

**Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/Solar Stand Alone Systems with distribution network including control room & Connection to households along with 5 years Operation and Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different villages of Lohardaga District.**

**NIB Number: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**JREDA**

**Government of Jharkhand**



**Jharkhand Renewable Energy Development Agency (JREDA)**

3rd Floor, S.L.D.C. Building, Kusai Colony, Doranda, Ranchi-834002.

Ph.: 0651-2491161, Fax: 0651-2491165,

E-mail: [info@jreda.com](mailto:info@jreda.com); Website: [www.jreda.com](http://www.jreda.com)

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**Govt. of Jharkhand**  
**Energy Department**  
**Jharkhand Renewable Energy Development Agency (JREDA)**  
3rd Floor, S.L.D.C. Building, Kusai Colony, Doranda, Ranchi-834002.  
Ph.: 0651-2491161, Fax: 0651-2491165,  
E-mail: info@jreda.com; Website: [www.jreda.com](http://www.jreda.com)

**e-Procurement Notice**

**Tender Reference No.: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**Dated: 22.05.2023**

1	Name of the work	Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/Solar Stand-Alone System with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different villages of Lohardaga District .
2	Estimated cost (Rs.)	<b>Rs 16770629.00</b>
3	Estimated Capacity	<b>71 kWp</b>
4	Period of contract	<b>5 Years from date of commissioning</b>
5	Time of completion	<b>06 (Six) Months</b>
6	Date of publication of NIT on website: <a href="http://jharkhandtenders.gov.in">http://jharkhandtenders.gov.in</a>	<b>26.05.2023 (Friday)</b>
7	Date & time of Pre-bid meeting	<b>02.06.2023 (Friday)</b> at 3.00 P.M.
8	Last date & time for receipt of online bids	<b>21.06.2023 (Wednesday)</b> upto 05:00 PM
9	Submission of original copies of Bid fee & EMD (Offline)	<b>21.06.2023 and 22.06.2023</b> up to 5.00 P.M.
10	Technical Bid Opening Date	<b>23.06.2023 (Friday) at 3.00 P.M.</b>
11	Name & address of office inviting tender	Director, Jharkhand Renewable Energy Development Agency(JREDA) 3 <sup>rd</sup> Floor, SLDC Building, Kusai, Doranda, Ranchi- 834002 (Jharkhand)
12	Contact no. of procurement officer	0651-2491163/61
13	Helpline no. of e-procurement	0651-2491163/61

**Any corrigendum/addendum can be seen on website: <http://jharkhandtenders.gov.in> & [www.jreda.com](http://www.jreda.com). Further details can be seen on website: <http://jharkhandtenders.gov.in> & [www.jreda.com](http://www.jreda.com)**

**Sd/-**  
**Director,**  
**JREDA, Ranchi**

## Section -1

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

### List of Important dates & details of Bids

1.	Name of work	Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households & Solar Stand Alone Systems along with 5 years Operation & Comprehensive Maintenance Contract (CMC) on Turnkey basis in 08 different villages of Lohardaga District.																																																
2	Tender reference no.	12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24																																																
3	Contract period	5 YEARS AND 6 MONTHS																																																
5	Mode of submission of tender	Online through <a href="http://www.jharkhandtenders.gov.in">www.jharkhandtenders.gov.in</a>																																																
9	Cost of Bid document (Non-refundable)	<ul style="list-style-type: none"> <li>A non-refundable Bid Fee of <b>Rs. 11,800/-</b> including GST in form of DD drawn in favour of "Director JREDA" payable at Ranchi.</li> <li>Rs. Nil for MSE of Jharkhand.</li> </ul>																																																
10	Earnest Money Deposit	<p style="text-align: center;">Village wise details for EMD amount :-</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;">S.N.</th> <th style="width: 60%;">Details</th> <th style="width: 10%;">Capacity (kWp)</th> <th style="width: 10%;">Mode of Electrification</th> <th style="width: 15%;">EMD Amount (INR)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Block-Peshrar, village/Tola- Doodhpatan-1</td> <td>4.5</td> <td>Minigrid</td> <td>21800.00</td> </tr> <tr> <td>2</td> <td>Block-Peshrar, village/Tola- Doodhpatan-2 Bhagat Tola</td> <td>3.6</td> <td>Minigrid</td> <td>17450.00</td> </tr> <tr> <td>3</td> <td>Block-Peshrar, village/Tola- Ganeshpur</td> <td>16.5</td> <td>Minigrid</td> <td>80000.00</td> </tr> <tr> <td>4</td> <td>Block-Peshrar, village/Tola- Chari</td> <td>10.5</td> <td>Minigrid</td> <td>51000.00</td> </tr> <tr> <td>5</td> <td>Block-Peshrar, village/Tola- Manhepaat</td> <td>16.5</td> <td>Minigrid</td> <td>80000.00</td> </tr> <tr> <td>6</td> <td>Block-Peshrar, village/Tola- Hurmur</td> <td>13.5</td> <td>Minigrid</td> <td>65500.00</td> </tr> <tr> <td>7</td> <td>Block-Peshrar, village/Tola- Malangveer Tola,</td> <td>03</td> <td>Solar StandAlone</td> <td>9000.00</td> </tr> <tr> <td>8</td> <td>Block-Senha, village/Tola- Samri Tola</td> <td>02</td> <td>Solar StandAlone</td> <td>6000.00</td> </tr> </tbody> </table> <p style="text-align: center;">For MSEs of Jharkhand (Manufacturing Sector): Nil.</p>				S.N.	Details	Capacity (kWp)	Mode of Electrification	EMD Amount (INR)	1	Block-Peshrar, village/Tola- Doodhpatan-1	4.5	Minigrid	21800.00	2	Block-Peshrar, village/Tola- Doodhpatan-2 Bhagat Tola	3.6	Minigrid	17450.00	3	Block-Peshrar, village/Tola- Ganeshpur	16.5	Minigrid	80000.00	4	Block-Peshrar, village/Tola- Chari	10.5	Minigrid	51000.00	5	Block-Peshrar, village/Tola- Manhepaat	16.5	Minigrid	80000.00	6	Block-Peshrar, village/Tola- Hurmur	13.5	Minigrid	65500.00	7	Block-Peshrar, village/Tola- Malangveer Tola,	03	Solar StandAlone	9000.00	8	Block-Senha, village/Tola- Samri Tola	02	Solar StandAlone	6000.00
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11	Publishing on website	<b>26.05.2023 (Friday)</b>																																																
12	Date of Pre-Bid meeting	<b>02.06.2023 (Wednesday)</b> at 3.00 P.M.																																																
13	Period of downloading of bidding documents	Start date: <b>30.05.2023</b> End date: <b>21.06.2023</b>		Time: 10.00 AM Time: 05.00 PM																																														
14	Bid online submission	Start date: <b>06.06.2023</b> End date: <b>21.06.2023</b>		Time: 11.00 AM Time: 05.00 PM																																														
15	Technical bid opening date	<b>23.06.2023 (Friday) at 3.00 P.M.</b>																																																
16	Authority inviting bids	Director, Jharkhand Renewable Energy Development Agency(JREDA)																																																
17	Place for receiving tender fee & EMD	Jharkhand Renewable Energy Development Agency(JREDA) 3rd Floor, SLDC Building, Kusai, Doranda, Ranchi- 834002. Ph.No: 2491161,Fax No: 0651-2491165 Web site: <a href="http://www.jreda.com">www.jreda.com</a> E-mail: <a href="mailto:info@jreda.com">info@jreda.com</a>																																																

Note: The **tender fee** and **Earnest Money Deposit (EMD)** in original must be submitted between all working days from **21.06.2023 and 22.06.2023** up to 5.00 P.M. **If tender fee and EMD are not received before mentioned date and time, tender shall be considered invalid.** MSMEs seeking exemption from Bid fee & EMD shall submit documentary evidence supporting the exemption.

## Section-2

### NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24

#### Instructions to Bidders

Detailed instructions & documents to be furnished for online bidding

1. The guidelines to submit bid online can be downloaded from website <http://Jharkhandtenders.gov.in>
2. The interested bidders can download the bid from the website "<http://Jharkhandtenders.gov.in>".
3. To participate in bidding process, bidders have to get 'Digital Signature Certificate (DSC)' as per Information Technology Act-2000 to participate in online bidding. This certificate will be required for digitally signing the bid. Bidders can get above mention digital signature certificate from any approved vendors (CCA). Bidders, who already possess valid Digital Certificates, need not to procure new Digital Certificate.
4. The bidders have to submit their bids online in electronic format with digital Signature. The bids without digital signature will not be accepted. No proposal will be accepted in physical form.
5. Bids will be opened online as per time schedule mentioned in section 1
6. Bidders should get ready with the scanned copies of cost of documents & EMD as specified in the tender document. Before submission of online bids, bidders must ensure that scanned copy of all the necessary documents have been attached with bid.
7. Bidder have to produce the original D.D. towards tender fee & EMD in approved form to the authority "Director, Jharkhand Renewable Energy Development Agency, Ranchi" on the date & time as mentioned in the NIT failing which bidder will be disqualified. The details of cost of documents, EMD specified in the tender documents should be the same as submitted online (scanned copies) otherwise tender will summarily be rejected.
8. Uploaded documents of valid successful bidders will be verified with the original before signing the agreement. The valid successful bidder has to provide the originals to the concerned authority. The department will not be responsible for delay in online submission due to any reason.
9. All the required information for bid must be filled and submitted online.
10. Other details can be seen in the bidding documents.

B. Details of documents to be furnished for online bidding:

11. **Scanned copies of the following documents to be up-loaded in pdf format on the website <http://Jharkhandtenders.gov.in>.**
  - i. D. D. towards Tender fee.
  - ii. Duly pledged EMD (In case of BG as per Annexure).
  - iii. Latest GST certificate and GST Returns.
  - iv. PAN Card.
  - v. Firm registration certificate
  - vi. Certificate/documents related to MSEs of Jharkhand as specified in clause I of section 3 (only applicable for the bidder who wants to avail benefit reserved for MSEs of Jharkhand)

- vii. Proof of completion of similar works during the last 7 years and list of similar works in hand in the prescribed formats duly signed by the competent authority of the issuing Department.)
- viii. List of works for which bids already submitted
- ix. Audited financial Report for the last 3 financial years i.e. audited Balance sheet & P/L (FY2019-20 ,2020-21 & FY2021-22) certified by chartered Accountant.
- x. ITR for AY2020-21,2021-22 & 2022-23
- xi. Annual Turn over Details certified by Chartered Accountant.
- xii. Net worth certificate certified by Chartered Accountant
- xiii. List of current litigant cases in which the bidder is involved.
- xiv. An affidavit for non-engagement of related persons.
- xv. Test Certificates for PCU, Battery, Module & Solar Standalone system based solar power Packs as applicable which shall be issued by MNRE approved Test Labs.
- xvi. Authorized address & contact numbers of the bidder as per instruction in the Notice Inviting Bid duly digitally signed
- xvii. Undertaking of Bidder that he is able to invest minimum of cash up to 10% as defined in ITB
- xviii. Undertaking for validity of bid for 180 days.
- xix. Copy of written power of attorney of the signatory of the Bid for bidding

12. Scanned Copies of the Annexure as per the enclosed formats should be uploaded after converting the same to .pdf format.

- i. Annexure-1: Covering letter.
- ii. Annexure-2: Checklist for Technical Bid.
- iii. Annexure-3: Information about the bidding firm
- iv. Annexure-4: Declaration by the bidder.
- v. Annexure-5: Average Annual Turnover certificate issued by CA.
- vi. Annexure-6: Net-worth certificate issued by CA.
- vii. Annexure-7: Format for power of attorney for signing of bid.
- viii. Annexure-8: Details of Orders Received and Executed in Last 7 Years
- ix. Annexure-9: Price Bid for Solar Mini/Micro grid
- x. Annexure-10: Bank Guarantee format for EMD
- xi. Annexure-11: Undertaking by MSEs of Jharkhand
- xii. Annexure-21: Quoted Village Name details
- xiii. Annexure-22: Price Bid for Solar standalone system
- xiv. Registration Certificate: Contractor Registration Certificate

13. **Duly filled in & digitally signed Price Bid.**

- 14. Uploaded documents of valid successful bidders will be verified with the original before signing the agreement. The valid successful bidder has to provide the originals to the concerned authority on receipt of such letter, which will be sent through registered post.
- 15. Bank Account Mandate form from the Banker.

### **Section-3**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**Sub:** Request for Proposal (RFP) for Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households & Solar Stand Alone Systems along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different Villages of Lohardaga District of Jharkhand.

#### **Preamble:**

As part of Rural Electrification Program, JREDA invites bid for “ **Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households & Solar Stand Alone Systems along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different Villages of Lohardaga District of Jharkhand.**” for short listing of experienced & eligible Agency to whom work shall be allocated for successful execution of the project in a defined time frame.

#### **(I) General Requirement:**

- 1.** The bidder should be a registered company/ Proprietorship/LLP/ Partnership/ /Firm/ Corporation in India. **Authorized dealers’ companies/firms/ corporations and subcontractors are not eligible to participate.**
- 2. Bidders claiming benefit of Micro & Small Enterprises (MSEs) of Jharkhand:-**
  - i. The manufacturing or Service unit is located within the State of Jharkhand.
  - ii. The Head Office **or** Corporate Office of such registered unit/company/enterprise is within the territorial jurisdiction of Jharkhand.
  - iii. “MSE is registered with the Directorate of Industries/District Industries Centre, Khadi and Village Industries Board, Directorate of Handloom, Sericulture and Handicraft of Jharkhand Govt, Industrial Area Development Authorities and National Small Industries Corporation Ltd **or** any other body specified by Directorate of Industries, Jharkhand Govt from time to time and other industrial units/enterprises which have submitted IBM and been issued Date of Production (DOP) certificate by GM, DIC/MD, Industrial Area Development Authorities/Director, Industries, GoJ **or** MSEs having Udyog Aadhar Number issued by Ministry of Micro, Small and Medium Enterprises, Gol to be duly verified, whether unit is existing/functional and doing regular production at what capacity by GM, DIC/MD, Industrial Area Development Authorities/Director, Industries, GoJ”.
  - iv. The MSEs /other Enterprises and units must be registered under Jharkhand Goods and Services Tax (JGST) Act-2017 or The Central Goods & Services Tax (CGST) Act 2017.
  - v. The MSE /other enterprise and unit must have encouraged local people in employment.
  - vi. The MSE /other enterprise and unit must have complied with all statutory and legal formalities of concerned regulators/Act.



- vii. The MSE Unit availing preferential treatment will give an undertaking with respect to point i to vi above including a categorical statement that the product/services being supplied to Govt. Dept. or its agencies has been manufactured/created by the unit located in Jharkhand only, giving details of batch no./date or any other identifiable tag (GSI etc ) as per prevalent established practice and will have to submit compulsorily duly signed copy of Form GSTR-9C (For units having aggregate yearly turnover of more than 2 crores) as prescribed under JGST Act-2017". However, in case of VAT products/services, Form JVAT-409 (For units having of gross yearly turnover more than 60 lacs) issued by dept. of Commercial taxes, Govt. of Jharkhand.
3. A registered manufacturing company/Firm/Corporation in India (Including MSME of Jharkhand) of at least one of the major components namely SPV Cells/ Modules or Battery or PCU (Conforming to relevant National/ International Standards). The bidder shall furnish either relevant certificate or concerned Industry Department certificate clearly indicating that they are manufacturers of SPV Cells/ Modules or Battery or PCU.
  4. The bidder should be a functional organization. To substantiate this claim, the bidder should submit the copy of Audited accounts for last 3 years i.e. audited Balance sheet & P/L for FY 2019-20, 2020-21 & 2021-22 along with Income Tax Return (ITR) for AY 2020-21, 2021-22 & 2022-23 complete set. These audited accounts should be duly certified by the Statutory Auditor with his stamp.
  5. Registered Micro & Small Enterprises (MSMEs) of Jharkhand should submit the attested copy of Registration certificate/ Udyog Aadhar/Udyam issued by the Industry Department, Govt. of Jharkhand duly verified by concerned DIC.
  6. The bidder should have valid GST and PAN.
  7. Bids from joint venture are not allowed.
  8. Contractor Registration in JREDA is mandatory to participate in this tender.
  9. Performance certificates
  10. UDIN certificates

**(II) Commercial Requirement:**

**1. Turnover certificates :**

**For General Bidder:** Average Annual financial turnover during the last 3 years (FY 2019-20 & 2020-21 & 2021-22) certified by chartered Accountant & it should be at least **30%** of the estimated cost of Bidding Quantity

**For MSE of Jharkhand:** Bidder should have the average Annual Turnover of **10%** of Bidding Quantity derived from the last three financial years (FY 2019-20 & 2020-21 & 2021-22)

**The certificate should be issued by CA with UDIN no.** as per the Performa given at **Annexure-5**

## 2. Net worth Requirement:

**For General Bidder/MSE of Jharkhand:** Bidder should have Positive Net Worth as on 31.03.2022 on the basis of audited annual accounts.

**Net worth certificate should be issued by CA with UDIN no.** as per the Performa given at **Annexure-6**

### (III) Technical Requirement:

#### Experience Requirement:

**For General Bidders:** Experience of having successfully completed similar works in any SNA / Govt. Organization / PSU during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following: -

Three similar completed works costing not less than the amount equal to 40% of the estimated Project cost/ Quoted quantity cost.

Or

Two similar completed works costing not less than the amount equal to 50% of the estimated Project cost/ Quoted quantity cost.

Or

One similar completed work costing not less than the amount equal to 80% of the estimated Project cost/ Quoted quantity.

**Definition of Similar Work:** - Bidder should have experience of Design, Engineering, Supply, Installation, and Testing & Commissioning of Solar Power Plant equivalent to quoted Quantity. Each Work Order along with successful completion certificate will be considered as one "Similar completed work"

#### For MSME of Jharkhand:

One similar completed work costing not less than the amount equal to 10% of the estimated Project cost/ Quoted quantity from PSU/Govt. Organization/ SNA in last seven years.

#### Valid Test Report approved by MNRE/BIS to be submitted by the Bidder:

Sr. No.	Components	Standards
1	Solar Module	IEC61215 edition II / BIS 14286, IEC 61730 part I & II, IEC 62804
2	PCU	As per IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std., IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS std., IEC 62109-1 & 2/ Equivalent BIS std.
3	Battery	As per IS 16046:2015,IS16047 equivalent latest BIS
4	Solar Home light System	As per MNRE/NABL approved labs

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.

**\*\*Note: All the above test reports are mandatory for being technically eligible.**

**(IV) Procedure for Award of Work :**

- i. The lowest rate i.e., L1 received would be the appropriate rate for awarding the work. The bidders shall be ranked as L1, L2, L3 and so on based on financial bids.
- ii. JREDA will allot the quantum of work to L1 bidder on the basis of quoted quantity by the bidder. If required, the remaining work will be offered to L2 bidder at L1 rate, and so on.
- iii. Allocation of the quantity to MSMEs registered in Jharkhand will be made as per the provisions of Jharkhand Procurement Policy 2014. MSMEs of Jharkhand should be functional & having running production unit in the State and should fulfill all the criteria as defined in Jharkhand Procurement Policy 2014.
- iv. Successful bidders shall be required to furnish at the time of Agreement, documentary evidence of the quantity of production of the self-manufactured component/s for the last three years.
- v. If quantity/capacity is left unallocated in any category, JREDA reserves the right to reallocate the left-over quantity to other categories.
- vi. **In Case any Bidder is L-1 in multiple villages than Director JREDA will have right to decide maximum no. of villages which can be allocated to the bidder.**

## **SECTION-4**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

### Table of Clauses

Clause A. <b>General</b>	Clause D. <b>Submission of Bids</b>
1 Scope of Bid	17 Deadline for Submission of Bids
2 Source of Funds	
3 Eligible Bidders	<b>E. Bid Opening</b>
4 Qualification of the Bidder	18 Bid Opening
5 One Bid per Bidder	19 Process to be Confidential
6 Cost of Bidding	20 Clarification of Bids and Contracting the JREDA
	21 Examination of bids and Determination of Responsiveness
<b>B. Bidding Documents and Evaluation</b>	
	22 Correction of Errors
7 Content of Bidding Documents	23 Evaluation and Comparison of Bids
8 Clarification of Bidding Documents	24 Price Preference
9 Amendment of Bidding Documents	<b>F. Award of Contract</b>
<b>C. Preparation of Bids</b>	25 Award Criteria
10 Language of Bid	26 JREDA Right to Accept any Bid And to reject any or all Bids
	27 Notification of Award
11 Documents Comprising the Bid	28 Performance Security
12 Bid Prices	29 Corrupt or Fraudulent Practices
13 Currencies of Bid and Payment	
14 Bid Validity	
15 Earnest Money	
16 Sealing and Marking of Bids	

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**Instructions to Bidders (ITB)**

**A. General**

**1. Scope of Bid**

- 1.1. The JREDA invites bids for the work as described in these documents and referred to as "the work". The name and identification number of the works is provided in the Notice Inviting Bid.
- 1.2. The successful Bidder will be expected to complete the Works by the Intended Completion time specified in the General Conditions of Contract.
- 1.3. Throughout these documents, the terms "bid" and "tender" and their derivatives (bidder/ tenderer, bid/ tender, bidding/ tendering) are synonymous.
- 1.4. Electrification of each village will be considered as single project

**2. Source of Funds**

- 2.1. The JREDA has decided to undertake the works of "Request for Proposal (RFP) for Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/StandAlone with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contract (CMC) on Turnkey basis in different Villages under Jharkhand." through funds from the Government of Jharkhand to be implemented through JREDA.

**3. Eligible Bidders**

- 3.1 This Invitation for Bids is open to all bidders as defined in the Notice Inviting Bid.
- 3.2 Bidders shall not be under a declaration of ineligibility for corrupt and fraudulent practices /debarred/blacklisted by the Central Government, the State Government or any public undertaking, autonomous body, authority by whatever name called under the works.

**4. Qualification of the Bidder**

- 4.1 All bidders shall provide in Section 3, Forms of Bid and Qualification information, a preliminary description of the proposed work method and schedule, including drawings and charts, as necessary.
- 4.2 All bidders shall include the following information and documents with their bids in Section 3, Qualification Information unless otherwise stated in the Notice Inviting Bid/ITB.
- 4.3 Copies of original documents defining the constitution or legal status, place of registration, and principal place of business.
- 4.4 Copy of written power of attorney of the signatory of the Bid to commit the Bidder.
- 4.5 Experience in works of a similar nature and size for each of the last seven years, and details of works in progress or contractually committed with certificates from the concerned officer or competent authority.
- 4.6 Reports on the financial standing of the Bidder, such as profit and loss statements and auditor's reports for the last three years.

- 4.7 Bidder shall submit all the information required to be provided as per Annexures.
- 4.8 The Bidder, at his own cost, responsibility and risk, is encouraged to visit, examine and familiarize himself with the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for supply & installation of the Works. The costs of visiting the Site shall be at the Bidder's own expense. He may contact the person whose contact details are given in the Notice Inviting Bid.
- 4.9 Even though the bidders meet the qualifying criteria of Section-3, they are subject to be disqualified if they have:
- i. made misleading or false representations in the forms, statements, affidavits and attachments submitted in proof of the qualification requirements; and/or
  - ii. record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures
  - iii. Participated in the previous bidding for the same work and had quoted unreasonably high or low bid prices and could not furnish rational justification for it to JREDA.

#### **5. One Bid per Bidder**

- 5.1 Each Bidder shall submit only one Bid for one work. A Bidder who submits more than one Bid will cause the proposals with the Bidder's participation to be disqualified.

#### **6. Cost of Bidding**

- 6.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the JREDA will, in no case, be responsible or liable for those costs.

### **B. Bidding Documents**

#### **7. Content of Bidding Documents**

- 7.1 The set of bidding documents comprises the documents listed below and addenda issued in accordance with Clause 10 of ITB.
- a. Notice Inviting Tender
  - b. Instructions to Bidders
  - c. Qualification Information
  - d. Conditions of Contract
  - e. Bill of Quantities
  - f. Form of Bid
  - g. Form of Bank Guarantee.
- 7.2 The bidder is expected to examine carefully all instructions, conditions of contract, contract data, forms, terms and specifications, bill of quantities, forms in the Bid Document. Failure to comply with the requirements of Bid Documents shall be at the bidder's own risk. Pursuant to clause 21 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

## **8. Clarification of Bidding Documents and Pre-bid Meeting**

- 8.1 A prospective Bidder requiring any clarification of the bidding documents may notify the JREDA in writing at the JREDA's address indicated in the Notice Inviting Tenders.
- 8.2 Pre-bid meeting will be held on 02.06.2023 at 3.00 P.M. in the Conference Hall of JREDA. The bidder or his authorized representative may attend the meeting.
- 8.3 The purpose of such a meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 8.4 The bidder is requested to submit any questions in writing so as to reach the JREDA not later than two days before the meeting.
- 8.5 Any modifications of the bidding documents listed in Clause 8.1 of ITB, which may become necessary as a result of the pre-bid meeting shall be made by the JREDA exclusively through the issue a Corrigendum/Addendum.
- 8.6 Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

## **9. Amendment of Bidding Documents**

- 9.1 Before the deadline for submission of bids, JREDA may modify the bidding documents by issuing corrigendum/addendum.
- 9.2 To give prospective bidders reasonable time in which to take a corrigendum/addendum into account in preparing their bids, the JREDA shall extend, if necessary, the deadline for submission of bids, in accordance with Clause 17.2 of ITB.

## **C. Preparation of Bids**

### **10. Language of Bid**

- 10.1 All documents relating to the Bid shall be in the English language specified in the Notice Inviting Bid.

### **11. Documents Comprising the Bid**

- 11.1 Technical Bid – (Fee/Pre-Qualification/Technical Cover)
  - i. EMD & Tender Fee
    - a. Scanned Copy of Demand draft drawn in favour of "DIRECTOR, JREDA", payable at Ranchi towards Cost of Tender Fee and Earnest Money Deposit as specified in the Notice Inviting Bid. Bid fee and EMD to be submitted in original in the office of JREDA as per the instruction given in the Bid.
  - ii. Technical Details & Declaration
    - a. Proposed work programme (work method, time schedule and financial flow), description, and charts as necessary (Duly to be signed digitally) to comply with the requirement of the Bidding Document.
    - b. Scanned copy of an Affidavit by the Bidder that he/she has accepted the S.B.D.
  - iii. Valid test Report from MNRE approved Labs of the offered system
  - iv. Technical Details of documents  
Scanned copies/Prescribed Formats of Documents to be attached in "My Document" in .pdf format file duly digitally signed by the bidder.
    - a. Income Tax clearance certificate/PAN Card
    - b. GST certificate.

- c. Proof of completion of similar works during the last 5 years in the prescribed formats in the ITB duly signed by the competent authority of the issuing Department.
- d. Audited Financial Report for the last 3 FYyears (2019-20 to 2021-22) certified by charteredAccountant with ITR.
- e. Annual Turn over Details certified by Chartered Accountant.
- f. Net-worth details certified by Chartered Accountant
- g. List of current litigant cases in which the bidder is involved.
- h. Authorized address & contact numbers of the bidder as per instruction in the Notice Inviting Bid duly digitally signed.
- i. Undertaking for validity of bid for 180 days.

#### 11.2 Financial Bid – (Finance Cover)

- a. Duly Quoted & digitally signed Bill of Quantity (BoQ) in the file supplied by JREDA in .xls/.pdf format shall be uploaded.

NOTE: - All the documents should be digitally signed.

#### 11.3 The following documents, which are not submitted with the bid, will be deemed to be part of the bid.

##### Section Particulars

- a. Notice inviting Tender
- b. Instruction to the bidders
- c. Conditions of Contract
- d. Contract Data

### **12. Bid Prices**

- 12.1 The Contract shall be for the whole Works, as described in Clause 1.1 of ITB.
- 12.2 The Bidder shall adopt the Item Rate Method as specified in the Notice Inviting Bid only the same option is allowed to all the Bidders.
- 12.3 All duties, taxes, royalties and other levies payable by the Contractor under the Contract, or for any other cause, shall be included in the rates, prices, and total Bid price submitted by the Bidder.
- 12.4 The rates and prices quoted by the Bidder shall be fixed for the duration of the Contract and shall not be subject to adjustment.

### **13. Currencies of Bid**

- 13.1 The unit rates and the prices shall be quoted by the bidder entirely in Indian Rupees (INR).

### **14. Bid Validity**

- 14.1 Bids shall remain valid for a period of 180 (One Hundred Eighty) days after the deadline date for bid submission specified in Clause 19 of ITB. A bid valid for a shorter period shall be rejected by the JREDA as non-responsive.

### **15. Earnest Money**

- 15.1 The Bidder shall furnish, as part of the Bid, Earnest Money, in the amount specified in the Notice Inviting Bid.



- 15.2 The Earnest Money shall, at the Bidder's option, be in the form of Bank Guarantee/Demand Draft/TDR/FDR of a scheduled commercial bank, issued in favour of the name given in the Notice Inviting Bid. The Bank Guarantee shall be valid for 12 months or more after the last date of receipt of bids. Other forms of Earnest Money acceptable to the JREDA are stated in the Notice Inviting Bid.
- 15.3 Any bid not accompanied by an acceptable Earnest Money, unless exempted in terms given in the Notice Inviting Bid, shall be rejected by the JREDA as nonresponsive.
- 15.4 The Earnest Money of unsuccessful bidders will be returned within 07 days of finalization of the tender.
- 15.5 The Earnest Money of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required Security Deposit.
- 15.6 The Earnest Money may be forfeited:
  - a. if the Bidder withdraws the Bid after bid opening (technical bid) during the period of Bid validity;
  - b. in the case of a successful Bidder, if the Bidder fails within the specified time limit to
    - i. sign the Agreement; and/or
    - ii. Furnish the required Security Deposit.

#### **16. Sealing and Marking of Bids**

- 16.1 The Bidder shall place the file marked "Technical Bid". The file will have markings as follows:

Technical Bid: To be opened on (date and time of Technical Bid opening as per clause 18.1 of ITB.)

The Technical bid file shall only contain Original of DD towards payment of bid fee and DD or BG towards payment of EMD.
- 16.2 The file containing the Technical Bid shall
  - a) Be addressed to the JREDA at the address provided in the Notice Inviting Bid
  - b) Bear the name and identification number of the Contract as defined in clause 1.1 of ITB; and
  - c) Provide a warning not to open before the specified time and date for Bid opening as defined in clause 18.1 of ITB.

#### **D. Submission of Bids**

##### **17. Deadline for Submission of Bids**

- 17.1 Complete Bids (including Technical and Financial) must be received by the JREDA at the address specified in the Notice Inviting Bid not later than the date and time indicated in the Notice Inviting Bid.
- 17.2 The JREDA may extend the deadline for submission of bids by issuing an amendment in accordance with Clause 8.3 of ITB, in which case all rights and obligations of the JREDA and the bidders previously subject to the original deadline will then be subject to the new deadline.

#### **E. Bid Opening and Evaluation**

## **18. Bid Opening**

- 18.1 The JREDA will open the bids received (except those received late). In the event of the specified date for the submission of bids being declared a holiday for JREDA, the Bids will be opened at the appointed time and location on the next working day.
- 18.2 The files containing the technical bid shall be opened. The document marked "cost of bidding document" will be opened first and if the cost of the bidding documents is not there, or incomplete, the remaining bid documents will not be opened, and bid will be rejected.
- 18.3 In all other cases, the amount of Earnest Money, forms and validity shall be announced. Thereafter, the bidders' names and such other details as the JREDA may consider appropriate, will be announced by the JREDA at the opening.
- 18.4 The JREDA will prepare minutes of the Bid opening, including the information disclosed to those present in accordance with Clause 18.3 of ITB.
- 18.5 Evaluation of the technical bids with respect to bid security, qualification information and other information furnished in Part-I of the bid in pursuant to Clause 12.1 of ITB, shall be taken up and completed and a list will be drawn up of the responsive bids whose financial bids are eligible for consideration.
- 18.6 The JREDA shall inform, by email, the bidders, whose technical bids are found responsive, date, time and place of opening as stated in the Notice Inviting Bid. In the event of the specified date being declared a holiday for the JREDA, the bids will be opened at the appointed time and location on the next working day through they or their representative, may attend the meeting of opening of financial bids.
- 18.7 At the time of the opening of the 'Financial Bid', the names of the bidders whose bids were found responsive in accordance with clause 18.5 of ITB will be announced. The financial bids of only these bidders will be opened. The remaining bids will be returned unopened to the bidders. The responsive bidders' names, the Bid prices, the total amount of each bid, and such other details as the JREDA may consider appropriate will be announced by the JREDA at the time of bid opening. Any Bid price which is not read out and recorded, will not be taken into account in Bid Evaluation
- 18.8 The JREDA shall prepare the minutes of the opening of the Financial Bids.

## **19. Process to be Confidential**

- 19.1 Information relating to the examination, clarification, evaluation, and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any attempt by a Bidder to influence the JREDA's processing of bids or award decisions may result in the rejection of his Bid.

## **20. Clarification of Bids and Contacting the JREDA**

- 20.1 No Bidder shall contact the JREDA on any matter relating to its bid from the time of the bid opening to the time the contract is awarded.
- 20.2 Any attempt by the bidder to influence the JREDA's bid evaluation, by any means, bid evaluation, bid comparison or contract award decision may result in the rejection of his bid.

## **21. Examination of Bids and Determination of Responsiveness**

- 21.1 During the detailed evaluation of "Technical Bids", the JREDA will determine whether each Bid
- (a) Meets the eligibility criteria defined in Clauses 3 and 4;
  - (b) Has been properly signed;
  - (c) Is accompanied by the required securities; and
  - (d) is substantially responsive to the requirements of the bidding documents. During the detailed evaluation of the "Financial Bids", the responsiveness of the bids will be further determined with respect to the remaining bid conditions, i.e. Backend, Integration & Databases Services, Report and feedback services.
- 21.2 The "Financial bids" of only those bidders (for general bidders only) shall be opened, who qualify all the criteria of "Minimum Eligibility Conditions".
- 21.3 A substantially responsive "Financial Bid" is one, which conforms to all the terms, conditions, and specifications of the bidding documents, without deviation as per requirement of NIB. A deviation or reservation is one (a) which affects in any substantial way the scope, quality, or performance of the Works; (b) which limits in any substantial way, inconsistent with the bidding documents, the JREDA's rights or the Bidder's obligations under the Contract; or (c) whose rectification would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
- 21.4 If a "Financial Bid" is not substantially responsive, it will be rejected by the JREDA, and may not subsequently be made responsive by correction or withdrawal of the nonconforming deviation or reservation.

## **22. Corrections of Errors**

- 22.1 Bids determined to be substantially responsive, will be checked by the JREDA for any arithmetic errors. Errors will be corrected by the JREDA as follows:
- a. where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
  - b. Where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.
- 22.2 The amount stated in the Bid will be adjusted by the JREDA in accordance with the above procedure for the correction of errors and shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount, the Bid will be rejected, and the Earnest money shall be forfeited in accordance with Clause 15.6(b) of ITB.

## **23. Evaluation and Comparison of Bids**

- 23.1 The JREDA will evaluate and compare only the bids determined to be substantially responsive in accordance with Clause 23 of ITB.
- 23.2 In evaluating the bids, the JREDA will determine for each Bid the evaluated Bid price by adjusting the Bid price by making correction, if any, for errors pursuant to Clause 22 of ITB.
- 23.3 If the Bid of the successful Bidder is seriously unbalanced in relation to the Engineer's estimate of the cost of work to be performed under the contract, the JREDA may require

the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, the JREDA may require that the amount of the performance security set forth in Clause 28 of ITB be increased at the expense of the successful Bidder to a level sufficient to protect the JREDA against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the Employer, which shall be final, binding and conclusive on the bidder.

- 23.4 After its evaluation, the JREDA may require that the amount of the performance security set forth in Clause 28 be increased at the expense of the successful Bidder to a level sufficient to protect the JREDA against financial loss in the event of default of the successful Bidder under the Contract. The amount of the increased performance security shall be decided at the sole discretion of the JREDA, which shall be final, binding and conclusive on the bidder.

#### **24. Price Preference**

- 24.1 There will be no price preference to any bidder.

### **F. Award of Contract**

#### **25. Award Criteria**

- 25.1 Subject to Clause 21 of ITB, the JREDA will award the Contract to the Bidder whose Bid has been determined to be substantially responsive to the bidding documents and who has offered the lowest evaluated Bid price, provided that such Bidder has been determined to be (a) eligible in accordance with the provisions of Clause 3 of ITB, and (b) qualified in accordance with the provisions of Clause 4 of ITB; and as per clause 14 of Notice Inviting Bid (Section-3).

#### **26. JREDA's Right to accept any Bid and to reject any or all Bids**

- 26.1 Notwithstanding Clause 25 above, the JREDA reserves the right to accept or reject any Bid, and to cancel the bidding process and reject all bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the JREDA's action without any reason.

#### **27. Notification of Award and Signing of Agreement**

- 27.1 The bidder whose Bid has been accepted will be notified of the award by the JREDA prior to expiration of the Bid validity period by cable, email, telex or facsimile confirmed by registered letter. This letter (hereinafter and in the Part I - General Conditions of Contract called the "Letter of Acceptance") will state the sum that the JREDA will pay to the Contractor in consideration of the execution and completion of the Works (hereinafter and in the Contract called the "Contract Price").

- 27.2 The notification of award will constitute the formation of the Contract, subject only to the furnishing of a performance security in accordance with the provisions of Clause 30.
- 27.3 The Agreement will incorporate all agreements between the JREDA and the successful Bidder. It will be signed by the JREDA and the successful Bidder after the performance security is furnished.
- 27.4 Upon the furnishing by the successful Bidder of the Performance Security, the JREDA will promptly notify the other Bidders that their Bids have been unsuccessful.

#### **28. Security Deposit:**

- 28.1 Successful General bidder shall submit a **security deposit @10%** of the allotted work order value in the form of Demand Draft/Bank Guarantee/FDR/TDR valid for one year on or before 15 days from issuing work order. If Bank Guarantee/DD/FDR/TDR will not be submitted within stipulated period from the date of issue of work order then JREDA shall cancel the work order.
- 28.2 Successful MSE bidders shall be required to deposit **only 1%** of security deposit (MSE Bidder) i.e. @1% of the allotted work order value in the form of Bank Guarantee/DD/FDR/TDR valid for one year as per Jharkhand Procurement Policy.
- 28.3 The Security Deposit shall be refunded / released to the bidder after expiry of 60 days from the actual date of successful completion of work.
- 28.4 The Security Deposit will have to be maintained by the bidder with JREDA till the satisfactory completion of the work. If the work extends beyond the expiry date of Bank Guarantee, bidders shall submit fresh or extend the period of validity of Bank Guarantee as per the direction of JREDA, otherwise JREDA may terminate the work order and blacklist the contractor.

#### **29. Performance Guarantee:**

- 29.1 Successful General bidder shall submit a performance guarantee **@5%** of the allotted work order value in the form of Demand Draft/Bank Guarantee/FDR/TDR valid for five years on or before release of Payment against Installation.
- 29.2 Successful MSE bidders shall submit a Performance Guarantee **@0.5%** of the allotted work order value in the form of bank guarantee/DD/FDR/TDR before release of payment against Installation.
- 29.3 The Performance Guarantee will have to be maintained by the bidder with JREDA till the completion of warranty period.
- 29.4 The Security Deposit/Performance Guarantee shall be submitted in the form of bank guarantee/FDR/TDR/DD in favour of "Director, JREDA" payable at Ranchi from any Indian Nationalized bank/Scheduled bank.
- 29.5 Non submission of Security Deposit/Performance Guarantee within the time frame, shall lead to forfeiture of EMD and cancellation of work order.
- 29.6 If Bidder/MSE unit fails to carry out the work allotted to him as per the provisions of the tender documents then such Bidder/MSE unit may be black listed for future awards of work.

### **30. Liquidated damages for delay in completion of Work:**

If the Successful Bidder fails to complete the Work within the period specified in the Agreement or any extension granted thereto under force majeure conditions, JREDA will recover from the Successful Bidder as penalty @ 0.5% at the contract price for each week of delay. The total penalty shall not exceed 10% (ten percent) of the contract price. Beyond 10 weeks of delay, JREDA may:

- a) Allow Successful Bidder to continue Work; OR
- b) JREDA may terminate the Contract with Successful Bidder and get Work completed by other party at risk and cost of Successful Bidder.

In either of the cases above, JREDA would recover the loss of subsidy from the Successful Bidder. This recovery shall be in addition to penalty for delay for 10 weeks.

### **31. Five Years Comprehensive Maintenance Contract (CMC)**

1. The Solar off-grid SPV Power Plant contract price includes the provision of 5 years mandatory Comprehensive Maintenance Contract (CMC). To ensure long term sustainability of the system, the bidder must 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 must also be provided. Failure to do shall invite penalty and action.
2. The Comprehensive Maintenance Contract shall include servicing & replacement guarantee for parts and components (such as battery, PCU, electronics, Inverter, PV modules and other hardware) of solar off-Grid SPV Power Plant for five years from the date of installation. PV modules shall be warranted for 25 years. Battery should be warranted for a minimum life of 5 years. The date of CMC maintenance period shall begin on the date of actual commissioning of solar off-Grid SPV Power Plant. It is mandatory for the contractor to carry out CMC regularly and submit report to JREDA monthly. Failure to submit monthly CMC reports timely shall invite penalty and action.
3. For any issue related to operation & maintenance, a contact number shall be made available to the concerned departments to resolve immediately, if the bidder do not attempt the rectification of any such defect within three days of communication of such complaint to the bidders, the bidder will be liable for a penalty of @0.5% at the contract price for each week of delay. The total penalty shall not exceed 10% of the contract price. Further if the outage of the plant is more than 30 days continuously, then the penalty 50% amount equal to PBG shall be recovered by JREDA either by Deduction from the CMC bill or the bidder shall pay to JREDA as penalty through DD/ and if the outage is exceeding more than 60 days than complete PBG amount shall be encashed by JREDA. This will be applicable till 5 years of O&M as per the scope of the RFP. Bidder shall submit monthly CMC report as per the **Annexure 14** with generation data of month within 7 working days of subsequent month.
4. The Contractor should have sufficient numbers of skilled staff for proper maintenance of solar off-grid power plant. The contractor have to make suitable arrangement for running, operation and maintenance of SPV Power Plant by deputing electrician and other skilled persons required in the plant 24 x 7 so that SPV off grid Power Plant will be functional every day. It is mandatory for the contractor to carry out CMC regularly for Mini grid /standalone system and submit report including maintenance schedule to JREDA monthly. Failure to submit monthly CMC reports timely shall invite penalty and action.

### **32. Insurance:**

1. The supplier shall arrange for transit and erection insurance of the materials & equipment's for supply & installation of Solar System including distribution network.
2. The Supplier shall arrange for insurance against any type of theft/damage defect of the complaint/sub-complaints for the complete comprehensive maintenance contract (CMC) period.

**33. Corrupt or Fraudulent Practices**

The JREDA requires the bidders/Contractors to strictly observe the laws against fraud and corruption in force in India, namely, Prevention of Corruption Act, 1988.

**34 Site Visit** : The Bidder, at his own cost, responsibility and risk, is encouraged to visit, examine and familiarize himself with the Site of Works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for supply & installation of the Works. The costs of visiting the Site shall be at the Bidder's own expense. He may contact the person whose contact details are given in the Notice Inviting Bid.

## Section-5

### **General Terms & Conditions**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

#### **1. 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. Scope of work:**

Request for Proposal (RFP) for Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid /Solar StandAlone System with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in different Villages of Jharkhand.

- a) Design, Construction of suitable control room of Solar Photovoltaic Power Plants (Mini/Micro Off grid) for battery Bank, Power Conditioning Unit (PCU) & Control Panels required for defined capacity of SPV Power Plant at all the Locations and Operation & maintenance of system for five years as amended/ replaced/ Sub-assumed as mentioned in the tender document.
- b) The work for **"Rate Contract for Design, Engineering, Supply, Installation Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/Solar StandAlone System with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different Villages of Lohardaga District ,Jharkhand"** complete set in all respects along with one set of operational instruction cum maintenance manual (both English and Hindi) for each set and delivery on destination/site (door delivery) basis across the State of Jharkhand as per the direction of JREDA
- c) Design, supply, installation, commissioning and operation & maintenance, for 5 years of SPV Power Packs (Solar Standalone System), all associated civil works etc. in two villages/tola of Lohardaga District, Jharkhand on turnkey basis All the material required for the installation of solar mini/micro power plant/Solar Stand Alone System as per the work order issued shall be kept at sight in custody of the contractor, JREDA shall not be responsible for any loss or damage of any material during the installation. The contractor shall be responsible and take an insurance policy for transit-cum-storage-erection for all the materials.
- d) Preparation of Pre-feasibility Report (PFR) /site survey report of the proposed sites of SPV Mini/Micro Grid Power Plants.
- e) **Chain-Link Fencing and Boundary Wall:** The Contractor shall provide chain-link fencing of the entire solar-off grid Plant boundary for plant sites. Details are mention in accordance with the provision of clause 1.24 of Section 6
- f) Execution of the work shall be carried out in an approved manner as per the technical specification of NIB, in case of any dispute relevant MNRE/BIS/ISI specification shall be followed.



g) Contractor has to depute at least two (2) Skill manpower for 24\*7 Solar Plant monitoring.

**NOTE\*\*** Manpower must be on that village only.

**3. Bid documents:**

Tender documents shall comprise of all the documents mentioned in this Bid. 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. 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 excluding GST and inclusive of all taxes, duties and levies and 5 years CMC etc. as on the opening date of tender. **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. Dispatch Instructions:**

All items/equipments shall be subject to **Pre-Dispatch Inspection (PDI)** by JREDA or its authorized representatives at the manufacturing site before their dispatch. The sample size for **PDI** shall be in accordance with BIS norms or minimum @ 2% of the quantity offered, which will be randomly selected. However, representative of JREDA will have right to demand bigger sample size, if required. The manufacturing site must have sufficient testing facilities conforming to NABL facility. The manufacturer will submit test report with regard conformity to technical specifications for the items to be dispatched to work site of JREDA. However, equipments will be dispatched from the manufacturing site only after the receipt of "Dispatch Clearance" from JREDA after acceptance of test report.

- Randomly selected Sample/s from each lot offered for PDI, may be sent to MNRE approved or NABL accredited lab for verification of Specifications and Performance of the System. The cost of such tests shall be borne by JREDA.
- No consignment shall be dispatched without the receipt of dispatch clearance from JREDA. No PDI shall be done at any site other than the concerned manufacturing site. Successful bidders have to arrange necessary equipment's conforming to NABL facility for testing the materials to be supplied during the pre-dispatch inspection by JREDA at their manufacturers unit. Failure to fulfill the PDI conditions shall lead to cancellation of work order and forfeiture of security deposit.
- The items which are being procured through this bid have to be distributed/installed on the basis of demand to be received by JREDA. Therefore, JREDA does not take responsibility that it will procure 100% quantity as has been indicated in the bid. Further, as JREDA will receive the demand and fund, the supply order shall be placed to the successful bidder for execution in due time.
- After finalization of the tender JREDA authority will take decision for issuing work order for

the work under scope to the successful bidder; and thereafter on the basis of demands received in the JREDA office, request for supply/ installation will be communicated. Then within 45 days the supplier will have to ensure pre dispatch inspection from JREDA and within next 15 days JREDA will issue Dispatch instruction. Accordingly the work of supply & installation will be completed by the vendor within 60 days period from the date of issue of dispatch instruction. The bidders shall have no claim regarding economy of scale, choice of district/s or choice of region in the state, for the purpose of transportation of items/materials to the demand/work sites.

**Preventive/Routine Maintenance:**

This shall be done by the supplier/contractor at least once in every month 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 Solar Photovoltaic Power Plant. The maintenance record should be kept properly and to be submitted at JREDA office time to time. CMC documents should be certified by Beneficiary.

## 6. Timeline/ Completion Period:

The timeline for incorporation of all the requirements as per the clauses of scope of work shall be 4 months from the date of issuance of demand note and shall be in line with the following table:

Sl. No	Activity/Deliverables	Timelines
1	Issuance of Letter of Award (LoA) to the contractor	X Days
2	Signing of Agreement between JREDA & Contractor	X+ 15 Days
3	Call for Pre Dispatch Instruction	X+ 30 Days
4	Issuance of Dispatch Instruction by JREDA	X+40 Days
5	Delivery of Material on Site	X+60 Days
6	<b>Testing and commissioning over the project</b>	X+90 Days

## 7. Payment terms and conditions:

Subject to any deduction which JREDA may be authorized to make under this contract, the successful contractor shall be entitled to payment as per given payment Schedule defined in the table below:-

Sr. No.	Activity/Deliverables	Payment Schedule
1	Supply and delivery of goods	56% of Work order Value
2	Installation, Testing & Commissioning of complete Project	24% of Work order Value
3	Completion of <b>every one year</b> period of the 5 year CMC period.	4% of Work order Value per year (4% for 5 years = Total 20%)

### Details of Payment terms and conditions as follows:-

- (a) **56%** of the of Contract price shall be paid **after supply and delivery of goods** in full and in good condition as certified by Consignee and/or JREDA Officials after submission of following documents:
- Original Commercial invoice raised from the state of Jharkhand for the supply made in triplicate (1+2).
  - Copy of duly raised delivery challan / transportation challan /lorry receipt/dispatch clearance.
  - Duly filled Annexure-12 & Annexure 17 should be submitted in three sets (one for Consignee record, one for JREDA Hq. and one for JREDA's field Executive Engineer).
  - Geo-tagged 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.
  - Submission of the Insurance Documents and Warranty Certificates of the Components.
- (b) **24%** of the of Contract price shall be paid **after Installation ,Testing & Commissioning** of complete project after submission of following documents:
- Original Commercial invoice raised from the state of Jharkhand for the Installtion ,Testing & Commissioning made in triplicate (1+2).
  - Copy of duly raised challan / transportation challan /lorry receipt/dispatch clearance.
  - Duly filled Annexure-13 & Annexure 18 should be submitted in three sets (one for Consignee record, one for JREDA Hq. and one for JREDA's field Executive Engineer).

- iv. Certificate for minimum seven days of satisfactory performance with Geo-tagged Photographs of each Solar Mini grid village along with soft copy(Pendrive).
  - v. Submission of the Detailed Project commissioning Report in Booklet form.
- (c) Rest **20%** of the Contract Price shall be paid **@4%** of the Contract Price on completion of every one year period of the 5 year CMC period. Payment for CMC can be released after submission of duty pledged DD/BG/FDR/TDR of 4% for each year valid up to CMC period. The BG/FDR will be release after submission of CMC documents in prescribed format. The Payment shall be released after submission of following documents:
- i. Original Commercial invoice raised from the state of Jharkhand for the supply made in triplicate (1+2).
  - ii. Submission of monthly reports of CMC undertaken by the manufacturer as per Annexure-14 & Annexure 19

The payment for the items to be procured/installed will be released on availability of funds. "The efforts will be made by JREDA to make available the due payments to the agency within three months against satisfactory completion of the work."

**8. Agreement:**

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

**9. Income Tax:**

Without prejudice to the obligations of the contractor 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 contractor. JREDA shall provide the contractor a certificate for such deductions of tax.

**10. Other responsibility of Successful Bidder:** Notwithstanding anything mentioned in the specifications or subsequent approval or acceptance of the DDG system by JREDA, if at all, the ultimate responsibility for satisfactory performance of the entrusted Work shall rest with the Successful Bidder.

**11. Cancellation of Work Order:**

JREDA will be at liberty to terminate/blacklist in part or full the awarded contract without prejudicing its rights and affecting the obligations of the Contractor by giving 15 (Fifteen) days' notice in writing in the following events:

- (a) If the contractor/supplier is found defaulter for delays in supply of services to JREDA as per the Scope of Work.

- (b) If the contractor/supplier fails to comply with the provision(s) of the contract including the responsibilities to fulfill the 5 years CMC as per the provisions mentioned.
- (c) If the Contractor/vendor is involved in any action of moral turpitude.
- (d) If at any time, during the tendering process or after award of work, 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 and EMD/SD will be forfeit and bidder will blacklisted.

**12. Jurisdiction of the Court:**

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

**13. Confidentiality**

The contractor shall maintain utmost confidentiality of information supplied method of operation, procedure etc. and shall not make or allow to make an unauthorized copy, use, access or other utilization of these materials commercially or otherwise, directly or indirectly except as agreed to by JREDA.

This confidentiality will be maintained by the contractor for a period of two years from the date of service level agreement. The bidder shall follow the standard information systems of security policies and Govt. of India guidelines.

## **Section-6: Technical Specification**

A ) Technical Specifications of Components for Mini/Micro Grid System with Distribution Network to Household

### **1. Solar photo voltaic modules:**

- 1.1 SPV modules and BOS including power conditioners/inverter, charge controller/MPPT units, storage batteries, cables used in SPV power generation plant should strictly have minimal technical requirement/ standards as per latest MNRE guidelines. Technical specifications defined in this section notwithstanding, the most recent technical specifications of MNRE, till the time of submission of Bid, shall supersede the specifications defined in this Bid document and Bidders shall have to abide by the same. The Bidders are advised to keep themselves updated regarding the same.
- 1.2 If specifications of any component are not provided/mentioned in RfP documents, the same shall be as per BIS/ IS/ IEC specifications applicable at the time of submission of Bid.

### **1.3 Technical specification for solar photo voltaic modules & cells**

#### **1.3.1 Mono/multi-crystalline Silicon solar photo-voltaic modules:**

- a) The SPV modules must conform to the latest edition of any of the following IEC/equivalent BIS standards for SPV module design qualification and type approval:
  - i. Crystalline silicon terrestrial SPV modules - IEC 61215/IS14286
  - ii. Thin film terrestrial SPV modules - IEC 61646/Equivalent IS (Under Dev.)
  - iii. Concentrator SPV modules & assemblies - IEC 62108
  - iv. For the SPV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701
  - v. Solar PV Mono/Multi crystalline Module should be of high efficiency (>15%)

- 1.3.2 In addition, the modules must conform to IEC 61730 Part 1-requirements for construction & Part 2- requirements for testing. For safety qualification or equivalent IS shall be applicable.

#### **1.4 Other details of technical specification solar photo voltaic modules**

- 1.4.1 SPV 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 ten (10) years and 80% at the end of twenty five (25) years. All specifications refer to the Standard Test Conditions (STC). Above modules should be as per latest MNRE /

IEC norms & tested at test centres accredited by MNRE/ NABL.

- 1.4.2 The panel should be supplied with a plastic coated thermal sticker to be affixed at the back side of SPV Module which contains the matter in English / Hindi about warning against illegal use of SPV module.
- 1.4.3 Protective devices against surges at the SPV module shall be provided. Low voltage drop bypass diodes shall be provided.
- 1.4.4 PV modules must be tested and approved by one of the IEC authorized test centres.
- 1.4.5 The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- 1.4.6 The Bidder shall carefully design and accommodate requisite numbers of the modules to achieve the rated power in his Bid.
- 1.4.7 Other general requirement for the PV modules and subsystems shall be the following:
  - a) The rated output power of any supplied module shall have tolerance of  $\pm 3\%$ .
  - b) 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 two (2) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
  - c) 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-65 rated.
  - d) IV curves at STC should be provided by Bidder.
- 1.4.8 Identification and traceability
  - a) Each SPV module must use a RF identification tag (RFID). RFID shall be mandatorily placed inside the module laminate. RFID must contain the following information:
    - i. Name of the manufacturer of SPV Module
    - ii. Name of the manufacturer of solar cells
    - iii. Month and year of 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,  $I_m$ ,  $V_m$  and PF for the module.
    - vii. Unique Serial No and Model No of the module.
    - viii. Date and year of obtaining IEC SPV 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.

## **15 Warranties**

- 1.5.1 Material Warranty:

- a) Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (5) years from the date of sale to the Bidder
- b) Defects and/or failures due to manufacturing
- c) Defects and/or failures due to quality of materials
- d) Non- conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s).

## 1.6 PCU/ Inverter

1.6.1 These solutions are required to provide uninterrupted power to 1P/ 3P AC loads using the various powers sources (PV, Grid etc.) directly or indirectly through battery storage. As SPV array produces direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. 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 (PCU)”. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter. The power conditioning unit should also have provision of charge controller in case of systems with battery backup If necessary. Inverter output should be compatible with the grid frequency.

The system consists of a single cabinet housing all the necessary components – MPPT Chargers, Grid Charger, Inverter, Changeover circuit, ACDB & Remote Monitoring System in a single IP54 type cabinet suitable for outdoor mounting.

**System Working:** The solution should provide uninterrupted AC power to loads from various power sources connected to it like PV, Battery. It should also have possibility to connect to grid supply (synchronize & export) whenever available at site in future. The unit should always work in PV priority mode such that PV power is utilized to maximum and only. Some of the salient features of operation are as below:

- a. Inbuilt Single/ Multi MPPT charger for maximum PV generation and using the generated DC power for battery charging and meeting the loads.
- b. Inbuilt AC-DC convertor to utilize Grid power to charge batteries and cater to loads in bypass mode.
- c. Inbuilt DC-AC convertor so as to convert battery power and PV power into AC and meet the loads. Inverters should also have the facility to export excess PV power back into the grid whenever grid power is available.
- d. Automatic changeover arrangement between Inverter & grid so as to ensure uninterrupted power to AC loads.
- e. Remote Monitoring System which provides complete monitoring and automation of all the elements of plant, battery bank as well as various sections of PCU.



## 1.7 SOLAR CHARGE CONTROLLERS:

1. Single/ Multi MPPT Chargers should be convert PV power in to suitable DC power to charge batteries as well as provide DC power to Inverter input.
2. Solar Charge controllers shall be MPPT type only so as to extract maximum PV power from solar modules under varying weather conditions.
3. Three Stage battery charging (Float, Boost, equalize) should be provided for extended battery life along with features like battery current limiting, DC over voltage, DC under Voltage, PV revere polarity protection etc.
4. In case of multi MPPT Chargers there should be active sharing between the modules so as to ensure that all the modules are equally loaded.
5. All the MPPT chargers must communicate with the master controller of the unit so as to ensure proper sharing between the various elements of the system.
6. All the parameters of the MPPT Chargers like PV Voltage, PV Amps (total), battery voltage, battery amps, battery status (Charging/ discharging) should be available on the front side of the unit through common display unit or through digital meters.
7. Circuit breakers to be provided at the input of each MPPT Chargers and at battery input.
8. All the parameters of the MPPT chargers should be available for remote monitoring on the RMS along with facility to control the critical parameters remotely.

## SOLAR INVERTER:

1. Full capacity inverter should be provided to convert PV/ battery power into suitable AC power (230V/ 1P or 415V/ 3P +N) depending upon the requirement. Inverter should be a single inverter of full capacity or multiple inverters of smaller capacity to meet the full rating for the entire temperature range of 0-50 degrees.
2. Inverter should be microprocessor based with inbuilt power transformer so as to provide isolation between DC and AC side.
3. Inverter should have inbuilt protections against DC under voltage, DC over voltage, AC under voltage, AC over voltage, AC over frequency, AC under frequency.
4. All the inverter parameters, faults, warnings should be displayed on a central display unit visible from the front side.
5. Inverter should have the facility to cater to loads as well as export excess PV power into the grid. For this purpose, Inverter should have the facility to synchronize with the grid supply whenever grid is within its range of voltage (+/- 15% of nominal) and frequency (+/- 3 Hz). The functionality of exporting excess power should be field selectable for the end costumer.

Typical technical features of the inverter shall be as follows:

Switching devices	IGBT/MOSFET
Control	Microprocessor /DSP

Nominal AC output voltage and frequency (In case single phase inverters are offered, suitable arrangement for Grid Frequency Synchronization range)	415V, 3 Phase, 50 Hz
Grid Frequency Synchronization range	± 3 Hz or more
Ambient temperature considered	-20° C to 50° C
Humidity	95 % Non-condensing
Protection of Enclosure	IP-20(Minimum) for indoor. IP-65(Minimum) for outdoor.
Grid Frequency Tolerance range	± 3 or more
Grid Voltage tolerance	20% &± 15 %
No-load losses	Less than 1% of rated power
Inverter efficiency(minimum)	>93% (In case of 10kW or above)
Inverter efficiency (minimum)	> 90% (In case of less than 10 kW)
THD	< 3%
PF	> 0.9

## REMOTE MONITORING

All the relevant parameters of PCU should be available for remote monitoring over internet using GPRS (4G/5G enabled) based monitoring solution. PCU shall have GPRS (4G/5G enabled) in ability based on SIM card which shall be provided by the bidder. The monthly charge of SIM card will be borne by bidder. The list of parameters should include:

Solar Charge Controller	PV Voltage, PV Current, PV Power, Daily PV Generation, Total PV Generation. (All above parameters to be included for all MPPT channels individually)
Inverter/ Mains Charger	<ul style="list-style-type: none"> <li>• Inverter Voltage, Current, Frequency</li> <li>• Mains Voltage, Current, Frequency</li> <li>• Battery Voltage, Current</li> <li>• Daily &amp; total Battery charging energy (kWh)</li> <li>• Daily &amp; total Battery discharging energy (kWh)</li> <li>• Daily &amp; Total load energy consumption(kWh)</li> <li>• Daily &amp; Total energy import energy from Grid(kWh)</li> <li>• Daily &amp; Total energy export energy from Grid(kWh)</li> <li>• Active Faults</li> </ul>

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### **SOLAR HYBRID INVERTER/PCU**

Sl. No.	PARAMETERS	SPECIFICATIONS
1	Output Voltage	230V for single phase and 230/415Volts $\pm$ 1% three phase, 4 wire output for three phase.
2	Output Frequency	50Hz $\pm$ 0.5% during standalone Inverter/PCU operation. Inverter/PCU to follow generator frequency up to $\pm$ 3 Hz of the nominal output frequency during synchronized operation
3	Rating	as stated below from 03KW -150KW
4	Surge Rating	Up to 150% of the continuous rating for a minimum of 5 seconds
5	Waveform	Sine wave output
6	THD	Less than 4%
7	Efficiency	>90% peak efficiency for single phase units. >92% peak efficiency for three phase units.
8	Regulation	Better than 2%

9	Phase Load imbalance	100% between phases for 3 phase units.
10	Internal Protection System	<ul style="list-style-type: none"> <li>• Inverter/PCU overload</li> <li>• Short circuit protection</li> <li>• Over/under AC voltage protection</li> <li>• Over/under frequency protection</li> <li>• Over/under battery voltage protection</li> </ul>
11	Front Panel Display (Inverter/PCU)	<ul style="list-style-type: none"> <li>• PV Volts, Amps, Power.</li> <li>• Inverter/PCU O/P Voltage, Current, Frequency</li> <li>• Mains Voltage, Current, Frequency</li> <li>• Battery Voltage, Current</li> <li>• Mode of Operation, Active Faults</li> <li>• Mimic diagram</li> </ul>
12	Circuit Breakers	<ul style="list-style-type: none"> <li>• PV (each Channel)</li> <li>• Battery</li> <li>• Mains</li> <li>• Load</li> </ul>
13	Environmental	
14	Temperature Range	0-50 degrees ambient

15	Humidity	0-90% non-condensing
16	Enclosure	IP-20 minimum
17	Data Logging	All the relevant parameters should be stored periodically in a USB stick/ pen drive/ flash drive to analyse the present and past data
18	Event Scheduling	<p>It should be possible to set events on a 24 hour scale. The events shall include:</p> <ul style="list-style-type: none"> <li>➤ Sleep Mode.</li> <li>➤ Grid charge</li> <li>➤ Grid Disconnect.</li> <li>➤ Grid Export.</li> <li>➤ Shut Down.</li> </ul> <p>If configured, these events will force the PCU to enter that particular mode.</p>

## 1. REMOTE MONITORING

All the relevant parameters of PCU should be available for remote monitoring/ controlling over internet using GPRS based monitoring solution. The list of parameters should include:

5.1	Solar Charge Controller	PV Voltage, PV Current, PV power, Daily Generation, Total Generation. (all above parameters to be included for all MPPT channels individually)
5.2	Inverter/PCU/ Mains Charger	<ul style="list-style-type: none"> <li>• Inverter/PCU Voltage, Current, Frequency</li> <li>• Mains Voltage, Current, Frequency</li> <li>• Battery Voltage, Current</li> <li>• Active Faults</li> </ul>

There should be facility to turn on/ off the unit remotely using GPRS based monitoring solution. All the data should be downloadable in form of excel sheets from the portal. The portal should be accessible from anywhere through a URL, user ID and password.

### Other important Features:

- a) Three phase hybrid PCU shall be used with each power plant system.
- b) PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown. (c) Inverter/PCU should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- c) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- d) Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.

- e)** In PCU/Inverter/PCU, there shall be a direct current isolation provided at the output by means of a suitable isolating transformer. If Isolation Transformer is not incorporated with PCU/Inverter/PCU, there shall be a separate Isolation Transformer of suitable rating provided at the output side of PCU/PCU units for capacity more than 100 kW.
- f)** The PCU/ Inverter/PCU generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines. 244 Compendium of Policies, Regulations, Technical Standards & Financing Norms for Solar Power Projects
- g)** The PCU / Solar Inverter/PCUs should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std.
- h)** The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS std. The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- i)** The PCU/ Solar Inverter/PCUs should be tested from the MNRE approved test centers/ NABL/ BIS/ IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.
- j)** Inverter/PCU shall be applicable to operate in the both offline and online mode so that if export facility is required then it can be converted in to grid export mode.

## **AC-DC Convertor for Grid Charging.**

1. Rectifier cum AC-DC convertor for charging batteries from Grid should be an integral part of the system. There can be separate rectifier units or the inverter should be used in a bidirectional manner to implement this functionality.
2. Battery charging should be of 3 stage type (float, boost, equalize) so as to ensure long life of the battery.
3. AC-DC convertor should be able to work with Grid in the entire range of voltage (150V-270V) and frequency (47-53 Hz). Any additional circuitry of required to achieve the above functionality should be a part of PCU itself.
4. It should inbuilt protections for AC Under Voltage/ Over Voltage, AC Under frequency/ Over Frequency, O/P Short Circuit, Battery over Voltage, Battery under Voltage etc.
5. All the parameters and faults should be displayed on a common display unit on the front panel.
6. Three Phase PCU/inverter shall be used with each power plant system (10kW and/or above) but in case of less than 10kW power plant system single phase inverter shall be used.
7. PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
8. The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
9. Built-in meter and data logger to monitor plant performance through external computer shall be provided.
10. The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2(1,2,14,30) /Equivalent BIS Std.
11. The charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS STD. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
12. Less than 10 kW PCU/inverter shall be tested from the MNRE approved test centres/NABL/BIS/IEC accredited testing-calibration laboratories. Incase of imported power conditioning units, these should be approved by international test houses.
13. PCU/inverter shall be tested from the MNRE approved test centres/NABL/BIS/IEC accredited testing-calibration laboratories.

### **a. Data acquisition system/ plant monitoring**

Considering the nature of sites which are located remotely and generally unmanned hence all the data of site has to be made available **remotely on a Web server for monitoring** as well as control. **The remote monitoring system** should have below features:

1. Data of all the equipments at sites (MPPT, Inverter, Charger, Battery Bank shall be available in a common bus preferably MODBUS 485. All this data should be input to the local modem housed inside the Inverter cabinet.
2. The modem should have capability to connect with 3G/ 4G/5G network via SIM card and send all the local data to server. It would be preferred to have dual SIM card slots for redundancy. IT should also have required antennae for signal transmission.
3. In addition to sending data remotely there should be facility to store same data locally as well so as to fetch data from weak network areas. During network failure local storage should act as buffer storage and once network resumes then data from the buffer period should be fetched back to server to avoid any loss of data.
4. The modem will draw supply from inverter/ battery bank in an uninterrupted manner such that even if inverter has failed, modem should continue to report the conditions remotely.
5. All the data should be shared remotely on 3rd part server and end customer can access data from all the sites using a common login and password.
6. The User interface should be designed in a user friendly manner with a dashboard page which shows all the lives sites along with status of power sources, faults, GPS mapping and energy graphs.
7. End user should be able to get insight of individual sites by clicking on them where they can access live status of power flow, power, energy and other parameters along with past history.
8. Facility of getting data history of individual sites should be possible along with auto generated daily reports.
9. For trouble shooting purpose it should be possible to find event history of each site in reverse chronological order.
10. It should be possible to control events like Inverter On & Off, Load On and OFF etc. from the remote portal itself
11. In case any fault occurs there should be facility to communicate the same through SMS/ E-Mail/ Wiber to the allocated numbers of end user. The ticket raised should have site details, unit ID along with nature of fault. In case the fault is not closed in stipulated time then there should be facility to escalate it to higher level through auto generated email/ SMS Wiber to pre fixed numbers or email id. This is call ticketing system.
12. All the data should also be accessible locally through USB port or pen drive.
13. From reliability point of view and avoid theft like activities at site faults like Door open (for battery and inverter separately), Smoke, module level failures, additional AIO/ DIO (2 Nos each) integration of Weather sensors (1 irradiation and 1 wind sensor) and web cam integration should be possible.



14. Successful Bidder shall install appropriate Time-of-Day (ToD) meter at Site to keep record of 15- minute time block-wise generation and supply of electricity. For this purpose, the standard and specifications of the meter shall be at par with those recommended by electricity distribution companies of Jharkhand suitable for generation and supply from plants of the size of Project.

15. The meter should have capacity to store 15-minute time block-wise data on generation and supply for 40-45 days and day-wise data on generation and supply for 6 months in such a form as to help Engineer download it using MRI.

**b. There should be an easily accessible emergency stop switch.**

**c. Protection and safety**

i. Specifically, the inverter should be three phase static solid state type power conditioning unit. Both AC & DC lines shall have suitable MCB/MCCB and Contractors to allow safe start up and shut down of the system. PCU should have protections for overload, surge current, high Temperature, over / under voltage and over / under frequency & reverse polarity. The complete operation process & safety instructions should be printed on the sticker & suitably pasted on the PCU. The inverter shall have provision for input & output isolation (automatic & manual).

ii. Each solid state electronic device shall have to be protected to ensure long life of the inverter as well as smooth functioning of the inverter. Inverter should have safety measures to protect inverter from reverse short circuit current due to lightening or line faults of distribution network.

iii. PCU should be suitably placed in control room on a suitable wooden or concrete platform with complete safety measure as per norms.

**d. Battery Bank**

The tubular VRLA/GEL batteries must be conforming to the programme of Ministry of New and Renewable Energy. The battery bank capacity shall be of different capacities as specified in the price schedule, of tubular VRLA/GEL Battery of 2 volt cells. The general specifications shall be as under:

1. The battery bank shall consist of required number of deep-discharge electrochemical storage cells, suitably interconnected as required. Parallel connections of storage cells will be discouraged.
2. The cells shall be capable of deep discharge and frequent cycling with long maintenance intervals and high columbic efficiency. Automotive or car batteries shall not be accepted.
3. The nominal voltage and capacity of the storage bank shall be selected and specified by the supplier in the Bid.
4. The self-discharge rate of the battery bank or individual cell shall not exceed four (4) percent per month.
5. The permitted maximum Depth of Discharge (DOD), shall not be more than 80%.
6. The cells shall include explosion proof safety vents.

7. Suitable number of corrosion resistant storage racks shall be supplied to accommodate the cells tester and other accessories. The rack design shall be such that minimum space is required, without any way obstructing the maintenance requirements. For metallic racks, standards specified for control panel enclosures and other metallic shall govern.
8. All the connectors should be insulated except for the end portions.
9. Charging instructions shall be provided along with the batteries.
10. A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank.
11. The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
12. 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.
13. Connectors for inter cell connection (series / parallel) shall be maintenance free screws. Front covers shall be provided for each battery bank.
14. The operating range will be 0°C to +55/60°C.
15. AH Efficiency: >95% and WH Efficiency: >85%
16. Recombination Efficiency shall be >98%
17. Self-Discharge of battery shall be <0.5% per week at 27°C.

The minimum rating of battery voltage (V) and Ah at C10 rate of discharge of different villages should be as following:

S. No.	Capacity of Power	Battery Bank Voltage	Battery capacity Ah @8.4 VAH/Wp
	Plant (kW)		
1	1	48	175
2	2	48	350
3	3	48	525
4	4	48	700
5	5	96	437.5
6	6	96	525
7	7	96	612.5
8	8	96	700
9	9	96	787.5
10	10	120	700
11	15	240	525
12	20	240	700
13	25	240	875
14	30	240	1050

15	40	240	1400
16	50	240	1750
17	60	240	2100
18	70	240	2450
19	80	240	2800
20	90	240	3150
21	100	240	3500

## **Battery Rack**

Battery rack should be of matured treated Salwood duly painted single tier or two tier (if required) or epoxy coated MS structure (for VRLA GEL Cells) with rubberized coating on battery runners. Placement of battery should be such that maintenance of the battery could be carried out easily. The non-reactive acid proof mat should be provided to cover the entire floor space covering the battery rack. Battery rack should compulsorily be placed on the appropriate rubbers pads to avoid the contact of racks with the floor, and to protect wooden rack particularly from termite.

## **Integration of SPV power plant with grid**

- a) The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization.
- b) In case of grid failure, or low or high voltage, solar PV System shall be out of synchronization and shall be disconnected from the grid. The supply would be resumed from battery bank or once the grid comes into service PV system shall again be synchronized with grid supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid power connection need to be provided.

## **Array structure**

- i. Hot dip galvanized MS mounting structures may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
- ii. The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (for minimum wind speed of 150 km/ hour). Suitable fastening arrangement that do not require drilling in roof tops should be adopted to secure the installation against the specific wind speed.
- iii. The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the

Mounting structure shall be in compliance of latest IS 4759.

- iv Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, and nuts and bolts. Aluminium structures also can be used, that can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided, either by coating or anodization.
- v The fasteners used 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
- vi Regarding civil structures the Bidder need to take care of the load bearing capacity of the roof and need to arrange suitable structures based on the quality of roof.

Vii The total load of the structure (when installed with PV modules) on the terrace should be less than  $60 \text{ kg/m}^2$ .

Viii The minimum clearance of the structure from the roof level should be 300 mm

#### **i Lightning and over voltage protection**

The SPV power plants shall be provided with lightning & overvoltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 standard. The protection against induced high-voltages shall be provided by the use of Metal Oxide Varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

#### **ii Surge Protection**

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement)

#### **iii Earthing protection**

Each array structure of the PV yard should be grounded/ earthed properly as per IS: 3043-1987. In addition the lightning arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department as and when required after earthing by calibrated earth tester. PCU, CAD and DC DB should also be earthed properly.

Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

#### **iv Array Junction Box (AJB)**

This shall consist of suitable polycarbonate / powder coated metal casting. Array junction box allows several photovoltaic strings (from 8 to 32) to be connected in parallel. The total DC

power is then distributed to the photovoltaic inverter. It includes photovoltaic string protection, overvoltage protection and a DC output switch disconnected. In this box/boxes, a separate arrangement, consisting of SPDs and DC connector of suitable specifications for array, shall be made to help it with stand respective flow of current.

1. All the incoming PV strings should connect to the box through proper MC4 connectors on +ve and –ve side. Field side connectors should be provided as a part of the system so as to ensure proper connections.
2. The number of AJB inputs should be decided depending upon the number of strings along with one spare input.
3. All the incoming strings should have proper PV fuses on +ve and –ve side. Rating of fuses should be chosen depending upon the geographical location of the plant and short circuit current of string. All the fuses should be rated for minimum 1000V DC.
4. Type II SPD to be provided at the output of each AJB (input of each MPPT) for protections against lightening surges.

5. Proper isolator/ MCCB shall be provided at the output of each MPPT charger.

**v DCDB**

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

**vi AC Distribution Board(ACDB)**

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

A separate changeover switch of proper rating should also be suitably installed in the ACDB to isolate the existing connected load from solar system and cater the power to the existing load from convention power (Mains) in case of emergency. ACDB should be connected between PCU and Load.

**vii Battery Protection Panel (BPP)**

This shall consist of box of suitable powder coated metal casting. BPP should be installed to make provision to isolate the battery bank. Proper rating HRC fuse and MCCB/isolator for DC application should be suitably installed. BPP should be connected between battery bank and DCDB. This can be integrated in the PCU.

### **viii Danger Boards**

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

### **ix Cables/ wires**

Cables of appropriate size to be used in the system shall have the following characteristics:

- i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii. Temp. Range:  $-10^{\circ}\text{C}$  to  $+80^{\circ}\text{C}$ .
- iii. Voltage rating 660/1000V
- iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- v. Flexible
- vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- vii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- viii. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.
- ix. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the Bidder. Any change in cabling sizes if desired by the Bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.
- x. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armored cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS standards.
- xi. Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.
- xii. The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.
- xiii. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2%.

## **1.23 Junction Boxes (JBs)**

1.23.1 The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.

1.23.2 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. It should be placed at 5 feet height or above for ease of accessibility.

1.23.3 Each Junction Box shall have High quality Suitable capacity SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

1.23.4 Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

1.23.5 All fuses shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers

## **1.24 Power distribution network**

Installation & Supply of minimum three (3) domestic light points along with 3 nos. LED lamps of 9W/10W/11watt each & Installation of one socket point (60W) & one socket point (100 W) thus a total of 193 W upto 200 W will be taken with proper switching arrangement, in every selected house hold of the village with complete fittings of wiring in proper manner within conduit installed on saddle/ casing capping with prior approval of JREDA. In house wiring should be done with Heavy duty wire/ cable. P.V.C. Insulated twisted bright annealed Copper wire of 1.5 Sq. mm (3core) or 2.5 Sq. mm (2core) size every light point & socket point should be provided with individual switch of 6A rating and should be of reputed make.

1. Installation of domestic connection to every household shall be through service pipe as per the standard electrical fittings. It shall use cable of aluminum wire PVC insulated sheathed and single core cable (IS694/1990 of 6 sq.mm) of reputed make.

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

3. Supply, installation & grouting of 8 meters MS Poles/tubular pole/PCC pole as per ISI/ JBVNL norms (or if the Bidder has better drawing he may attach the same with additional offer) for overhead / underground distribution network of cables at village/site. All poles/street lights should be numbered by oil paint in the specified format of JREDA. Two numbers of MS sign boards (each of 2' x 2.5' size) has to be supplied, painted (in the same manner as pole painting instructions) & clamped on the poles of the PDN as per JREDA's instructions.

4. Supply, installation & commissioning of cabling from pole to pole & pole to house. Cabling between pole to pole/ pole to house can also be done as per Bidder's design with prior approval of JREDA.

5. Supply, installation & commissioning of one number of 18 W LED Street light luminary

for five households each.

6. Supply of 1 number of street light per 5 households.

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

8. **Fencing:-** The contractor shall provide chain link fencing with barbed wire at top to protect the entire plant premises for restriction the entry of trespassers. The minimum height of the fencing at any point from ground shall be 1.5 mtr. The chain link of 50mm x 50mm diamond mesh of 10-gauge galvanized steel wire with 12-gauge barbed wires at top (02 numbers) is to be provided. The Contractor's shall be supplying, fabricating and fixing aligning vertical post of 75mm x 75mm x 6mm with cross bracing both side of ISA 45mm x 45mm x 5mm and both bracing shall be fixed by nut bolt assembly at intersecting point. Also, line wire at top and bottom of chain link mesh of 8 gauge is to be provided. The chain link fencing shall be fixed in ground by minimum 450mm deep foundation. At bottom of the fencing, 230mm thick brick masonry of 150mm depth shall be provided to avoid entry of any animal from the bottom. The brick masonry shall be rested on 100mm thick of M15 grade Plain cement concrete. The brick masonry shall be covered by 12mm plaster in 1:4 Cement Mortar.

**Note** - All cables should be of copper, tested for general test and measuring method and PVC insulated cables as per IEC 60227 / IS 694 and IEC 60502 / IS 1554. All the materials to be consumed in the power distribution network should be of best quality confirming to specification and should be with prior approval of JREDA.

In case the length of the distribution network increases/decreases due to change in number of households in the villages, then the change upto  $\pm 5\%$  should be accommodated in the same price quote. Over and above the change of  $\pm 5\%$  the amount will be adjusted on the proportionate bases.

### **Changeover, Switchgear & Terminations (Protection and safety):**

1. All Inputs and outputs should have proper circuit breakers in form of MCB/ MCCB. This includes Battery, PV (each MPPT), Load (separate in case of multiple outputs) etc.
2. All incoming PV strings should be through proper MC4 connectors along with supply of female counterparts as well.
3. Battery termination should be in form of single/ multiple set of bus bar type terminations depending upon the number of banks in parallel.
4. Load connections should be bus bar type terminals.
5. DC and AC side terminations/ switchgear should be in separate housings (both part of main housing) having PAD lock provisions along with proper cable clamping mechanism and Ip65 glands suited for battery sizes specified.
6. Proper SPD should be provided on PV, load and Grid path. (Load path should have Type-I+II SPD where others can have typical Type II SPD. In case of multiple outputs each path should have its dedicated SPD protection.
7. Automatic changeover should be ensured between inverter & Grid depending upon the availability of power sources or during failure so as to ensure uninterrupted power at load output.

### **Construction of Room for Inverter/ Battery:**



The Contractor shall plan for sufficient no. of appropriately designed rooms for inverters/ Batteries or any other equipment as per the equipment's operating guidelines. The room(s) thus constructed shall have auxiliary power supply, electrical fixtures with all necessary protections for connection of the equipment inside. All civil work shall strictly follow relevant IS standards and REC's DDG guidelines.

**Container (Optional):**

1. The whole system (Battery, Inverter, firefighting System etc.) Shall be enclosed in a container or cabinet with IP-54 Class of Protection or as per national/ International Standards. (IEC-60529). The Systems must be placed in a container and it should heaved feature for heat load management the Standards containerized Solution including both battery and hybrid inverter shall be preferred. The System's Container shall meet all the standard safety requirements. Further, the container material should have electro- chemical compatibility and resistant to acid and alkaline material should be fire retardant and it shall able to with stand the tensile stress due to internal pressure of the cells or electrolyte in the worst operating conditions.
2. The equipments of solar power generation plant except PV Modules cell be housed in container as per relevant ISO Standards. The corrosion category of the container shall be as per relevant ISO Standards and location requirement.
3. Control room and battery bank shall be in a container of suitable size for housing of batteries and control system. The facilities must be properly ventilated and must have clear space for walking for at least one person between different rows of equipment. Minimum C4 Class paint cell be used for container to protect against Corrosive conditions.

**B ) Technical Specifications of WHITE LED (W-LED) BASED SOLAR BASED HOME SYSTEMS (SOLAR POWER PACKS)**

A solar home system (SHS) provides a comfortable level of illumination in one or more rooms of a house. The SHS consists of a PV module. Control electronics, battery, and luminaire(s). The Systems featuring 5 numbers of luminaires based on White Light emitting Diode (W-LED) and could be used to run a small DC fan and / or a 12-V DC television with mobile charging.

The System consists of:

S.No	Item/System	Specification
1	SPV Module (with Module Mounting Structure)	<b>200 Wp</b>
2	Battery	<b>12.8 Volts, 80 Ahr.</b> (approx. 1000 Watt hours) Lithium Ferro phosphate. A very good battery management system to be incorporated and got it tested with battery from MNRE/NABAL/IEC accredited lab as per IEC/BIS standard. IEC 62133 , IEC 61960 & UL 1642 : SAFETY OF LIFEPO4 BATTERY

3	Solar DC Charge Controller	<p>Solar Charge Controller with MPPT to appropriately charge and protect the battery against overcharge. Charge Controller should have following Protection:</p> <ul style="list-style-type: none"> <li>• <b>Transient/Surge.</b></li> <li>• <b>Over Charging/Deep Charging.</b></li> <li>• <b>Solar and battery reserve Protection.</b></li> <li>• <b>Reverse current from battery at night.</b></li> <li>• <b>Overload-Auto Shutdown and Restart:</b></li> </ul> <table border="1" data-bbox="630 488 1390 734"> <thead> <tr> <th data-bbox="630 488 1125 546">Description</th> <th data-bbox="1125 488 1390 546">12.8 V Operation</th> </tr> </thead> <tbody> <tr> <td data-bbox="630 546 1125 613">Higher Vol. Cut-off Setting</td> <td data-bbox="1125 546 1390 613">14.6 V</td> </tr> <tr> <td data-bbox="630 613 1125 680">Battery Low Load Disconnect</td> <td data-bbox="1125 613 1390 680">11.5 V</td> </tr> <tr> <td data-bbox="630 680 1125 734">Load Reconnect</td> <td data-bbox="1125 680 1390 734">12.6 V</td> </tr> </tbody> </table>	Description	12.8 V Operation	Higher Vol. Cut-off Setting	14.6 V	Battery Low Load Disconnect	11.5 V	Load Reconnect	12.6 V
Description	12.8 V Operation									
Higher Vol. Cut-off Setting	14.6 V									
Battery Low Load Disconnect	11.5 V									
Load Reconnect	12.6 V									
4	Load	<ul style="list-style-type: none"> <li>○ 5 Nos. of White Light Emitting Diode (W-LED) Luminaire (7.0 Watts each ) for 5-6 Hrs./day</li> </ul> <p style="text-align: center;"><b>and</b></p> <ul style="list-style-type: none"> <li>○ 1 D.C. Pedestal Fan(20Watts) for 5-6 Hrs./day</li> <li>○ Provision for Mobile Phone Charging.</li> <li>○ Power for a 12V DC TV (max. 25 watts) set, to be purchased separately(<b>Optional</b>) for 5-6 hrs./day</li> </ul>								

## TECHNICAL DETAILS

### PV MODULE(S)

- i. Indigenously manufactured PV modules should be used
- ii. The PV modules should be made up of crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II /BIS 14286 from an NABL or IECQ accredited Laboratory.
- iii. The capacity should be minimum 200 Wp Multi/Mono Crystalline/MNRE approved solar modules having 24 V nominal voltage with 48 full cells with minimum 15% Module Efficiency.
- iv. The terminal box on the module should have a provision for opening, for replacing the cable, if required.
- v. There should be a Name Plate fixed inside the module which will give: a. Name of the Manufacturer or Distinctive Logo. b. Model Number c. Serial Number d. Year of manufacture
- vi. 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.
- vii. PV module 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.

### BATTERY

- i. Lithium Ferro phosphate type battery only.
- ii. Capacity approx. 1000 Watt Hour
- iii. Maximum Depth of Discharge 90%
- iv. Battery should conform to the latest BIS/International standards.
- v. The cell and battery should be got tested as per IEC62133-2012 or BIS specifications with MNRE/NABAL accredited center
- vi. Cycle life: more than 2000 cycles

## **LIGHT SOURCE**

- i. Two light sources shall be with 7.0 Watts of white LED and Light Output should be Minimum 25 Lux when measured at the periphery of 2.5 meter diameter from a height of 2.5 meter
- ii. At any point within area of 2.5mtr diameter periphery the light level should not be more than three times of the periphery value.
- iii. The illumination should be uniform without Dark Bands or abrupt variations and soothing to the eyes. Higher output would be preferred.
- iv. The colour temperature of W-LEDs used in the system should be in the range of 5500 °K-6500°K.
- v. LEDs should not emit ultraviolet light.
- vi. The light output from the W-LED light source should be constant throughout the duty cycle.
- vii. The lamps should be housed in an assembly suitable for indoor use.
- viii. white LED of NICHIA/OSRAM/SEOUL SEMICONDUCTOR/PHILIPS/LUMILEDS/LEDNIUM/LG Make or equivalent (Having LM 80 test report) shall only be use
- ix. The LEDs luminaire should have life time about 50,000 hrs as per IESNA latest standard.
- x. The lumen depreciation of LED luminaire shall not be more than 30% at 50,000 burning hours as per IESNA latest edition.
- xi. The Luminary should be tested as per LM79-08 or latest standard by the MNRE/NABL accredited lab for such Standards and copy of such test certificate should be submitted. The test report should have the Polar curve of luminaire

## **ELECTRONICS**

- i. The total electronic efficiency should be at least 85%.
- ii. Electronics should have temperature compensation for proper charging of the battery throughout the year.
- iii. The idle current should be less than 20 mA.
- iv. The voltage drop from module terminals to the battery terminals should not exceed 0.6 volts including the drop across the diode and the cable when measured at maximum charging current.
- v. The PCB containing the electronics should be capable of solder free installation and replacement.
- vi. Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

## **ELECTRONIC PROTECTIONS**

- i. Adequate protection is to be incorporated under "No Load" condition.
- ii. The system should have protection against battery overcharge, deep discharge condition.
- iii. Load reconnect should be provided at 80% of the battery capacity status.
- iv. Adequate protection should be provided against battery reverse polarity.
- v. Fuses should be provided to protect against short circuit conditions.
- vi. Protection for reverse flow of current through the PV module(s) should be provided.

## **MECHANICAL COMPONENTS**

- i. Corrosion resistant frame structure should be provided to hold the SPV module.
- ii. The frame structure should have provision to adjust its angle of inclination to the horizontal, so that it can be installed at the specified tilt angel.
- iii. Light source should be either for wall mounted or ceiling mounted or can be hung from the ceiling in a stable manner, as per site requirements.
- iv. A metallic box of minimum 18 SWG thick made of pre coated galvanized (60 micron thickness) ms sheet for housing the storage battery indoors should be provided
- v. The size of box should be as per battery size. The battery should be fixed inside the battery box so it should be properly separated to avoid the electrical contract between battery and box.
- vi. The Box should have separate compartment for BMS with IP65.
- vii. Signboard of JREDA should be installed in each village covered under the scheme.
- viii. Specification of board:
  - Iron Sheet: MS Sheet 14 gauge (1.6mm thickness)
  - Size of Iron Sheet: 3Feet x 4Feet (Length x Breadth)
  - Height of board from ground level: 5 feet
  - Support L type angle: 3"x3", 6 mm thickness

- Sample copy of signboard material will be provided later

### **Pedestal BLDC FAN**

The fan should be 12 volt DC operated with following minimum requirement:

- i. Type of motor: BLDC
- ii. Rated voltage: 12 Volt
- iii. Sweep size : 300 mm (diameter) (minimum).
- iv. Blade: Three leaves Alluminium Powder Coated
- v. Power: 20 Watt (+ 5% including instrumental errors)
- vi. Air delivery: > 150 CMM ( cubic meter per minute)
- vii. RPM: >1100
- viii. Speed: 3 electronically controlled.  
Operating Voltage range: 10.8 Volt to 14.4 Volt.

**Annexure-1**

**Format for Covering Letter**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

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

To,

The Director,  
Jharkhand Renewable Energy Development Agency  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi - 834002.

**Sub:** Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 08 different villages of Lohardaga districts.

Sir,

We are hereby submitting our offer in full compliance with the terms and condition of the above NIB No. We have submitted the requisite amount of Bid fee in the form of DD & "Earnest Money" in the form of Bank Guarantee/DemandDraft/TDR/FDR, valid for twelve months.

The tender is uploaded on [www.jharkhandtenders.gov.in](http://www.jharkhandtenders.gov.in) as per the requirement of the website separately Technical Bid & Financial Bid.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

**Annexure-2**

**Check List for Technical bid**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

<b>S. No.</b>	<b>Particulars</b>	<b>Uploaded Yes / No</b>	<b>Page No.</b>
1	Covering Letter as per <b>Annexure-1.</b>		
2	Information about the Bidder as per <b>Annexure-3.</b>		
3	Declaration by Bidder as per <b>Annexure-4.</b>		
4	Average Annual Turnover for last three years ending 31.03.2022 (Attach average annual turnover certificate as per <b>Annexure-5</b> )		
5	Net worth as on 31.03.2022. (Attach proof & Net worth certificate as per <b>Annexure-6</b> )		
6	Authority Letter for Signing Bid Document & Attending Bid Opening Meeting as per <b>Annexure-7</b>		
7	The proof of related work in any PSU/Govt. organization in the last five years as per NIB in <b>Annexure-8.</b> Attach copy of the order/work completion and certificate indicating its successful execution.		
8	To indicate the functionality of the firm attach the balance sheet of last three years ending 31.03.2022 of the firm duly certified by statutory Auditor.		
9	A copy of valid GST registration certificate		
10	A copy of valid test Report from MNRE approved Labs of the offered system		
11	Details of tender document fee (Bank Draft No. and Date)		
12	Details of Earnest money Deposit (Bank Guarantee/DD Number & Date)/TDR/FDR/		
13	Details of Bid fee (Bank Guarantee/TDR/FDR/DD Number & Date)		

*\* Please number the pages of the uploaded documents and write it in the box.*

**Please ensure:**

- i) That all information is provided strictly in the order mentioned in the check list mentioned 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 condition mentioned therein.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

**Annexure-3**

**Format for Information about the Bidder**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contract (CMC) on Turnkey basis in 08 different villages of Lohardaga district.

1	Name of the Agency /Firm	Address and other details of the Agency/Firm
2	Website Address (if any)	
3	Phone Numbers Fax Numbers	
4	E-mail	
5	Contact person's Name	
6	Contact Person's Mobile Number	
7	Contract Person's email ID	
8	GPS Co-ordinate of Registered Office	
9	GPS Co-ordinate of Factory Campus	
10	Nature of Firm (Proprietorship/Partnership /Pvt. Ltd./Public Ltd. Co./Public Sector)	
11	Permanent Account Number (PAN)/TIN (Attach proof)	
12	Firm's Registration Number (Attach proof)	
13	GST Certificate (Attach proof)	
14	Specify the Item Originally Manufactured (SPV module/PCU/Battery) (Attach copy of Registration Certificate of Industry Department)	
15	Quoted capacity (kWp) & village name	
16	Particulars of Earnest Money	
17	Place where Materials will be Available for Inspection	
18	Other details and remarks, if any	

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

**Annexure-4**

**Declaration by the Bidder**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

(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 rate 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 Government Dept. /PSU.
11. The Bidder gives the assurance to execute the tendered work as per specifications terms and conditions.
12. 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-5**

**Format For Financial Requirement – Annual Turnover**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

To,

The Director,  
Jharkhand Renewable Energy Development Agency  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi - 834002

Dear Sir,

Sub: Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/Solar Stand Alone with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in different 8 villages of Lohardaga District ,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 31.03.2022

Sl. No.	Financial Year	Turn over (in Rupees)
1.	2019-20	
2.	2020-21	
3.	2021-22	
	<b>Average Annual Turnover</b>	

**UDIN No.:** .....

*Authorised Signatory*  
(Power of Attorney holder)

Date:

*Statutory Auditor*  
(Stamp & Signature)

**Annexure-6**

**Format for Financial Requirement - Net Worth Certificate**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

To,

The Director,  
Jharkhand Renewable Energy Development Agency  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi - 834002

Dear Sir,

Sub: Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid/Solar Stand Alone with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in different 8 villages of Lohardaga District ,Jharkhand.

Sir,

This is to certify that Net worth of \_\_\_\_\_ {insert the name of Bidding Company}, as on 31st March 2022 is Rs\_\_\_\_\_. The details are appended below.

<b>Particulars</b>	<b>Amount (In Rs.)</b>
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 31 <sup>st</sup> March 2022	

**UDIN No.:** .....

*Authorised Signatory*  
(Power of Attorney holder)

*Statutory Auditor*  
(Stamp & Signature)

**Annexure -7**

**Format of Power of Attorney for Signing Bid**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**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 **NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

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 Agency in 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

\_\_\_\_\_Signature (Name, Designation and Seal)

Accepted by

..... (Signature) (Name, Designation and Seal)

(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-8**

**Details of Orders Received and Executed in Last 7 Years**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Details of Orders Received & Executed as per NIB for Govt. Organization during Last Seven Years.

<b>SL. No.</b>	<b>Name of Agency / Organization</b>	<b>Work Order No., Date.</b>	<b>Date of commissioning and full execution with letter no. &amp; date of the performance certificate</b>	<b>Page number of the Work order/ purchase order submitted</b>	<b>Page number of the performance certificate/recommendation submitted</b>

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 with page number. Proof of work order/purchase order and corresponding performance certificate should be submitted/enclosed in the bid. Non submission of the work orders and corresponding performance certificate will be treated as no experience.

**Annexure-9**

**Financial Bid in PDF.**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**(To be submitted on the letterhead of the company/firm)**

S.N.	Village	Census Code	Plant Capacity (kWp)	Cost of Module (INR)	Cost of PCU with RMS (INR)	Cost of Battery (INR)	MMS INR	Pole, Cable and all BOS (INR)	Construction of Control room, Fencing, I & C and all other Civil Work (INR)	Distribution network connection to individual HHs cost (INR)	Total Amount Excluding GST
1											
2											
3											
4											
5											
6											
7											
8											

1. Above quoted price are complete in all respect as per Technical Specifications
2. Certified that rates quoted are as per specifications, terms & conditions mentioned in the bid document.
3. Price should be quoted in complete numeric figure and words.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

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

**Annexure-10**

**Format for Submitting Bank Guarantee for Earnest Money Deposit**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

(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  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi - 834002.

WHEREAS ..... (Contractor's name) (hereinafter referred to as "Contractor"), 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 Contractor 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.

WHEREAS you have agreed to accept a Bank Guarantee/DD/FDR/TDR from us in ..... instead of earnest money in cash from the Contractor.

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 Contractor/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 Contractor/Tenderer for the work under "Notice Inviting Bid Ref. No.:" **NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

1. ".  
Your decision as to whether the Contractor/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 Contractor/Tenderer for the work under "Notice Inviting Bid Ref. No.:" **NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**
2. 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 Contractor/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-11**

**Undertaking by MSEs of Jharkhand for availing preferential treatment**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

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

I/We \_\_\_\_\_ (here in after referred to as MSE bidder) being desirous of tendering for the 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

- i. The Manufacturing or Services unit is located at.....District..... in the State of Jharkhand.
- ii. The Head office or Corporate Office of the unit/company/enterprise is at ..... Within the territorial Jurisdiction of Jharkhand.
- iii. The unit/company/enterprise is registered with (tick):-
  - a. Directorate of industries/District Industries Center, (Copy attached).
  - b. Khadi and Village Industries Board, (Copy attached).
  - c. Directorate of Handloom, Sericulture and Handicraft of Jharkhand Govt., (Copy attached).
  - d. Industrial Area Development Authorities, (Copy attached).
  - e. National Small Industries Cooperation Ltd, (Copy attached).
  - f. Other body specified by Directorate of Industries, Jharkhand Govt. from time to time and other industrial units/enterprises which have submitted IEM and been issued Date of Production (DOP) certificate by GM, DIC/MD, Industrial Area Development Authorities Director, Industries, GoJ.
  - g. MSE having Udyog Adhar Number..... issued by Ministry of Micro, Small and Medium enterprises, Gol and has been duly verified, whether unit is existing / functional and doing regular production at..... (Specify capacity) by GM, DIC/MD, Industrial Area Development Authorities / Director, Industries, GoJ", (Copy attached).
- iv. The unit/company/enterprise is registered under Jharkhand Goods and Services Tax (JGST) Act-2017 or The Central Goods & Services Tax (CGST) Act 2017, (Copy attached).
- v. The unit/company/enterprise have encouraged local people in employment.
- vi. The unit/company/enterprise complies with all statutory and legal formalities of concerned regulators/ Act.
- vii. That the product/services being supplied to JREDA has been manufactured/created by the unit located in Jharkhand only and agree to submit details of batch number/date or any other identifiable tag as per prevalent practice.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

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



**Annexure-12**

**Certificate of Delivery of Mini/Micro Grid System with Distribution Network with Households received from the Consignee as Proof of Compliance by the Supplier**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Certificate Name of Beneficiary:.....

Address of Beneficiary:.....

Certified that we have received the following materials of .....Nos. of Solar Systems and grid:

1. Serial nos. of SPV Modules & Make:.....
2. Serial nos. of Batteries & Make:.....
3. Serial nos. of LED Luminaries & Make:.....
4. Serial nos. of Charge Controller & Make:.....
5. Serial no. fan & Make:.....
6. Other materials:.....

Above materials have been supplied by M/s.....on dated.....

Attachment: Photographs of materials (Module, Battery, Charge Controller, fan etc.)

**Signature of Consignee**

**Signature of Supplier along with Seal**

**Date.....**

**Date.....**

*Signature of JREDA representative*

*Date.....*

**Annexure-13**

**Certificate of Installation of Mini/Micro Grid System with Distribution Network with Households received from the Consignee as Proof of Compliance by the Supplier**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Certificate Name of Beneficiary:.....

Address of Beneficiary:.....

.....

Certified that M/s ..... has successfully installed .....Nos. of Solar System and Grid on..... and are in working condition since seven days:

1. Serial nos. of SPV Modules & Make:-----
2. Serial nos. of Batteries & Make:.....
3. Serial nos. of LED Luminaries & Make:.....
4. Serial nos. of Charge Controller & Make:.....
5. Serial nos. of fan & Make:.....
6. Other materials:.....

Attachment: Photographs of installed system (Three views of each component of each system)

**Signature of Consignee**

**Signature of Supplier along with Seal**

**Date.....**

**Date.....**

*Signature of JREDA representative*

*Date.....*

**Annexure-14**

**Format for Quarterly O&M and CMC Report**

**NIB No:**  
**12/JREDA/SPV/LOHARDAGA/OFFGRID/**  
**23-24**  
[On the letterhead of Bidding Company]

To,  
The Director,  
Jharkhand Renewable Energy Development Agency  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi – 834002.

**Sub:** Request for Proposal (RFP) for Design, Engineering, Supply, Installation, Testing & Commissioning of Solar Photo voltaic Mini/Micro Grid with distribution network including control room & Connection to households along with 5 years Operation & Comprehensive Maintenance Contact (CMC) on Turnkey basis in 8 different villages of Lohardaga District, Jharkhand.

Sir,  
Date of Installation.....  
JREDA Dispatch Order No..... Dated.....  
Place of Supply.....  
Name of Technicians:.....

S . N	Place of Installed System	System Details	Date of Site Visit/CMC	Fault observation	Fault repaired	Status of the system
1		Module No.				
		Battery No.				
		Charge Controller No.				
		Luminaire and Fan				
2		RMS/Data logger system working or not				
3		Total generation for the month in kWh:				
4		CUF for month in %:				
5		RMS login id:				
		Password:				

(Signature of Consignee)

Name:

Designation:

Seal:

**Signature of JREDA representative**

**Signature of Agency with Seal**

**Annexure-15**

**Performance Guarantee Testing Report format**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

This is to certify that the Solar System and Grid in village.....block.....

District.....is working satisfactory for the following parameters:

- 1.
- 2.
- 3.
- 4.

Further, the following installations/structures were found in satisfactory working order

- 1.
- 2.
- 3.
- 4.

It is also certified that the Successful Bidder provided power .....hours per day for.....days every month from the date of commissioning of the plant.

**Signature of Consignee**

**Signature of Supplier along with Seal**

**Date.....**

**Date.....**

**Signature of JREDA representative**

**Date.....**

**Annexure-16**

**Warranty Card**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

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

1.	Name & Address of the Manufacturer/ Supplier of the System	
2.	Name & Address of the Purchasing Agency	
3.	Date of Supply of the System	
4.	Details of PV Module(s) Supplied in the System	
	(a)	Name of the Manufacturer
	(b)	Make
	(c)	Model
	(d)	Serial No.
	(e)	Wattage of the PV Module(s) under STC
	(f)	Guarantee Valid Up To
5.	Details of Battery	
	(a)	Name of the Manufacturer
	(b)	Make
	(c)	Model
	(d)	Batch/Serial No(s).
	(e)	Month & Year of Manufacture
	(f)	Rated V & AH Capacity at C/20 or C/10 Rated at 27°C
	(g)	Guarantee Valid Up To
6.	Details of Electronics & Other BOS Items	
	(a)	Name of the Manufacturer
	(b)	Make
	(c)	Model
	(d)	Serial No(s).
	(e)	Month & Year of Manufacture
	(f)	Guarantee Valid Up To
7.	Designation & Address of the Person to be Contacted for Claiming Warranty Obligations	

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

**Filling Instructions:**

1. The Mini/Micro Grid with Distribution Network to Households system 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.

**Annexure-17**

**Certificate of Delivery of Solar Stand Alone Systems (Solar Power Packs) received from the Consignee as Proof of Compliance by the Supplier**  
**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Certificate Name of Beneficiary:.....

Address of Beneficiary:.....

.....

Certified that we have received the following materials of..... Nos. of Solar Stand Alone Systems (Solar Power Pack):

1. Serial nos. of SPV Modules (200Wp) & Make:.....

2. Serial nos. of Batteries (80Ah) & Make:.....

3. Serial nos. of LED Luminaries & Make:.....

4. Serial nos. of Charge Controller & Make:.....

5. Serial no. fan & Make:.....

6. Other materials:.....

Above materials have been supplied by M/s.....on dated.....

Attachment: Photographs of materials (Module, Battery, Charge Controller, fan etc.)

**Signature of Consignee**

**Signature of Supplier along with Seal Date.....**

**Date.....**

*Signature of JREDA representative*

*Date.....*

**Annexure-18**

**Certificate of Installation of Solar Stand Alone Systems (Solar Power Packs) received from the Consignee as Proof of Compliance by the Supplier**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

Certificate Name of Beneficiary:.....

Address of Beneficiary:.....  
.....

Certified that M/s ..... has successfully installed .....Nos. of Solar Stand Alone Systems on.....and are in working condition since seven days:

1. Serial nos. of SPV Modules (200Wp) & Make:-----
2. Serial nos. of Batteries (80Ah) & Make:.....
3. Serial nos. of LED Luminaries & Make:.....
4. Serial nos. of Charge Controller & Make:.....
5. Serial nos. of fan & Make:.....
6. Other materials:.....

Attachment: Photographs of installed system (Three views of each component of each system)

**Signature of Consignee**

**Signature of Supplier along with Seal**

**Date.....**

**Date.....**

*Signature of JREDA representative*

*Date.....*

**Annexure-19**

**Format for Quarterly O&M and CMC Report**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

[On the letterhead of Bidding Company]

To,  
The Director,  
Jharkhand Renewable Energy Development Agency  
3rd Floor, S.L.D.C. Building,  
Kusai Colony, Doranda,  
Ranchi – 834002.

Sub: Empanelment of Agencies for Rate Contract for Household Electrification Works through Solar Stand Alone Systems including Five Year Comprehensive Maintenance Contract (CMC) on Turnkey basis in 02 different villages of Lohardaga District

Sir,in

Date of Installation.....

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

Place of Supply.....

Name of Technicians:.....

S. N.	Place of Installed System	System Details	Date of Site Visit/CMC	Fault observation	Fault repaired	Status of the system
		Module No.				
		Battery No.				
		Charge Controller No.				
		Luminaire and Fan				

(Signature of Consignee)

Name:

Designation:

Seal:

**Signature of JREDA representative**

**Signature of Agency with Seal**



**Annexure-20**

**Warranty Card**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

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

1.	Name & Address of the Manufacturer/ Supplier of the System	
2.	Name & Address of the Purchasing Agency	
3.	Date of Supply of the System	
4.	Details of PV Module(s) Supplied in the System	
	(a) Name of the Manufacturer	
	(b) Make	
	(c) Model	
	(d) Serial No.	
	(e) Wattage of the PV Module(s) under STC	
	(f) Guarantee Valid Up To	
5.	Details of Battery	
	(a) Name of the Manufacturer	
	(b) Make	
	(c) Model	
	(d) Batch/Serial No(s).	
	(e) Month & Year of Manufacture	
	(f) Rated V & AH Capacity at C/20 or C/10 Rated at 27°C	
	(g) Guarantee Valid Up To	
6.	Details of Electronics & Other BOS Items	
	(a) Name of the Manufacturer	
	(b) Make	
	(c) Model	
	(d) Serial No(s).	
	(e) Month & Year of Manufacture	
	(f) Guarantee Valid Up To	
7.	Designation & Address of the Person to be Contacted for Claiming Warranty Obligations	

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

**Filling Instructions:**

3. The standalone system 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.
4. 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.

**Annexure-21**

**Quoted Village details under Lohardaga District**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**(To be submitted on the letterhead of the company/firm)**

<b>Sr.No.</b>	<b>Block</b>	<b>Village/Tola</b>	<b>Mode of Electrification</b>	<b>Plant Capacity (kWp)</b>	<b>Quoted (YES/NO)</b>
1	Peshrar	Doodhpatan-1	Solar Mini/Micro Grid	4.5	
2	Peshrar	Doodhpatan-2 Bhagat Tola	Solar Mini/Micro Grid	3.6	
3	Peshrar	Ganeshpur	Solar Mini/Micro Grid	16.5	
4	Peshrar	Chari	Solar Mini/Micro Grid	10.5	
5	Peshrar	Manhepaat	Solar Mini/Micro Grid	16.5	
6	Peshrar	Hurmur	Solar Mini/Micro Grid	13.5	
7	Peshrar	Malangveer Tola	Solar StandAlone	<b>3</b>	
8	Senha	Samri Tola	Solar StandAlone	<b>2</b>	

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

**Annexure-22**

**Financial Bid for Solar StandAlone System in PDF.**

**NIB No: 12/JREDA/SPV/LOHARDAGA/OFFGRID/23-24**

**(To be submitted on the letterhead of the company/firm)**

<b>S. No.</b>	<b>Description</b>	<b>Quantity</b>	<b>Unit</b>	<b>Unit Rate (in Rs.)</b>	<b>Amount Excluding GST (in Rs.)</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
1	SPV Module (with Module Mounting Structure) 200 Wp		Per Wp		
2	12.8 Volts, 80 Ahr. (approx. 1000 Watt hours) Lithium Ferro phosphate. A very good battery management system to be incorporated and got it tested with battery from MNRE/NABAL/IEC accredited lab as per IEC/BIS standard. IEC 62133 , IEC 61960 & UL 1642 : SAFETY OF LIFEPO4 BATTERY		1 Set		
3	Solar DC Charge Controller		1 Set		
4	Pedestal BLDC Fan		1 Set		
5	LED & Other electronic accessories		1 Set		
6	Installation of the system including fixing of pole in the ground.		1 Set		
7	Any other cost/ charges.		.....		
8	CMC (10% of the total cost of system)		1 Set		
<b>Total</b>					

1. Above quoted price 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.
2. Certified that rates quoted are as per specifications, terms & conditions mentioned in the bid document.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

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