balance sheet of last three years ending 31.03.2012/2013 of the firm duly certified by statuary Auditor.		IV/V/VI	
5	Registration certificate of MSME of Jharkhand State (Enclose certificate issued by Industry Department, Govt. of Jharkhand).		VII	
6	The proof of supply /execution of SPV items in any SNA/Govt. organization/PSU in the last seven years as per **Annexure-4**. Attach copy of the order and certificate indicating its successful execution.		VIII/IX Series	
7	IEC/IS certificates for Solar PV Module (Attach relevant certificate).		X	
8	IEC/IS certificate for Electronics and test certificate of Inverter (Attach valid relevant certificates).		XI	
9	Certificate of Battery (Attach valid certificate).		XII	
10	A copy of valid VAT/ TIN registration certificate		XIII	
11	Undertaking from bidder that they have resources and capability to supply the offered quantity within scheduled period as per **Annexure-3**.		XIV	
12	Average Annual Turnover for last three years ending 31.03.2012/2013. (Attach average annual turnover certificate as per **Annexure-12**)		XV	
13	Net worth as on 31.03.2012/2013. (Attach proof & Net worth certificate as per **Annexure-13**)		XVI	
14	Details of tender document fee (Bank Draft No. and Date)		XVII	
15	Details of Earnest money (Bank Guarantee No. and Date) as per **Annexure-9.**		XVIII	
16	Technical Details as per **Annexure-8.**		XIX	
17	Declaration by Bidder as per **Annexure-7.**		XX	
18	Product Leaflet/Catalogue (if any).		XXI	
19	A tentative overall supply schedule in the form of Bar Chart.		XXII	
20	Authority Letter for Signing Bid Document & Attending Bid Opening Meeting as per **Annexure-11**.		XXIII	
21	Confirm whether you have prepared all the bid documents in a spiral binding booklet.			
22	Confirm whether all pages have been serially numbered.			
23	Confirm that the authorized representative has signed all the pages of bid document.			

24	Confirm whether you have signed (with company seal) all the pages of bid document & enclosed with the bid.			

**** Please flag the annexure and write flag number as in the box.***

Please ensure:

i) That all informations are provided strictly in order mentioned in the check list above.

ii) Bidders are advised to strictly confirm compliance to bid conditions and not to stipulate any deviation/conditions in their offer. Subsequent to bid submission, JREDA may or may not seek confirmations/clarifications and any offer(s) not in line with Bid conditions shall be liable for rejection.

iii) Any clarification/confirmation bidder may require shall be obtained from JREDA before submission of the bid. Bidder shall submit complete bidding document including subsequent amendment, modification and revision, duly signed and stamped as a token of having read, understood and accepted all the terms and conditions mentioned therein.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

Annexure-3

Format for Undertaking to confirm having Capability & Resources

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

To,

Director
Jharkhand Renewable Energy Development Agency
328/B, Road No.-4, Ashok Nagar, Ranchi-834002,
Jharkhand, INDIA

Dear Sir,

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

We certify that we have the resources and capability to supply and install the offered quantity within scheduled period. We confirm that we are aware that these resources and capability have been assessed on the basis of MNRE benchmark cost for SPV Systems.

Signature of Chief Executive Officer/Managing Director

Date:

Note: The above response sheet should be signed and certified as true by the Chief Executive Officer/ Managing Director being full time Director.

Annexure-4

Details of Orders Received and Executed in Last 7 Years

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Details of Orders Received & Executed by the Bidder for Supply of **SPV Systems** to SNA/ Govt. Organization during Last Seven Years.

SL. No.	Name of Agency/ Organization	Purchase Order No., Date & Ordered Qty.	Name of Model	Delivery Schedule/Commissioning Schedule	Qty. Supplied Within Delivery Schedule	Qty. Supplied After Delivery Schedule	Date of Full Supply/Commissioning

Yours faithfully,

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

Note:

(a) Attach Photocopies of Purchase Orders
(b) Attach Photocopies of Certificate of Satisfactory Performance Issued by Concerned Nodal Agency/*PSU*/ Govt. Organization
(c) Separate sheet may be used for giving detailed information in seriatim duly signed. This bid Proforma must be submitted duly signed in case separate sheet is submitted

Annexure-5

Part-II PRICE BID

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

	Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis:			
S. N.	**Village**	**District**	**Capacity (In kWp)**	**Quoted Price (In Rs.)**
1	Mohanpur	Koderma	37.50	
2	Koyenardih	Ranchi	23.75	
3	Gomiadih	Saraikela Kharsawan	28.75	
4	Amarpur	Godda	37.50	
5	Kendar Kutti	Saraikela Kharsawan	5.00	
6	Raijama	Saraikela Kharsawan	5.00	
7	Holong	Ranchi	5.00	
8	Budha Gujju	Ranchi	6.00	
		Total	**148.50**	

1 **The ranking of bidders for each village will be done separately.**

2 Above quoted price for **Solar Power Plant& other related items** are complete in all respect as per Technical Specifications inclusive of all Central/State/Local taxes & duties, packing, forwarding, transit insurance, loading & unloading, transportation & other charges etc. FOR destination in Jharkhand and inclusive of installation, testing, commissioning, operation & maintenance, performance testing and training.

3 Certified that rates quoted for **Solar Power Plant & other related items** are as per specifications, terms & conditions mentioned in the bid document.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

(This bid Proforma must be submitted duly signed in case separate sheet is submitted)

Annexure-6

Information about the Bidding Firm

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

(To be submitted in the official letter head of the company)

SL. No.	Particulars	
1.	Name of the Bidder	
2.	Address of Bidder with Telephone, Fax, email	
3.	Address of the Registered Office	
4.	Address of the works	
5.	GPS Co-ordinate of Registered Office	
6.	GPS Co-ordinate of Factory Campus	
7.	Name & Designation of Authorized Signatory for Correspondence (Attach Power of Attorney as per **Annexure-11**)	
8.	Nature of Firm (Proprietorship/Partnership /Pvt. Ltd./Public Ltd. Co./Public Sector)	
9.	Permanent Account Number (PAN)/TIN (Attach proof)	
10.	Firm's Registration Number (Attach proof)	
11.	Sales Tax/Value Added Tax Registration Number (Attach proof)	
12.	Specify the Item Originally Manufactured (SPV module/Electronics/Battery) (Attach copy of Registration Certificate of Industry Department)	
13.	Details of in-house testing facility (Attach Proof)	
14.	Office/ Dealer and Service network in Jharkhand with TIN No.(Give details)	

15.	Quoted quantity	
16.	Particulars of Earnest Money	
17.	Place where Materials will be Manufactured	
18.	Place where Materials will be Available for Inspection	
19.	Other details and remarks, if any	

Yours faithfully,

(Signature of Authorized Signatory)

Name :

Designation :

Company seal :

(Separate sheet may be used for giving detailed information duly signed)

Annexure-7

Declaration by the Bidder

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

(To be submitted in the official letter head of the company)

I/We_____ (here in after referred to as the Bidder) being desirous of tendering for the contract for work under the above mentioned tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document, DO HEREBY DECLARE THAT

1. The Bidder is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document.

2. The Bidder is capable of executing and completing the work as required in the tender.

3. The Bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.

4. The Bidder has no collusion with any employee of JREDA or with any other person or firm in the preparation of the bid.

5. The Bidder has not been influenced by any statement or promises of JREDA or any of its employees, but only by the tender document.

6. The Bidder is financially solvent and sound to execute the work.

7. The Bidder is sufficiently experienced and competent to perform the contract to the satisfaction of JREDA.

8. The information and the statements submitted with the tender are true.

9. The Bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.

10. The Bidder has not been debarred from similar type of work by any SNA/ Government Dept. /PSU.

11. This offer shall remain valid for Six months from the date of opening of the tender.

12. The Bidder gives the assurance to execute the tendered work as per specifications terms and conditions.

13. The Bidder confirms the capability to supply and install required no. of systems per month.

14. The Bidder accepts that the earnest money be absolutely forfeited by JREDA if the Bidder fails to undertake the work or sign the contract within the stipulated period.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

Annexure-8

Technical Detail of the Equipment to be Supplied

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

(To be submitted in the official letter head of the company)

S. N.	Particulars		Details
1	Mounting arrangement for Solar module	:	
2	Solar module frame material	:	
3	Module type	:	
4	No. of solar cells per module	:	
5	Make of Solar module (Attach IEC Certificate)	:	
6	Country	:	
7	Weather resistant HDPE junction Box (IP55)	:	
8	Max. Temperature rise of solar cells under severe working condition over max. ambient temperature	:	
9	Nominal voltage	:	
10	Operating voltage of solar module (nom)	:	
11	Peak power voltage (Vmp)	:	
12	Peak Power current (Imp)	:	
13	Open circuit voltage (Voc)	:	
14	Short circuit current (Isc)	:	
15	Make of PCU and Origin	:	
16	Make of Battery and Origin	:	
17	Type of Battery		
18	No. of Battery	:	
19	Each Battery Voltage	:	
20	Each Battery Ah	:	
21	Battery Bank rating (Voltage & Ah)	:	
22	Make of Motor-Pump Sets and Origin	:	
23	Type of Motor-Pump Sets	:	
24	Motor Rating (HP)	:	
25	Total Dynamic Head (M)	:	
26	Water Output (Ltrs/day)	:	

27. Undertaking

a) We agree to manufacture and supply quality Solar Power Plant as per NIT specifications.
b) We agree to give performance guarantee as specified and to abide by the scope of the guarantee as prescribed under the tender document.
c) We agree to operate as per the terms & conditions of the tender.

We undertake to supply quality products for promoting energy efficiency in the era of lighting systems.

(Signature of Authorized Signatory with Name Designation & Company Seal)

Filling Instructions:

1. The **SPP** components will be generally guaranteed as per General Terms & Conditions. The manufacturer can also provide additional information about the system and conditions of Guarantee as necessary. The Guarantee card to be supplied with the system must contain the details of the system supplied as per format given above.

2. During the Guarantee period JREDA/users reserve the right to cross check the performance of the systems for their minimum performance levels specified in the MNRE specifications.

Format for Submitting Bank Guarantee for Earnest Money

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

(To be submitted in Rs. 100/- Non-Judicial Stamp Paper to be purchased in the name of the issuing bank)

To,
The Director
Jharkhand Renewable Energy Development Agency (JREDA)
Plot No. 328/B, Road No. 4, Ashok Nagar,
Ranchi – 834002.

WHEREAS ……..…….... (Supplier's name) (thereinafter referred to as "Supplier"), a company registered under the Companies Act, 1956 and having its registered office at ……..…… is required to deposit with you, the Purchaser, by way of Earnest Money Rs. ……..…….. (Rupees ……. only) in connection with its tender for the work with reference to Notice Inviting Bid (NIB) No. ……..…… dated ……..……. as per specification and terms and conditions enclosed therein.

WHEREAS the Supplier as per "Notice Inviting Bid, point no. 3 Earnest Money" has agreed to establish a Bank Guarantee in Your favour through us valid up to …….…….….. (date) instead of deposit of earnest money in cash.

WHERAS you have agreed to accept a Bank Guarantee from us in …… instead of earnest money in cash from the Supplier.

1. We ……..…… (Bank) hereby agree and undertake to pay you on demand the said amount of Rs. …….. (Rupees …… only) without any protest or demur in the event the Supplier/Tenderer after submission of his tender, resiles from or withdraws his offer or modifies the terms and conditions thereof in a manner not acceptable to you or expresses his unwillingness to accept the order placed and/or letter of intent issued on the Supplier/Tenderer for the work under "Notice Inviting Bid No.: **10/JREDA/SPV/SPP/IREP/2013-14**".
2. Your decision as to whether the Supplier/Tenderer has resiled from or has withdrawn his offer or has modified the terms and conditions thereof in a manner not acceptable to you or has expressed his unwillingness to accept the order placed and/or Letter of Intent issued by you on the Supplier/Tenderer for

the work under "Notice Inviting Bid No. : **10/JREDA/SPV/SPP/IREP/2013-14"** in this regard, shall be final and binding on us and we shall not be entitled to question the same.

3. Notwithstanding anything contained in the foregoing, our liability under this Guarantee shall be restricted to Rs. …….. (Rupees ……..……..…….. only).

4. This Guarantee shall remain valid and in full force and effect up to ……..…….. (Date) and shall expire thereafter unless an intimation is given to the Bank by you earlier in writing discharging us from our obligation under this Guarantee.

5. We shall not revoke this Guarantee during its currency except by your consent in writing.

6. This Guarantee shall not be affected by any change in the constitution of the Supplier/Tenderer or yourselves or ourselves but shall ensure to your benefit and be enforceable against our legal successors or assignees by you or your legal successors.

7. Notwithstanding anything contained herein above unless a demand or claim under this Guarantee is made on us in writing within six months from the date of expiry of this Guarantee we shall be discharged from all liabilities under this Guarantee thereafter.

8. We have power to issue this Guarantee under our Memorandum and Articles of Association and the undersigned who is executing this Guarantee has the necessary power to do so under a duly executed Power of Attorney granted to him by the Bank.

Signed and Delivered

For and on behalf of …….. Bank.

(Banker's Name)

Name of Bank Manager: …….

Address ……..……

……..…

Annexure-10

Certificate of Delivery of Solar Systems received by the Consignee as Proof of Compliance by the Supplier

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

iek.ki=

Consignee/प्राप्त कर्ता का नाम : .....पदनामः .....

विभाग का नामः .....

विभाग का पता : .....

प्रमाणित किया जाता है कि सोलर फोटोभोल्टाईक कार्यक्रम के अंतर्गत सोलर पावर प्लांट हेतु निम्नलिखित उपस्कर प्राप्त किये गयेः–

1. सोलर मॉडयूलस की संख्या एवं क्षमता– .....
2. मॉडयूल हेतु स्ट्रक्चर की संख्याः.....
3. बैट्री की संख्या एवं प्रकार :.....
4. इन्भरटर (पी0सी0यू0) की संख्या एव प्रकारः.....
5. जंक्शन बॉक्स की संख्याः.....
6. तार आदि.....

इन सोलर उपस्करों की आपूर्ति मेसर्स ..... द्वारा की गई है।

Consignee का हस्ताक्षरः

जे्रडा प्रतिनिधि का प्रमाण–पत्र

यह प्रमाणित किया जाता है कि उपर इंगित सामानों का निरीक्षण Specification के अनुसार प्राप्त करके उपर इंगित प्राप्त कर्त्ता को सुपूर्द की जा चुकी है।

Annexure -11

Format of Power of Attorney for Signing Bid

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

POWER OF ATTORNEY

(To be on non-judicial stamp paper of appropriate value as per Stamp Act relevant to place of execution.)

Know all men by these presents, we…….(name and address of the registered office) do hereby constitute, appoint and authorize Mr. / Ms.……(name and residential address) who is presently employed with us and holding the position of…….

as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our bid for **Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand**, including signing and submission of all documents and providing information / Bids to Jharkhand Renewable Energy Development Agency, representing us in all matters before [Insert Name], and generally dealing with Jharkhand Renewable Energy Development Agencyin all matters in connection with our bid for the said Project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For

_____

Accepted

…….. (Signature)

(Name, Title and Address of the Attorney)

Note: The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, lay down by the applicable law and the charter documents of the executants (s) and when it is so required the same should be under common seal affixed in accordance with the required procedure.

Annexure-12

Format For Financial Requirement – Annual Turnover

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

[On the letterhead of Bidding Company]

To,

The Director,
Jharkhand Renewable Energy Development Agency,
328/B, Road No.-4, Ashok Nagar,
Ranchi- 834002.

Dear Sir,

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

We certify that the Bidding Company had an average Annual Turnover of Rs. ---------- based on audited annual accounts of the last three years ending 31.03.2012/2013.

Authorised Signatory
(Power of Attorney holder)

Statutory Auditor
(Stamp & Signature)

Date:

Annexure-13

Format For Financial Requirement - Net Worth Certificate

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

[On the letterhead of Bidding Company]

To,

The Director,
Jharkhand Renewable Energy Development Agency,
328/B, Road No.-4, Ashok Nagar,
Ranchi- 834002.

Dear Sir,

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

This is to certify that Net worth of _____ {insert the name of Bidding Company}, as on 31st March 2012/2013 is Rs _____. The details are appended below.

Particulars	**Amount (In Rs.)**
Equity Share Capital	
Add: Reserves	
Subtract: Revaluation Reserve	
Subtract: Intangible Assets	
Subtract: Miscellaneous Expenditure to the extent not written off and carried forward losses	
Net Worth as on 31st March 2012/2013	

Authorised Signatory
(Power of Attorney holder)

Statutory Auditor
(Stamp & Signature)

Annexure-14

Format for Quarterly CMC Report

NIB No: 10/JREDA/SPV/SPP/IREP/2013-14

[On the letterhead of Bidding Company]

To,

The Director,
Jharkhand Renewable Energy Development Agency,
328/B, Road No.-4, Ashok Nagar,
Ranchi- 834002.

Dear Sir,

Sub: Design, Manufacture, Testing, Supply, Installation & Commissioning of indigenous Solar Photovoltaic Power Plants and associated work for Village Electrification including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis of Different Capacities in Eight Villages of Jharkhand.

Date of Installation.....

JREDA Dispatch Order No..... Dated.....

Place of Supply.....

S. N.	Place of Installed System	System Details		Date of Site Visit	CMC activities undertaken by Technician	Name and Signature of Concerned field Officer of JREDA	Name and Signature of Controlling Officer of JREDA
		Module No.					
		Battery No.					
		PCU /Inverter No.					
		Module No.					
		Battery No.					
		Charge Controller No.					
		Street Light No. from------ No. to------- No.					

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal: