Bid Specifications for

Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Government of Jharkhand

Jharkhand Renewable Energy Development Agency (JREDA)

Tender reference no.: 03/JREDA/GCRT/RD/25-26

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

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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

e-Procurement Notice

Tender reference no.: 03/JREDA/GCRT/RD/25-26 **Dated: 09.04.2025.**

Online bids are invited for Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand (JREDA). The details are as follows:

1	Name of the work	Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.
2	Tentative quantity (kWp)	**03 MWp**
3	Completion of work	**04 (Four) Months**
4	Period of contract	**05 (Five) Years**
5	Date of publication of NIT on website: http:// jharkhandtenders.gov.in	**21.04.2025 (Monday)**
6	Date & time of Pre-bid meeting	**29.04.2025 (Tuesday)** at 2.00 P.M.
7	Last date & time for receipt of online bids	**14.05.2025 (Wednesday)** up to 05:00 PM
8	Submission of Bid fee and EMD through Online Via SBI Payment Gateway of Jharkhand Tenders	**14.05.2025 (Wednesday)** up to 5.00 P.M.
9	Technical Bid Opening Date	**16.05.2025 (Friday)** at 3.00 P.M.
10	Name & address of office inviting tender	Director, Jharkhand Renewable Energy Development Agency (JREDA) 3rd Floor, SLDC Building, Kusai, Doranda, Ranchi-834002 (Jharkhand)
11	Contact no. of procurement officer	0651-2491163/67/61/7004806449
12	Helpline no. of e-procurement	0651-2491163/67/61

Any corrigendum/addendum can be seen on website: http://jharkhandtenders.gov.in & www.jreda.com. Further details can be seen on website: http://jharkhandtenders.gov.in & www.jreda.com

Sd/-
Director,
JREDA, Ranchi

Section -1: List of Important dates & details of Bids

NIB No: 03/JREDA/GCRT/RD/25-26

1.	Name of work	**Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand (JREDA).**
2	Tender reference no.	**03/JREDA/GCRT/RD/25-26**
3	Contract period	**05 (Five) Years**
4	Mode of submission of tender	**Online through www.jharkhandtenders.gov.in**
5	Tender fee (To be submitted through Online Via SBI Payment Gateway of Jharkhand Tenders)	❖ **For General Bidders: Rs. 11,800/- only (including GST).** ❖ **For MSEs of Jharkhand (Manufacturing Sector): Nil.**
6	Earnest Money Deposit (To be submitted through Online Via SBI Payment Gateway of Jharkhand Tenders)	❖ **For General Bidder: Rs. 4,00,000/- (Four Lakhs) only** ❖ **For MSEs of Jharkhand (Manufacturing Sector): Nil.**
7	Date of Publishing on website	**21.04.2025 (Monday)**
8	Date & time of Pre-bid meeting	**29.04.2025 (Tuesday)** at 2.00 P.M.
9	Last date & time for receipt of online bids	**14.05.2025 (Wednesday)** at 5.00 P.M.
10	Submission of Bid fee and EMD through Online Via SBI Payment Gateway of Jharkhand Tenders	**14.05.2025 (Wednesday)** up to 05:00 PM
11	Date & Time of Technical bid opening	**16.05.2025 (Friday)** up to 3.00 P.M.
12	Authority inviting bids	Director, Jharkhand Renewable Energy Development Agency (JREDA)
13	Address	Jharkhand Renewable Energy Development Agency (JREDA) 3rd Floor, SLDC Building, Kusai, Doranda, Ranchi- 834002. Ph. No: 2491161, Fax No: 0651-2491165 Web site: www.jreda.com E-mail: info@jreda.com

Note:

Note: - Only electronic receipt of Cost of Tender and Earnest Money Deposit (Bid Security) will be acceptable as per provisions of Standard Operating Procedure (SOP). Issued by Information Technology & e- Governance Department, Government of Jharkhand Vide Order Memo No. 120, Dt.03.10.23 of Secretary, Information Technology & e-Governance Department, Government of Jharkhand. (Copy Attached)

Bank Guarantee must include SFMS (Structural Financial Management System) as per JREDA Bank Details Which is as:

Name of Bank: State Bank of India
IFSC Code: SBIN0009010
Branch Details: Ashok Nagar Branch, Ranchi

Section-2: Instructions to Bidders
NIB No: 03/JREDA/GCRT/RD/25-26

A Detailed instructions & documents to be furnished for online bidding.

1. Detailed instructions & documents to be furnished for online bidding.
2. The guidelines to submit bid online can be downloaded from website http://jharkhandtenders.gov.in.
3. The interested bidders can download the bid from the website "http://Jharkhandtenders.gov.in".
4. 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.
5. 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.
6. Bids will be opened online as per time schedule mentioned in section 1.
7. Bidders should get ready with scanned copies of the cost of documents & Online EMD as specified in the tender document. Before submission of online bids, bidders must ensure that a scanned copy of all the necessary documents has been attached to the bid.
8. Receipts of Online Submission of EMD & Bid Fee specified in the tender documents should be online (scanned copies) otherwise tender summarily will be rejected.
9. Uploaded documents of valid successful bidders will be verified with the original before signing the agreement. The valid successful bidder must provide the originals to the concerned authority. The department will not be responsible for delays in online submission due to any reason.
10. All the required information for the bid must be filled out and submitted online. If the bid is not found to be uploaded online to the website (http://Jharkhandtenders.gov.in), No hard copy is required to be submitted to the office of JREDA.
11. Other details can be seen in the bidding document
12. Note: The agency needs to submit the amount of. 11,800/- (Inclusive of GST@ 18%) online mode via SBI payment gateway on https://jharkhandtenders.gov.in. for the participation in the NIB in between all working days from Date: 21.04.2025 to 14.05.2025 up to 05:00 PM.
13. **Submission of rate/price bid in any form by the bidder in technical section shall lead to the rejection of the bid.**

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

1. Scanned copies of the following documents to be up-loaded in pdf. format on the website http://Jharkhandtenders.gov.in.

i. Online Payments towards Tender fee.
ii. Online payments towards EMD.
iii. Scan Copy of Challan / Receipt of Tender Fee and EMD submission through Online Via SBI Payment gateway of Jharkhand Tender.
iv. PAN Card
v. Latest GST certificate and GST Returns.
vi. Firm's registration certificate company/Pvt. Ltd./ Proprietorship firm/Partnership/ corporation / LLP, and JREDA Registration Certificate.
vii. Registration certificate of MSMEs of Jharkhand (Certificate issued by GM DIC

Industry Dept. for system/components manufacturing)

viii. In case the bidder wants to avail the benefit of MSEs of Jharkhand then bidder will be submitted:

a. Registration certificate of MSEs of Jharkhand/ UDYAM issued by Industry Dept. duly verified by GM- DIC mentioning whether unit is existing & functional.

b. A registered manufacturing company/firm/corporation in India Including MSME of Jharkhand of at least one of the major components namely Modules or Battery or Inverter (Confirming to relevant National/International standards).

c. The bidder shall furnish the relevant certificate of the concerned industry department certificate indicating that they are manufacturers of SPV Modules, Battery, or Inverter along with a test report as per NIB.

ix. 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.

x. List of works for which bids already submitted.

xi. ITR for the assessment year AY 2022-23, 2023-24 & 2024-25.

xii. Financial Statements (i.e., Balance sheet & Statement of Profit or Loss) for the last 3 financial years FY 2021-22, 2022-23 & 2023-24 certified by a Chartered Accountant.

xiii. Annual Turnover (FY-2021-22, 2022-23 & 2023-24) certified by Chartered Accountant

xiv. Audited financial Report for the last 3 years (up to 31/3/2024) certified by chartered Accountant.

xv. Net worth certificate as on 31st March 2024 certified by Chartered Accountant.

xvi. List of current litigant cases in which the bidder is involved.

xvii. An affidavit for non-engagement of related persons.

xviii. Test Certificate for complete system for Rooftop solar system as applicable which shall be issued by MNRE approved Test Labs (Test report for supply lot).

xix. Authorized address & contact numbers of the bidder as per instruction in the Notice Inviting Bid duly digitally signed.

xx. Undertaking of Bidder that he is able to invest minimum of cash up to 10% as defined in ITB.

xxi. Undertaking for validity of bid for 180 days.

xxii. Copy of written power of attorney of the signatory of the Bid for bidding.

xxiii. Valid Vendor registration certificate of JREDA

xxiv. For MSEs only, proof of Manufacturing of Major Components (Inverter/SPV module/Battery): Valid test report of manufacturing components in the name of MSE bidder test report of manufacturing components in the name of MSE bidder with address of manufacturing unit issued by MNRE/BIS recognized lab & NABL approved test lab having accreditation of the equipment testing in the scope.

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

i. Annexure-1: Covering letter for Bid fee.
ii. Annexure-1a: Undertaking by MSME of Jharkhand for Availing Preferential treatment.
iii. Annexure-2: Covering letter for Earnest Money.
iv. Annexure-3: Information about the bidding firm.
v. Annexure-4: Declaration by the bidder.
vi. Annexure-5: Annual Turnover Certificate.
vii. Annexure-6: Net Worth certificate.
viii. Annexure-7: Format for power of attorney for signing of bid (As applicable).
ix. Annexure-8: Experience Certificate- Details of orders received and executed in last 7 years.
x. Annexure-9: Contact Person for the NIB, Administration and Execution of the project.
xi. Annexure-10: Format for technical details.
xii. Annexure-11: Technical details form with Test Certificate of Component.
xiii. Annexure-18: Declaration by the Bidder for the applied category.
xiv. Test report for Battery, PCU & PV Module.
xv. Bank Account Mandate form from the Banker.

3. 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 though registered post.

4. SBD is not to be uploaded by the bidder. The bidder has to submit Self certified stating agree that they agree to the SBD terms. who disagree on the conditions of SBD, cannot participate in the tender.

IMPORTANT NOTE TO BIDDERS:

Timely Submission of an offer to JREDA: The bidders must submit their bids online in electronic format with a digital signature along with a Scan Copy of Challan / Receipt of Tender Fee and EMD submission through Online Via SBI Payment gateway of Jharkhand Tender. The bids without digital signatures will not be accepted. No proposal will be accepted in physical/offline form, the offer will not be considered and any further communication in the matter will not be entertained. **Please note that the Bid is not to be submitted in physical form.**

The bid will not be accepted in any case after the due date and time of receipt of the Tender, irrespective of delay due to any reasons, circumstantial or otherwise and JREDA does not assume any responsibility for late receipt of the Tender.

1. All interested parties are requested to understand the Tender in detail to comply with JREDA's requirements including but not limited to the fees and deadlines, selection criteria, selection methodology, scope of work, and minimum technical standards. They shall strictly abide by all terms prescribed in this Tender and provide accurate information to the best of their knowledge without misleading the Company to be considered for participation in this Project.
2. It is mandatory for all the bidders to submit their Technical and Financial bids online only via the e-tendering portal.
3. Technical Bid (techno-commercial Bid): All the bidders must submit their Technical Bid (Techno-commercial Bid) Scanned copy of the documents & Transition receipt of the Tender Fee & EMD through online (e-tendering) at the scheduled time. Technical Bid in hard copy (physical form) shall not be considered.
4. Tender Fee and EMD shall be submitted through Online Via SBI Payment gateway of Jharkhand Tenders.
5. It is mandatory for all bidders to submit their Price-Bid only through online (e-tendering).
6. The Price bid submitted in physical form will not be considered for its opening. Only online submitted price bids will be considered for evaluation.
7. Any technical/commercial query about this Tender should be referred to:

   Director,
   Jharkhand Renewable Energy Development Agency
   (JREDA) 3rd Floor, SLDC Building, Kusai Colony
   Doranda,
   Ranchi-834 002, Jharkhand.
   Ph: 0651- 2491 161
   Email: info@jreda.com Website: www.jreda.com

8. JREDA reserves the right to accept/reject any or all tenders without assigning any reasons thereof. Bidders are requested to be in touch with the above-mentioned website till the opening of the price bid to know the latest status.

B. Details of documents to be furnished for online bidding

Financial Bid – (Finance Cover)

i. Duly Quoted & digitally signed Bill of Quantity (BOQ) in the file supplied by JREDA in .xls format.
ii. Declaration by Bidder in the format Annexure – 12 & 12 (A) form of Bid in .pdf format.

NOTE: - a) All the documents should be digitally signed.

Section-3: Notice Inviting Bid
NIB No: 03/JREDA/GCRT/RD/25-26

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Preamble:

With the help of Financial Assistance from the Government of Jharkhand, JREDA wishes to select competent, experienced and financially sound bidder to supply, install, commissioning and to maintain Rooftop Solar Photovoltaic Grid connected Systems. The bidders should be a registered manufacturing company/Firm/Corporation in India (Including MSEs of Jharkhand) of at least one of the major sub systems namely SPV Cells/ Modules or Battery or PCU (Conforming to relevant National/ International Standards) or PV System integrator.

Above work is to be carried out on **"Turnkey Basis"** which includes design, supply of SPV systems with all accessories and equipment's, installation, testing, commissioning and maintenance services for 5 years with free replacement warranty on spare parts against manufacturing defects for five years. JREDA will provide the list of Govt. buildings where rooftop systems need to be installed. The successful bidders have to execute the Supply, Installation & Commissioning of Grid connected Rooftop SPV Power Plants on Govt. Buildings.

Part –I: -The Technical Conditions:

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, GoI 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 the 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 the relevant certificate or the 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 2021-22, 2022-23 & 2023-24 along with Income Tax Return (ITR) for AY 2022-23, 2023-24 & 2024-25 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 must have a service office in Jharkhand, a valid GST registration, and JREDA Contractor Registration. JREDA registration for agency is mandatory to participate in this tender.

Technical Requirement:

Grid Connected Solar Rooftop Power Plant Grouped into 4 categories according to Capacity of plant. Bidder can participate only in one Category/group (with/without Battery System) mentioned as below. Group (A, A-1) together will be considered as one category and this condition will be same for all the category. Participating in more than one category/group will lead to disqualification of the bidder **for evaluation**: -

Table No. 01

Category No.	Group	Required Experience for General Bidder	Required Experience for MSEs Bidder
1	Group **"A"** 1 to 10 kWp (Without Battery System) Group **"A-1"** 1 to 10 kWp (With Battery System)	One System of 10kW **Or** Three Systems of 1KW	One System of 10kW **Or** Two Systems of 1KW
2	Group **"B"** 11 to 50 kWp (Without Battery System) Group **"B-1"** 11 to 50 kWp (With Battery System)	One System of 50kW **Or** Three Systems of 10KW	One System of 50kW **Or** Two Systems of 10KW
3	Group "**C"** 51 to 100 kWp (Without Battery System) Group **"C-1"** 51 to 100 kWp (With Battery System)	One System of 100kW **Or** Three Systems of 50KW	One System of 100kW **Or** Two Systems of 50KW
4	Group **"D"** above 100 kWp (Without Battery System) Group **"D-1"** above 100 kWp (With Battery System)	One System of above 100kW **Or** Three Systems of 100KW	One System of above 100kW **Or** Two Systems of 100KW

For New MSEs of Jharkhand: New-MSE of Jharkhand shall be exempted from the Experience requirement.

A copy of the work order and certificate indicating its successful execution from any government PSU/SNA/Agency should be enclosed as per the above table.

Note: Bidder shall participate only in one Category (with/without Battery System) mentioned above in BOQ otherwise participating in more than one category/group will lead to rejection of the bid.

7. Bids from joint ventures are not allowed.
8. The bidder must be in house manufacturing & testing facility & should be suitable equipment to perform testing in house, if bidder have not facility to perform such tests, they need to arrange Lab test facility for the samples in the presence of JREDA or JREDA Representative/ Authorized Third Party and the cost of Lab Testing will be bearded by the Manufacturer. All the expenses for inspection in this regard shall be borne by the Bidder only.
9. Bidders have to submit the details of order received and executed in the last 7 Years. Certificate should be as per the Performa given at ***Annexure-8***.
10. Even though the bidders meet the above qualifying criteria, 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.

Part –II: -The Financial Conditions:

The bidder should fulfill the following financial eligibility conditions: -

1. Financial Eligibility:

I. Turnover Requirement:

For General Bidder: Average Annual financial turnover during the last 3 years (FY 2021-22, 2022-23 & 2023-24) 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 2021-22, 2022-23 & 2023-24).

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

Table No. 02

S.N.	Category	Minimum required quoted quantity	Minimum Required Avg. Annual Turnover of Last 3 Years for **General Bidders (In Rs.)**	Minimum Required Avg. Annual Turnover of Last 3 Years for **MSE Bidders (In Rs.)**
1	Group **"A" & "A1"**	**100KW**	**Rs. 36,90,000/-**	**Rs. 12,30,000/-**
2	Group **"B" & "B1"**	**250KW**	**Rs. 83,25,000/-**	**Rs. 27,75,000/-**
3	Group **"C" & "C1"**	**500KW**	**Rs. 1,71,00,000/-**	**Rs. 57,00,000/-**
4	Group **"D" & "D1"**	**500KW**	**Rs. 1,77,45,000/-**	**Rs. 59,15,000/-**

II. Net worth Requirement:

For General Bidder/MSE of Jharkhand: Bidder should have Positive Net Worth as on 31.03.2024 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.***

Note: Details of minimum requirement of quoted quantity is as per the Section 4, clause no. 11.5 – Table No. 3.

Section-4: Instructions to Bidders
NIB No: 03/JREDA/GCRT/RD/25-26

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 works". 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 Date specified in Part (I)- 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.

2. Source of Funds

The JREDA has decided to undertake the works of "**Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand**" through funds from the Government of Jharkhand/ Beneficiary (if applicable) to be implemented through JREDA.

3. Eligibility/ Qualification Criteria

This Invitation for Bids is open to all bidders as defined in the Notice Inviting Bid Section-3.

4. One Bid per Bidder

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

5. Cost of Bidding

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

6. Content of Bidding Documents

6.1. The set of bidding documents comprises the documents listed below, and addenda issued in accordance with Clause 12 of ITB.

1. e-procurement notice
2. Instructions to Bidders
3. Qualification Information
4. Conditions of Contract
5. Technical Specifications
6. Bill of Quantities (Price Commercial)
7. Form of Bid (web portal)
8. Form of Bank Guarantee/TDR/FDR/DD.

6.2. 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 26 hereof, bids, which are not substantially responsive to the requirements of the Bid Documents, shall be rejected.

7. Clarification of Bidding Documents and Pre-Bid Meeting

7.1. A prospective Bidder requiring any clarification of the bidding documents may notify the JREDA in writing at the JREDA's address/ Mail info@jreda.com indicated in the Notice Inviting Tenders. The JREDA will respond to any request for clarification received within than 10 days prior to the deadline for submission of bids or as per date mentioned in the bid. Copies of the JREDA's response will be forwarded or uploaded on our website www.jreda.com to all purchasers of the bidding documents, including a description of the inquiry.

7.2. There will be a pre-bid meeting, the bidder or his one authorized representative shall be invited to attend it.

7.3. The purpose of such a meeting will be to clarify issues and to answer queries on related matter that may be raised and received at the JREDA during the Pre-Bid. JREDA may be preponed or postpone the pre-bid meeting and the notice shall be available at the web site.

7.4. The bidder is requested to submit any questions in writing or by cable so as to reach the JREDA not later than two days before the meeting.

7.5. Minutes of the meeting, including the text of the questions raised and the responses will be upload on the site/ or response on the queries mail.

Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

8. Amendment of Bidding Documents

8.1. Before the deadline for submission of bids, the JREDA may modify the bidding documents by issuing addenda.

8.2. Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing by registered post or by cable to all purchasers of the bidding documents.

8.3. To give prospective bidders reasonable time in which to take an addendum into account in preparing their bids, the JREDA shall extend, if necessary, the Closing Date of bids.

C. Preparation of Bid

9. Language of Bid

9.1. All documents relating to the Bid shall be in the language specified in the Notice Inviting Bid.

10. Documents Comprising the Bid

For technical details and documents as per section 2, B, 1 to 31. And Scan Copy of Applicable IEC Test Certificate as per Technical Specification.

10.1. Financial Bid –

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

11. Bid Price

11.1. The Bidder shall adopt the Market Item Rate Method as specified in the Notice Inviting Bid.

11.2. All duties, taxes, royalties and other levies payable by the bidder under the Price bid, or for any other cause, shall be included in the rates, prices, and total Bid price submitted by the Bidder **Excluding GST**.

11.3. The rates and prices quoted by the Bidder shall be fixed for the duration of the Contract and the cost variation as notified by the government from time to time shall be applicable.

11.4. Quoted price for grid connected rooftop SPV power plants are complete in all respect as per Technical Specifications Excluding GST and inclusive of all taxes & duties and royalties, packing, forwarding, transit insurance, loading & unloading, transportation & other charges etc. FOR destination at any site in Jharkhand and inclusive of installation, testing, commissioning, performance testing and training. The bidder shall be required to submit a Component Warranty certificate and insurance documents along with the invoice.

11.5. Price bids submitted by New MSEs shall not be considered. However, to complete the tender process New MSEs have to submit price bids. They have to accept the L1 rate derived in tender for award of work.

i. Price bid shall be opened and evaluated for the bids who shall quote the minimum requirement of quoted quantity as indicated below. Bidder quoted lesser than the minimum quoted quantity, will be disqualified.

ii. Bidder shall quote the price bid to complete the bid process and the bidder will quote rate in only in one category/group in BOQ otherwise participating in more than one category/group will lead to disqualification of the bidder for evaluation.

iii. The bidder should declare the quoted quantity in the prescribed annexure 3 & 4.

Table No. 03

Category No.	**Group**		**Minimum requirement of quoted quantity for considering, opening, and evaluation of price bid**
1	Group **"A"** 1 to 100 kWp (Without Battery System)	Group **"A-1"** 1 to 100 kWp (With Battery System)	100kW
2	Group **"B"** 11 to 250 kWp (Without Battery System)	Group **"B-1"** 11 to 250 kWp (With Battery System)	250kW
3	Group "**C"** 51 to 500 kWp (Without Battery System)	Group **"C-1"** 51 to 500 kWp (With Battery System)	500kW
4	Group **"D"** above 500 kWp (Without Battery System)	Group **"D-1"** above 500 kWp (With Battery System)	500kW

12. Bid Validity

12.1. Bids shall remain valid for a period of 180 (One hundred and Eighty Days) days after the Closing date for bid submission.

12.2. JREDA may request that in exceptional circumstances, prior to expiry of the original time limit, the bidders may extend the period of validity for a specified additional period. The request and the bidders' responses shall be made in writing or by Mail. A bidder may refuse the request without forfeiting his Earnest Money. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his earnest money for a period of the extension, and in compliance with Clause 14 of ITB in all respects.

13. Earnest Money

13.1. The Bidder shall furnish, Earnest Money, in the amount specified in the Notice Inviting Bid.

13.2. Submission of EMD through Online Via SBI Payment Gateway of Jharkhand Tenders. Only electronic receipt of Cost of Tender and Earnest Money Deposit (Bid Security) will be acceptable as per provisions of Standard Operating Procedure (SOP). Issued by Information Technology & e- Governance Department, Government of Jharkhand Vide Order Memo No. 120, Dt.03.10.23 of Secretary, Information Technology & e-Governance Department, Government of Jharkhand.

13.3. Any bid not accompanied by an acceptable Earnest Money at the time price bids are called, unless exempted in terms given in the Notice Inviting Bid, shall be rejected by the JREDA as nonresponsive.

13.4. The Earnest Money of unsuccessful bidders will be returned after finalization of the Bid.

13.5. The Earnest Money of the successful Bidder will be discharged when the Bidder has signed the Agreement and furnished the required performance Security Deposit.

13.6. The Earnest Money may be adjusted against the required security deposit after Receipt of specific request from the bidder.

13.7. 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. signs the Agreement within as specified time limit as mentioned in W.O. and/or

ii. Furnish the required Security Deposit within specified as W.O.

14. Alternative Proposals by Bidders

14.1. Bidders shall submit offers that comply with the requirements of the bidding documents, including the Bill of Quantities and the basic technical design as indicated in the drawings and specifications. Alternative proposals will be rejected as non-responsive.

D. Submission of Bids

15. Closing Date for Submission of Bids

15.1. Closing date for submission of the bid containing hard copy of the tender fees/ EMD/Exemption details and bid submission evidence.

C. Bid Opening and Evaluation

16. Bid Opening

16.1. JREDA will open the bids received (except Hard Copy 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.

16.2. 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.

16.3. The JREDA will prepare minutes of the Bid opening, including the information disclosed to those present at the time of Bid Opening.

16.4. Evaluation of the technical bids shall be carried out as per the e-procurement guideline.

16.5. JREDA shall inform by email to the bidders, whose technical bids are found responsive, date, time and place of opening as stated in the Notice Inviting Bid.

16.6. Bid Evaluation Criteria

Bid will be evaluated under the provision of the applied category and no further claim will be considered for the change in the applied category.

S.N.	Applied Category by Bidder	Document found Suitable for	Remarks
1	General	Document found OK for General, MSEs and/or NEW MSEs	Shall be Considered for General category
2	General	Document found OK for MSEs and/or NEW MSEs	Shall not be consider for any category. The Bid shall be rejected.
3	MSEs	Document found OK for General, MSEs and/or NEW MSEs	Shall be Consider only for MSEs category
4	MSEs	Document found OK for General or NEW MSEs	Shall not be consider for any category. The Bid shall be rejected
5	NEW MSEs	Document found OK for General & NEW MSEs	Shall be Consider only for NEW MSEs category
6	NEW MSEs	Document found 'OK' for General and MSEs	Shall not be consider for any category. The Bid shall be rejected.

17. Process to be Confidential

17.1. 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.

17.2. Any attempt by the bidder to influence JREDA's bid evaluation, by any means, bid evaluation, bid comparison or contract award decision may result in the rejection of his bid and blacklisting of the bidder.

18. Clarification of Bids and Contacting the JREDA

No Bidder shall contact JREDA on any matter relating to its bid from the time of the bid opening to the time the contract is awarded.

19. Examination of Bids and Determination of Responsiveness

19.1. 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) 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., priced bill of quantities, technical specifications and drawings.

19.2. A substantially responsive "Financial Bid" is one which conforms to all the terms, conditions, and specifications of the bidding documents, without material deviation or reservation. A material 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.

19.3. If a "Financial Bid" is not substantially responsive, it will be rejected by JREDA.

20. Correction of error

20.1. Bids determined to be substantially responsive will be checked by JREDA for any arithmetic errors. Errors will be corrected by the JREDA as follows:

- where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
- 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.

20.2. The amount stated in the Bid will be adjusted by 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.

21. Price Preference

There will be no price preference for any bidder.

E. Award of Contract

22. Award Criteria

JREDA will award the Contract to the Bidder whose Bid has been found technically and financially successful by JREDA Purchase committee and who has been empaneled under different category.

23. Empanelment Procedure

23.1 The lowest rate, i.e., L1 received would be the appropriate rate for awarding the work in each category.

23.2 JREDA shall empanel technically qualified bidders on acceptance of discovered lowest (L1) rate under this rate contract for different categories, for which the bidder has accepted the L1 rate.

23.3 Allocation of the quantity to MSEs registered in Jharkhand will be made as per the provisions made in Jharkhand Procurement Policy 2019.

23.4 JREDA shall empanel New MSEs of Jharkhand at the discovered lowest rate for each category. JREDA shall decide the quantity of the tendered capacity may be awarded to successful New MSEs of Jharkhand.

23.5 If quantity/capacity is left unallocated in any category, JREDA reserves the right to reallocate. JREDA will allocate capacities/quantities to empaneled bidders based on available demand and availability of fund.

23.6 JREDA will allocate initial capacities/quantities to empaneled bidders based on their bid capacities and available capacities. If Bidder is a working agency of JREDA then allocation of capacities/quantities will be done based on the bid capacities and their past performances in JREDA like timely completion of allotted work and timely submission of CMC report and performance certificate marks etc. JREDA will review the progress of each agency on a monthly basis and a performance appraisal will be done after completion of three months. On the basis performance appraisal quantities allocated to agencies will be revised.

24. Inspection of the factory Before the Empanelment of the successful Bidder.

JREDA reserves the right to inspect manufacturer's works/factory to ascertain the capability/availability of necessary equipment, infrastructure and Manpower required for manufacture of the items offered before empanelment of the successful Bidder.

25. Notification of Award and Signing of Agreement

25.1. The notification of award will constitute the formation of the Contract, subject only to the furnishing of a security deposit in accordance with the provisions of Clause 30.

26. Security Deposit

26.1. Successful General bidder shall submit a security deposit @10% of the allotted work order value in the form of DD/Bank Guarantee/TDR/FDR valid for one year on or before 15 days from issuing work order. If Bank Guarantee/DD/TDR/FDR will not be submitted within stipulated period from the date of issue of work order, then JREDA shall cancel the work order.

26.2. Successful MSEs bidders shall be required to deposit only 1% of security deposit the form of DD/Bank Guarantee/TDR/FDR valid for one year on or before 15 days from issuing work order. If Bank Guarantee/DD/TDR/FDR will not be submitted within stipulated period from the date of issue of work order, then JREDA shall cancel the work order.

26.3. Successful New MSEs bidders shall be required to deposit only 1% of the security deposit of the allotted work order value in the form of DD/Bank Guarantee/TDR/FDR for one year on or before 15 days from issuing work order. If DD/Bank Guarantee/TDR/FDR will not be submitted within the stipulated period from the date of issue of work order, then JREDA shall cancel the work order.

26.4. The Security Deposit shall be refunded / released to the bidder after successful completion of work and submission of performance guarantee.

27. Performance Guarantee

27.1. Successful General bidder shall submit a performance guarantee @5% of the allotted work order value in the form of DD/Bank Guarantee/FDR/TDR valid for five years on or before release of payment of installation.

27.2. Successful MSEs bidders/New MSEs shall submit a Performance Guarantee @0.5% of the allotted work order value in the form of DD/ Bank Guarantee/FDR/TDR before release of

payment of installation.

27.3. The Security Deposit/Performance Guarantee shall be submitted in the form of DD/Bank Guarantee/FDR/TDR in favor of "Director, JREDA" payable at Ranchi from any Indian Nationalized bank/Scheduled bank.

27.4. The Bank shall be governed by RBI e-portal, the details are under. This Bank Guarantee must include SFMS (Structural Financial Management System) as per JREDA Bank Details Which is as:

Name of Bank: State Bank of India
IFSC Code: SBIN0009010
Branch Details: Ashok Nagar Branch, Ranchi

27.5. Non-submission of Security Deposit/Performance Guarantee within the time frame, shall lead to forfeiture of EMD and cancellation of LOI/W.O.

27.6. If the Bidder/MSEs unit fails to carry out the work allotted to him as per the provisions of the tender documents, then such Bidder/MSEs unit may be blacklisted for future awards of work.

28. JREDA's Right to accept any Bid and to reject any or all Bids

28.1. Not with standing clause 26, clause 3, and Clause 14 of Instructions to Bidders the JREDA reserve 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 Bidders or bidders or any obligation to inform the affected bidder or bidders of the ground for JREDA's action without any reason.

29. Plant Performance Evaluation

For On-grid Solar PV Power Plant only, the successful bidder shall be required to meet minimum guaranteed generation with Performance Ration (PR) at the time of commissioning and related Capacity Utilization Factor as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% for Grid connected plant at the time of inspection for initial commissioning acceptance to qualify for release of CMC payment. Minimum CUF of 15% for Grid connected plant should be maintained for a period of 5 Years for fulfilling one of the conditions for release of PBG. The bidder should send the periodic plant output details to JREDA for ensuring the CUF. The PR will be measured at inverter output level during peak irradiation conditions. formula should be used to measure the plant performance Ratio:

[PR=Energy Measured (kWh)/Irradiation (kWh/m^2) x Active area of PV module (m^2) x PV Module Efficiency]

formula should be used to measure the plant Capacity Utilization Factor for Year:

[CUF=Energy Measurement (kWh)/(365x24) x Installed Capacity]

30. Five Years Comprehensive Maintenance Contract (CMC)

30.1. The Grid Connected Rooftop 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 representative's 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.

30.2. The Comprehensive Maintenance Contract shall include servicing & replacement guarantee for parts and components (such as battery, electronics, Inverter, PV modules and other hardware) of Grid

Connected Rooftop 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 Grid Connected Rooftop SPV Power Plant. It is mandatory for the contractor to carry out CMC regularly and submit reports to JREDA monthly. Failure to submit monthly CMC reports timely shall lead to penalty and action.

30.3. 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 Rs. 1000 per day beyond three days of reporting of such complaint. 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 exceedingly more than 60 days than complete PBG amount shall be enchased by JREDA. This will be applicable till 5 years of O&M as per the scope of the RFP. The bidder shall submit monthly CMC report as per the **Annexure- 17** with generation data of month within 7 working days of subsequent month.

30.4. Failure to submission of CMC report with generation data as per **Annexure-17** within 7 working days of subsequent month will be considered as CMC is not carried for that month and payment of CMC for that month will be deducted.

30.5. For more than 50 kWp sites bidder has to provide a 1 (one) technical manpower at the site for operation and maintenance of the GCRT Solar plant.

31. Preventive/Routine Maintenance

This shall be done by the supplier/contractor at least twice in every month and shall include activities such as, cleaning and checking the health of the SPV system, cleaning of module surface, tightening of all electrical connections, regular checks to identify any leakage of electricity, 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.

32. Breakdown / corrective Maintenance

Whenever a complaint is lodged by the user the bidder shall attend the same immediately. It is clarified that effective CMC means that the bidder should ensure smooth working of solar power plant throughout the CMC period and therefore, if any complaint in this level of service is found by the JREDA officials and 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 Rs. 1000 per day beyond three days of reporting of such complaint.

33. Advances

JREDA will not provide Mobilization Advance and Advance against the security of equipment as provided in Part I - General Conditions of Contract.

34. 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. Also, if any of the documents submitted by bidder fount out to be fake or incorrect, JREDA has right to blacklist the company from future tenders and also cancel the work order.

35. Estimated rate for different category

L1 rate discovered in last year for different category for the work "Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings" is considered for estimated rate. Details of rate for different category is mentioned in below:

Table No. 04

S.N.	Category		Estimated Rate per KWp (Excl. GST)
1	**Category 1**	Group **"A1"** 1 to 10kWp (With Battery System)	**Rs. 1,23,000/-**
2	**Category 2**	Group **"B1"** 11 to 50kWp (With Battery System)	**Rs. 1,11,000/-**
3	**Category 3**	Group **"C1"** 51 to 100kWp (With Battery System)	**Rs. 1,14,000/-**
4	**Category 4**	Group **"D1"** Above 100kWp (With Battery System)	**Rs. 1,18,300/-**

Section-5: General Terms & Conditions

NIB No: 03/JREDA/GCRT/RD/25-26

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

2.1. Preparation of Pre-Feasibility Report (PFR) of the proposed sites of SPV Power Plants.

2.2. Support in obtaining Net-metering approval from concerned DISCOM for grid connectivity.

2.3. 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/IS specification shall be followed and work carried out to the reasonable satisfaction of the engineer in charge.

2.4. The contractor shall complete the work of Design, supply, civil work, erection, testing and commissioning of SPV grid connected Power Plant within timeline as per Clause no 3 Section- 5: General Terms & Conditions.

2.5. The work for "**Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of 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.

2.6. **Establishing "Operation and Maintenance Centers" in concerned area to cater the maintenance needs for 5 years.**

2.7. All the material required for the installation of solar power plant 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.

2.8. The contractor shall take entire responsibility of electrical safety of the installations including connectivity with the grid and follow all the safety rules and regulations applicable as per Indian Electricity Act-2003 and CEA guidelines, it shall be responsibility of the contractor to take NOC from concerned authority and engage person as per provisions as per in CEA Rules and Regulations.

3. Timeline of project completion

Sr. No.	Particular	Timeline (in Days)
1	Letter of Award	X Day
2	Execution of Agreement	X+15 Day
3	Survey of Building and submission of report	X+20 Days
4	PDI Offer	X+30 Days
5	Issue of DI (Dispatch Instruction)	X+40 Days
6	Delivery of material on Site	X+60 Days
7	Installation & Commissioning of plant	X+120 Days

4. 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.

5. Price

The bidder shall quote their 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 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.*** 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.

6. Inspection of the factory and Tests

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

7. Payment terms and conditions

Project Cost will be divided into Supply, Installation, Commissioning as one part and CMC as second part. Rate of second part will automatically be 20% of complete Project cost (1st Part+ 2nd Part). In case agency fails to comply CMC as per work order i.e., fails to submit CMC report or fails to attend compliance then after two notice or two months whichever is earlier, 2nd part of work order will be transferred to any of the technically qualified agency under that NIB on quotation basis and the performance bank guarantee of the agency will be forfeited along with necessary action as per prevailing rules. Subject to any deduction which JREDA may be authorized to make under this contract, the contractor shall be entitled to payment as follows:

7.1. **70%** of the 1st Part of Project cost 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:

i. Original Commercial invoice raised from the state of Jharkhand for the supply made in triplicate (1+2).
ii. Copy of duly raised delivery challan / transportation challan /lorry receipt/e-waybill/dispatch clearance.
iii. Duly filled **Annexure–14** should be submitted in three sets (one for Consignee record, one for JREDA Hq. and one for JREDA's field Executive Engineer).
iv. Photographs of all the equipment (materials) at destination with signature & seal of Consignee/JREDA Officials. This record should be kept in the office of Consignee for verification.
v. Submission of the Insurance Documents and Warranty Certificates of the Components.

7.2. **30%** of the 1st Part of Project cost shall be paid against Installation, Testing & Commissioning after submission of following documents:

i. Copy of Original Commercial invoice raised at the time of supply in triplicate (1+2).
ii. Duly filled **Annexure–15** should be submitted in three sets (one for Consignee record, one for JREDA Hq. and one for JREDA's field executive Engineer).
iii. Certificate for minimum seven days of satisfactory performance with photographs of each installed Grid Connected Rooftop SPV Power Plant with GPS Co-ordinates in Soft copy (CD).
iv. Hard Copy of 7 days System Performance Report Downloaded from RMS Portal.
v. Insurance paper of each installed Solar Power Plants with complete system.

7.3. **For CMC 20%:**

Rest 20% of the contract Price shall be paid@4% on completion of every One-year period of the 5-year CMC period. **The Payment shall be released after submission of following documents:**

a) Copy of Original Commercial invoice raised at the time of supply in triplicate (1+2).
b) Submission of monthly reports of CMC undertaken by the **Agency along with consignee verification** as Per **Annexure-16.**
c) Monthly Generation data of solar plant.

The Payment against CMC (2nd Part) can also be released after submission of duly 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. However, JREDA reserves the right to pay agencies against submission of DD/BG/FDR/TDR of equivalent value of 2nd Part of the project cost (CMC) valid till CMC period of the system.

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. Dispatch Instructions

All items/equipment shall be subject to **Pre-Dispatch Inspection (PDI)** by JREDA or its authorized representatives at the manufacturing site before their dispatch. The manufacturing site must have sufficient in-house testing facilities as per applicable IEC/IS standards. If the manufacturing site have not in house testing facility as per Standards, the manufacturer will arrange the testing of Selected samples at the NABL accredited Labs in the presence of JREDA or its authorized representatives. And the cost of Lab Testing will be bearded by the Manufacturer. All the expenses for inspection in this regard shall be borne by the Bidder only. The manufacturer will give the **test report** with regard conformity to technical specifications for the items to be dispatched to work site of JREDA and also issue the warranty certificate of

items/equipment's supplied to JREDA on their letter head at the time of PDI. However, equipment's will be dispatched from the manufacturing site only after the receipt of **"Dispatch Clearance**" from JREDA after acceptance of test report. No consignment shall be dispatched without the receipt of dispatch clearance from JREDA. No PDI shall be done at any site other than the concerned manufacturing site. Successful bidders have to arrange necessary equipment for testing the materials to be supplied during the pre-dispatch inspection by JREDA at their manufacturer's 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 trough this bid have to be 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, the supply order shall be placed to the successful bidder for execution in due time.

After finalization of the tender JREDA authority will first empanel bidders and 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 one-month period 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 time schedule as per clause no. 3 timeline of Section-5: General Terms & Conditions. 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.

Bidder must submit the PDI request for the following components for Dispatch clearance:

- Module
- Battery
- Inverter/PCU
- MMS
- Junction Box (ACDB & DCDB)

JREDA may reject the item any stage of project in following Conditions:

Deliver / Install the Component or Materials Without Dispatch clearance from JREDA.

If Delivered materials are found different from the PDI or not as per Technical specifications of NIB.

9. Warranty of the Component and the Insurance of the Project

The bidder shall submit the Warranty Certificates. The components Warranty certificate should be in the name of JREDA, Ranchi.

The warranty of the Component should be minimum 5 years.

The Bidder have to submit Insurance Documents of the Project and Components.

10. Project Report

The bidder shall submit the progress report fortnightly (15 day's) to JREDA. JREDA will have the right to depute their representatives to ascertain the progress of contract at the site.

11. Project Inspection

The project progress will be monitored by JREDA, and the projects will be inspected for quality at any time during commissioning or after the completion of the project either by officer(s) from JREDA or any authorized agency/ experts. All the expenses for inspection in this regard shall be borne by the Bidder only.

11.1. JREDA reserves the right to do sample inspection checks for the projects commissioned by the Bidder.

11.2. JREDA may also depute a technical person(s) from its list of empaneled experts for inspection, third party verification, monitoring of system installed to oversee, the implementation as per required standards and also to visit the manufactures facilities to check the quality of products as well as to visit the system integrators to assess their technical capabilities as and when required.

12. Liquidated Damages for Delay in Completion & CMC

If the supplier fails in the due performance of the contract to deliver any part of the equipment or complete the work within the time fixed under the contract or any extension thereof granted to him by JREDA and/or to fulfill his obligations in time under the contract, he shall be liable to pay to JREDA @1% per week maximum up to 15% of work value delayed beyond contract period. The same will be applicable if the monthly CMC report will not be submitted within 7th Day of Month.

13. Risk & Cost

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

14. Insurance

The supplier shall arrange for transit and erection insurance of the materials & equipment for setting up of the Solar Photovoltaic System. In case of any theft or damage of equipment during the erection period the same will be responsibility of supplier to get it rectified at their own cost.

15. Assignment/ Sub-letting

The Manufacturer shall not assign or sublet, manufacture, shop testing, packing & forwarding, transportation, transit insurance, supply in whole or part, and its obligations to any third party to perform under the order/contract.

In the event the manufacturer contravenes this condition, JREDA reserves the right to reject the equipment/work contract and procure the same from elsewhere at manufacturer's risk and cost. The Manufacturer shall be solely liable for any loss or damage which JREDA may sustain in consequence or arising out of such replacing of the contract work.

16. Completeness of Tender

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

17. Cancellation of Work Order:

JREDA will be at liberty to terminate/blacklist in part or full the awarded contract and / forfeit security deposit and/or performance guarantee 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 delayed supply, installation & commissioning or failure to deliver satisfactory performance or supply of substandard materials.

(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 If the Contractor/vendor is involved in any action of moral turpitude.

(c). While taking decisions for blacklisting of the bidder, his past performance shall also be taken into account.

18. Compliance with Regulations

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

19. Agreement

The successfully qualified suppliers shall have to enter into an agreement within fifteen days from the date of issue of work order in the office of the Director, JREDA, in prescribed format.

20. Income Tax / GST

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

21. Training Program, After Sales Service and Availability of Spare Parts

21.1. The responsibility of organizing training program for Solar Power Plant will rest on the successful bidder. The training program will be organized in consultation with JREDA/Consignee. The training program will focus on operation and maintenance of Solar Power Plant. Printed leaflet/literature should be made available in Hindi by the Supplier regarding the operation and maintenance of their Solar Power Plant.

21.2. The Supplier shall depute authorized Service Engineer within 7 days from the date of the intimation of fault and establish sufficient inventory of spares in the State in consultation with JREDA to provide satisfactory and uninterrupted services during the warrantee period.

22. Force Majeure conditions

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

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

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

23. Jurisdiction of the Court

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

24. Transit Insurance of Solar Module, Battery, & PCU to be provided by the qualified agencies.

25. Electricity bill proof of all site to be submitted mandatorily along with site survey report.

Section-6: Technical Specification
NIB No: 03/JREDA/GCRT/RD/25-26

Technical Specifications for Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

1. General Description & Configuration

The brief technical details for the various Rooftop SPV power plants are as follow:

Cat. No.	SPV Power Plant Capacity (kWp)	SPV Capacity (kWp)	Battery Bank Size (AH/Volt)	PCU Rating (KVA)	Module Mounting Structure (MMS)	Balance of System (BOS)
1	Group "A" 1 to 10 kWp	1 to 10 kWp	Without Battery Bank	Same as SPV Capacity	As per design	As per design
	Group "A-1" 1 to 10 kWp	1 to 10 kWp	4.8VAH/Wp	Same as SPV Capacity	As per design	As per design
2	Group "B" 11 to 50 kWp	11 to 50 kWp	Without Battery Bank	Same as SPV Capacity	As per design	As per design
	Group "B-1" 11 to 50 kWp	11 to 50 kWp	4.8VAH/Wp	Same as SPV Capacity	As per design	As per design
3	Group "C" 51 kWp to 100 kWp	51 to 100 kWp	Without Battery Bank	Same as SPV Capacity	As per design	As per design
	Group "C-1" 51 to 100 kWp	51 to 100 kWp	4.8VAH/Wp	Same as SPV Capacity	As per design	As per design
4	Group "D" Above 100 kWp	Above 100 kWp	Without Battery Bank	Same as SPV Capacity	As per design	As per design
	Group "D-1" Above 100 kWp	Above 100 kWp	4.8VAH/Wp	Same as SPV Capacity	As per design	As per design

The rooftop installation of Solar Power Plant consists of crystalline solar module, mounting systems and hybrid solar power conditioning unit with battery back-up or pure grid tie central/string inverter without battery back-up. The Hybrid PCU in addition to battery charging during sunny hours the loads are fed from SPV Power Plant. The Solar Photovoltaic Power Plant shall cater to the electricity demand as per the proposed hours or duration per day. The system shall have the provision of charging battery bank through mains as well. It should be designed such that during sunny hours the loads are fed from SPV Power Plant in addition to battery charging. If the power produced from the Power Plant is not sufficient to feed the loads, then the balanced power will be taken from the grid and battery simultaneously according to the available source. The Power Plant shall provide a reliable and independent power supply at a voltage and frequency levels to suit the grid voltage and frequency.

2. Working of the Hybrid PV System

Rooftop Based Solar Power Plant is planned to meet the energy requirements of the concerned Building at any places in Jharkhand from solar power to ensure reliability and reduce dependence on grid power. The system is required to power the lights, fans, computer and other electrical appliances during office hours as well as during nighttime and holidays. The system is expected to work in the following way:

2.1. During daytime when sufficient sunlight is available, the connected load should be powered from the solar electricity generated and any excess solar energy produced should be used to charge the storage batteries.

2.2. If the storage battery is fully charged, the power generated from the solar plant will be connected to the load, and if the load consumption is lesser than the SPV plant production then the extra power exported to the utility grid through the bidirectional meter which records the net energy exported to the grid.

2.3. During daytime when sufficient solar electricity is not available to power the load, the balance energy should be drawn from the Utility Grid/storage battery provided.

2.4. During nighttime, when no solar energy is available, the load should be powered from the Utility Grid/ storage battery provided.

2.5. Normally, battery storage needs to be charged from the solar array. But there should be a provision available to charge the battery from utility grid, if the battery voltage is lower than a preset voltage.

2.6. In general, the priority of usage of input energy sources should be in the following order.

First Priority: Solar

Second priority: Mains

Third Priority: Storage Battery

There should be no break in the supply while changing from one mode to another mode of operation.

3. Major Components of the system

The following are the major components of the system:

- Solar PV Modules
- Module Mounting Structure
- Junction Boxes
- Power Conditioning Unit/ Inverter
- Storage Battery
- Data Logger
- Cables
- Bi-Directional Meter

1. Solar PV Module / Array:

1.1. Solar Photo Voltaic (SPV) modules/ array shall be of high efficiency made of crystalline silicon solar PV cells satisfying the **MINIMAL TECHNICAL REQUIREMENTS / STANDARDS FOR SPV SYSTEMS. Office Memorandum of Ministry of New & Renewable Energy (MNRE) issued "Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019 and Amendment –reg. is applicable for supply of SPV Module.**

1.2. The terminal box on the module should have a provision for opening for replacing the cable, if required.

1.3. The rating of each individual module should not be less than **335Wp** at Standard Test conditions (Higher ratings can be used) and shall meet following minimum requirement:

Efficiency of module ≥ 19.5%

Fill factor shall be greater than 77%.

General requirements for PV module:

a. Module shall be made up of mono or poly crystalline silicon cells.
b. The interconnected cells shall be laminated in vacuum to withstand adverse environmental conditions
c. The module frame is made of corrosion resistant materials, preferably having aluminum anodized finish
d. The minimum clearance between the lower edge of the modules and the developed ground level shall be 300 mm.
e. Surge arresting device to be provide at junction box and module shall be provided with bypass diode.
f. The SPV module must be IEC 61215, IEC 61730 Part I and Part II, IEC 61701 certified from any of the accredited certifying agencies.
g. Each solar PV module shall be warranted by the manufacturer for at least 90% of its rated power after initial 10 years and 80% of its rated power after 25 years from the completion of the trial run.
h. Each PV module deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each module. (This can be inside or outside the laminate but must be able to withstand harsh environmental conditions).

- Name of the manufacturer of the PV module
- Month & year of the manufacture (separate for solar cells and modules)
- Country of origin (separately for solar cells and module)
- I-V curve for the module
- Wattage, Im, Vm and FF for the module
- Unique Serial No and Model No of the module
- Date and year of obtaining IEC PV module qualification certificate
- Name of the test lab issuing IEC certificate
- Other relevant information on traceability of solar cells and module as per ISO 9001.

2. Module Mounting Structure (MMS):

2.1. The structure shall be provided on terrace of the building.

2.2. The PV modules shall be mounted on fixed metallic structures having adequate strength And appropriate design, which can withstand the load of the modules and high wind velocities. The MMS shall be hot dip galvanized Steel or Aluminum or C Channel etc.

2.3. The structure shall be designed in accordance with the latitude of the place of installation. The MMS should be designed so that the load on buildings does not cross the limit of 40 Kg / sq. m, for roof mounted type. The array mounting structure shall be designed to allow easy replacement of any module and shall be in line with site requirement. Structure shall be designed for simple mechanical and electrical installation.

2.4. The array structure shall support SPV modules at a given orientation, absorb and transfer the mechanical loads to the ground properly.

2.5. The mounting structure shall be of HDGI/anodized aluminum and shall be as per relevant standards and shall with stand the wind load of 150 Km/hour or as per IS 875. Use of Aluminum profiles shall be considered depending on design considerations and subject to withstanding wind load criteria. Factor of safety for designing shall be considered minimum **1.5 times.** Certificated chartered engineer's/ Structural engineer's certificates are required for approval of MMS.

2.6. Bolts, nuts, fasteners used in the MMS shall be minimum SS 304.

2.6. The support structure angle should be of dimension **50x50x5mm**.The minimum thickness Of galvanization shall be at least **80 microns**. Fixing fasteners shall be of Stainless steel, all nuts & bolts stainless steel. Legs assembly shall be of MS Hot Dip galvanized pipes after fabrication/Anodized Aluminum. Mounting structure shall have anodized aluminum /MS hot dip galvanized GI/ C Channel etc.

2.8. 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.

2.9. The minimum clearance of the lowest part of the module / module structure and the terrace shall not be less than 300 mm.

2.10. The total load of the structure (when installed with PV modules) on the terrace should be less than 60 kg/m2.

2.11. MMS has to be securely anchored to the terrace. Concrete foundations of appropriate weight and depth for MMS shall be mounted directly; shall be bolted with anchor bolts of appropriate strength for MMS mounted on RCC foundation blocks. The array structure shall be grounded properly using maintenance free earthing kit with proper insulators, suitable for mounting over building terrace. RCC foundation shall be minimum M20 Grade. **Drilling on the roof is not allowed.**

3. Junction Boxes:

3.1. 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 aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

3.2. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP67 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.

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

3.4. 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.

3.5. All MCB shall have DIN rail mountable holders and shall be housed in thermoplastic IP 67 enclosures with transparent covers

3.6. All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60 947 part I, II and III. The changeover switches, cabling work should be undertaken by the bidder as part of the project.

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

3.8. The panels shall be designed for minimum expected ambient temperature of 50 degrees Celsius, 80 percent humidity and dusty weather.

3.9. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.

3.10. Should conform to Indian Electricity Act and rules (till last amendment).

4. Power Conditioning Unit (Hybrid PV):

Power Conditioning Unit (PCU) provides an un-interrupted AC power using battery bank. Array output will be fed to PCU which consists of MPPT based Charge Controller, Inverter, Voltage Stabilizer and distribution panel along with necessary Displays, Indicators and Alarms and major protections and should conforming to IEC 61683/ IS 61683 Standard for efficiency measurement should conform to IEC 60068-2(1, 2, 14, 30) or equivalent BIS standard for environmental testing should conform to IEC 62109/ IS 16221 part 1 & 2 for Safety Protection. The power conditioning unit shall convert DC Power by SPV modules and store it in battery bank and good quality AC Power output is delivered. Bidder should ensure that the PCU supplied conforms to the performance as per MNRE requirements/specifications.

The Hybrid PCU in addition to battery charging during sunny hours the loads are fed from SPV Power Plant. The Solar Photovoltaic Power Plant shall cater to the electricity demand as per the proposed hours or duration per day. The system shall have the provision of charging battery bank through mains as well. It should be designed such that during sunny hours the loads are fed from SPV Power Plant in addition to battery charging. If the power produced from the Power Plant is not sufficient to feed the loads, then the balance power shall be fed by Utility Grid/Battery bank. The Power Plant shall provide a reliable and independent power supply at a voltage and frequency levels to suit the grid voltage and frequency.

The power conditioning unit should be an integrated unit comprising MPPT solar charger and bidirectional inverter. The details of solar charge controller & bidirectional inverter should be as under:

A. <u>SOLAR CHARGE CONTROLLER:</u>

Solar Charge controller should be an MPPT based charge controller which tracks the maximum power point of PV panels all the time.

The MPPT based solar charge controller should guarantee below minimum features:

- 3 stage battery charging (float, boost & equalize stages) for long life of the battery.
- Battery current limiting feature to avoid overcharging into the batteries.
- Battery & PV reverse polarity protection (no use of blocking diodes which reduces overall efficiency of the system)
- Rated MCCB/MCB on all PV inputs & Battery inputs.
- MOV type surge arrestors on all PV inputs for overvoltage protection against lightening induced surges
- Individual KWH meters showing PV Voltage, PV Amps, Instantaneous PV Power, Daily PV generated & cumulative PV generated.
- All the parameters from kWh meters of PV channels should be available through an industry standard protocol for remote access.

B. **<u>BIDIRECTIONAL SINGLE/THREE PHASE INVERTER:</u>**

It should be a bidirectional inverter unit such that the same circuit elements are used for performing inverting and battery charging (through mains) operation. It should be an IGBT/MOSFET based; microprocessor/DSP controlled inverter & should incorporate PWM technology and all the desired safety features for reliable running of PCU.

The below minimum features should be ensured in the inverter unit:

- Operation without any derating from 0 to 50 degrees of ambient temperature

- Overloads of 110% for 60 secs, 125% for 30 secs and 150% for 5 sec.
- Inverter should be able to sustain 100% load imbalance between the phases.
- Automatic reset of all non-critical faults such as overloads, AC over voltage/ under voltage etc. once the fault has been cleared.
- Facility to export excess PV power to grid in case consumption of loads is less than the generation. This is a futuristic feature and provision should be there to enable & disable this export feature.

The same bidirectional inverter should act as a battery charger (using 3 phase grid supply) in case solar PV power is not available, and battery is discharged below a predefined level. The mains- based battery charger should incorporate below minimum features:

- Facility to bypass grid to loads and charge batteries at the same time.
- Should be IGBT based for rugged operation.
- Should use AC supply of all the three phases and not single phase.
- Should have a peak efficiency of at least 85% for AC to DC conversion.
- 3 stage battery charging for long life of the battery.
- Facility to enable/ disable charging of battery through mains by controlling the import power from mains.

TECHNICAL SPECIFICATIONS

PARAMETERS	SPECIFICATIONS
Output Voltage	230Volts ± 1% single phase, 2 wire output /415Volts ± 1% three phases, 4 wire output. Nominal voltage could be adjusted ± 5% via system set points.
Output Frequency	50Hz ± 0.5% during stand-alone inverter operation. Inverter to follow generator frequency up to ± 3 Hz of the nominal output frequency during synchronized operation
Continuous Rating	As per system rating
Surge Rating	Up to 150% of the continuous rating for a minimum of 30 seconds
Waveform	Sine wave output
THD	Less than 3%
Efficiency	At 25% load> 85% At 50% load> 90% At 75 % load and above> 92%

Regulation	≤ 2%
Phase Load imbalance	100% between phases
Internal Protection System	• Inverter continuous overload • Short circuit protection • Over/under AC voltage protection • Over/under frequency protection • Over/under battery voltage protection
Display (Inverter/ MPPT Charger)	• Inverter O/P Voltage, Current, Frequency • Mains Voltage, Current, Frequency • Battery Voltage, Current • Mode of Operation, Active Faults • PV Voltage, Current, Instantaneous Power, Daily Generation, Total Generation (for each Solar Charger channel separately)
MCBs	• PV (each Channel) • Battery • Mains • Load
Environmental	
Operating Temperature Range	0-50 degrees ambient
Humidity	0-90% non-condensing
Enclosure	IP-54/ IP-65 for Indoor and outdoor inverters respectively
Isolation Switch	PV array Isolation switch (DC)
Safety	IEC 62109 Part 1 & 2
Environmental Testing	As per IEC 60068-2

Grid–Tied String or Central Inverter:

a. Grid Connected Inverters shall convert DC energy produced by the solar array to AC energy such that it synchronizes with the existing AC power sources on site. The AC power output of the inverter shall be fed to the rated AC distribution board (metering panel & isolation panel), which also houses the energy meter. The system should always work in solar priority mode such that power drawn from other sources (Grid or DG) is minimum depending upon the load requirement.

b. The inverter shall have an inbuilt MPPT (Maximum Power Point Tracker) feature so as to extract maximum power from PV modules at any moment of time.

c. The system shall have an inbuilt shut down/ wake feature such that it automatically wakes up in the morning and supply power, provided there is sufficient solar energy, and the grid voltage and frequency are in range. Similarly, once the Solar is down it should automatically go in to sleep

mode to minimize the losses.

d. The Inverter can be of either Central or String type.

e. The inverter shall have an inbuilt Anti-Islanding feature such that whenever the grid voltage and/or frequency go out of pre-set range, the inverter shall be immediately disconnected from the grid. The inverter will reconnect after a pre-determined time when the grid is back in the range. The same shall be applicable when there is a power cut.

f. The unit shall be able to synchronize with Diesel Generators (DG) or Hybrid PCU of similar or higher capacity as well and supply solar power to loads in solar priority mode. The quality of DG or Hybrid PCU shall be such that voltage and frequency output is within the stipulated limits.

g. The Inverter shall provide 1 Phase/ 3 phase output, 230V/ 415V (with grid tracking of -20% to +15 %/), 50 Hz (with grid tracking of ±5% i.e., 47.5 to 52.5 Hz) supply on AC side.

h. At rated power, the inverter output's current THD shall be less than 3%.

i. Also, the Inverter should perform at 100% capacity throughout the operating temperature range (i.e., 0- 50 degrees ambient). There should be no de-rating of output power within the operating temperature range.

j. It shall be capable of complete automatic operation, including wakeup, synchronization and shut down.

k. Ingress protection: For outdoor installation, Minimum IP-65 and for indoor installation minimum IP-54 degree of protection is required. This is valid for both string and central type inverter. For outdoor installation inverters are to be placed under shade.

l. MPPT controller, inverter and associated control and protection devices, etc. all shall be integrated into the PCU.

m. PCU shall have the facility to display the basic parameters of the system. Typically, it could be a 4 line by 20 characters' type LED/LCD display. Displays of a bigger size can also be provided.

n. PCU includes ground lugs for equipment and PV array groundings. The DC circuit ground shall be a solid single point ground connection.

o. To allow maintenance of the PCU, means of isolating the PCU from the DC side and the AC side shall be provided.

p. Since net metering may not have permitted at the time of installation at some places, a facility to prevent generated PV power into the Grid (beyond utility meter) would be preferred. This should not be implemented via shut down of solar inverter or Reverse power relay. Instead, inverters should have the facility of export power control.

q. In PCU/Inverter, 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, 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.

r. The PCU/ inverter 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.

s. 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.

t. 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.

u. The PCU/ inverters should be tested from the MNRE approved test centers/ NABL/ BIS/ IEC accredited testing- calibration laboratories. In the case of imported power conditioning units, these should be approved by international test houses.

Technical Parameters of Pure Grid–Tied String or Central Inverter

PARAMETERS	SPECIFICATIONS
Switching devices	IGBT/MOSFET
Control	Microprocessor /DSP
Output Voltage/ Frequency	230V/ 415V for 1-Phase/ 3 phase systems & 50Hz
Voltage Synchronization Range	-20% to +15% of the nominal output voltage
Frequency Synchronization Range	±5% of Nominal Output Frequency
Continuous Rating	As per the site but without any de rating from 0-50 degrees
Inverter Type	String/ Central Inverters
Galvanic Isolation	Must for both String and Central Inverters above 100 kW.
THD	Less than 3%
Regulation	≤ 2%
Internal Protection System	Array ground fault protection Input reverse polarity protection Grid Over/ Under Voltage & Frequency Anti-islanding Protection
Indications/ Displayed parameters	Inverter On/Off, GRID On/Off,
Circuit Breakers	PV, BATTERY, GRID, & LOAD.

Environmental	
Operating Temperature Range	0-50 degrees ambient
Humidity	95% non-condensing
Enclosure	IP-54/ IP-65 for Indoor and outdoor inverters respectively
Standards	
Efficiency Measurement	IEC 61683
Environmental testing	IEC 60068-2 (1,2,14,30)
Interfacing with utility grid	IEC 61727 or Equivalent
Islanding Prevention	IEC 62116 or Equivalent
General Electrical data	
Efficiency	> 95% at nominal voltage & power as per IEC 61683 or
No load losses	Less than 1% of rated power
Overload feature	150% for 1 minute
Cooling	Forced air cooling with temperature-controlled cooling fan
Display	
Display type	LCD / LED Display
Display parameter	
DC	Voltage Current
On grid connected mode	Line status
Interface (Communication	Suitable port to be provided in the inverter.
Web monitoring	Matched with the monitoring and data logging system
Protection	
DC Side	Input over voltage
AC side	i) DC inject protection to grid
Isolation Switch	PV array Isolation switch (DC)
Safety	IEC 62109 Part 1 & 2
Environmental Testing	As per IEC 60068-2

REMOTE MONITORING

All the relevant parameters of PCU should be available for remote monitoring over internet using GPRS (2G,3G & 4G enabled) based monitoring solution. PCU shall have GPRS (2G,3G & 4G enabled) inability 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	• Inverter Voltage, Current, Frequency • Mains Voltage, Current, Frequency • Battery Voltage, Current • Daily & total Battery charging energy (kWh) • Daily & total Battery discharging energy (kWh) • Daily & Total load energy consumption(kWh) • Daily & Total energy import energy from Grid(kWh) • Daily & Total energy export energy from Grid(kWh) • Active Faults

DATA ACQUISITION SYSTEM/PLANT MONITORING/REMOTE MONITORING:

Data Acquisition System shall be provided for each of the solar PV plant capacity.

Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.

Solar Irradiance: An integrating Pyrometer / Solar cell-based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.

Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system

The following parameters are accessible via the operating interface display in real time separately for solar power plant:

a. AC Voltage (V)
b. AC Output current(I)
c. Output Power (W)
d. Total output consumption by load(kWh)
e. Daily output consumption by load(kWh)
e. Power factor.
f. DC PV Input Voltage (V)
g. DC PV Input Current (I)
h. Total PV generation(kWh)
i. Daily PV generation(kWh)
j. Daily & total Battery charging energy (kWh)
k. Daily & total Battery discharging energy (kWh)
l. Time Active.
m. Time disabled.

n. Time Idle.

o. Total & daily import energy from Grid (kWh)

p. Total & daily import energy from Grid (kWh)

q. Protective function limits (Viz-AC Over voltage, AC Under voltage, over frequency, under frequency ground fault, PV starting voltage, PV stopping voltage).

All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.

PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class.

Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.

String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.

Computerized AC energy monitoring shall be in addition to the digital AC energy meter.

The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.

All instantaneous data shall be shown on the computer screen.

Software shall be provided for USB download and analysis of DC and AC parametric data for individual plants.

Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.

Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.

Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.

Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environmental data shall be provided.

Remote Monitoring and data acquisition through Remote Monitoring System software at the owner/JREDA location with latest software/hardware configuration and service connectivity for online/real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the bidder.

The bidders shall be obligated to push real-time plant monitoring data on a specified interval (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably. Suitable provision in this regard will be intimated to the bidders.

All the relevant parameters of Inverter should be available for remote monitoring over internet using GPRS based monitoring solution. The monthly charge of SIM card and server will be borne by bidder. The list of parameters should include:

PV Side	PV Voltage, PV Current, PV Power, Daily PV Generation, total Generation etc.
Inverter Side	➢ Inverter Voltage, Current, Frequency ➢ Mains Voltage, Current, Frequency ➢ Battery Voltage, Current ➢ Daily & total Battery charging energy (kWh) ➢ Daily & total Battery discharging energy (kWh) ➢ Daily & Total load energy consumption(kWh) ➢ Daily & Total energy import energy from Grid(kWh) ➢ Daily & Total energy export energy from Grid(kWh) ➢ Active Faults

5. Battery Bank:

The batteries shall be for SPV application Lead Acid type AGM-VRLA or Tubular Gel, Battery Bank voltage will be 24V/48V/96V/120V/240V/480V or as per design.

The batteries shall use 2V battery capacity to be designed for C10 rate. Charging instructions shall be provided along with the batteries. A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank. Battery shall conform as per IEC 61427 and / relevant IS specifications as per MNRE requirements. The undertaking letter of the above specifications must be submitted along with the consignment. The Battery should be warranted for a period of 5 years.

Features:

- The batteries shall be for SPV application and shall be Lead Acid type AGM-VRLA or tubular Gel.
- The batteries shall use 2V battery capacity to be designed for C10 rate.
- Charging instructions shall be provided along with the batteries.
- A suitable battery rack with interconnections & end connector shall be provided to suitably house the batteries in the bank.
- The batteries shall be suitable for recharging by means of solar modules via incremental / open circuit regulators.
- Battery interconnecting links shall be provided for interconnecting the battery in series and in parallel as needed and shall be Lead coated heavy duty copper strips.
- Connectors for inter cell connection (series / parallel) shall be maintenance free screws. Front covers shall be provided for each battery bank.
- The operating range will be 0ºC to +55/60°C.

- AH Efficiency: >95% and WH Efficiency: >85%
- Recombination Efficiency shall be >98%
- Self-Discharge of battery shall be <0.5% per week at 27ºC.
- The minimum warranty of the Battery should be 5 years.

6. DC Distribution Board (DCDB):

DC DPBs shall have sheets from enclosure of dust & vermin proof conform to IP 65 protection. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

DCDB shall consist of MCBs of suitable specifications which can withstand respective flow of current, with the purpose of providing the option for isolating the battery bank & SPV arrays. **The best quality Ah meter** has to be installed to measure the cumulative charging & discharging status of battery bank. If charge & discharge AH meter is available in PCU then no need of AH meter separately in DCDB.

7. AC Distribution Board (ACDB):

7.1. AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.

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

7.3. The **changeover switches and cabling work** should be undertaken by the bidder as part of the project.

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

7.5. The panels shall be designed for minimum expected ambient temperature of 45 degrees Celsius, 80 percent humidity and dusty weather.

7.6. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better. Should conform to Indian Electricity Act and rules (till last amendment).

7.7. All the 415 AC or 230 volts' devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance.

8. Cables and Accessories:

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

a. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards.
b. Temp. Range: –10oC to +80oC.
c. Voltage rating 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation.
e. Flexible
f. 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 (2%).

g. For the DC cabling, XLPE or XLPO insulated and sheathed, UV-stabilized single core multi- stranded flexible copper cables shall be used; multi-core cables shall not be used.

h. For the AC cabling, PVC or, XLPE insulated, and PVC sheathed single or multi-core multi-stranded flexible copper cables shall be used; Outdoor AC cables shall have a UV-stabilized outer sheath.

i. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. The outer sheath of cables shall be electron beam cross-linked XLPO type and black in color.

j. The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.

k. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.

l. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo- plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm2 copper; the minimum AC cable size shall be 4.0 mm2 copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.

m. 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. In addition, cable drum no. / Batch no. to be embossed/ printed at every one meter.

n. Cable Jacket should also be electron beam cross-linked XLPO, flame retardant, UV resistant and black in color.

o. All cables and connectors for use for installation of solar field must be of solar grade which can withstand harsh environment conditions including High temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall be solar grade copper (Cu) with XLPO insulation and rated for 1.1kV as per relevant standards only.

p. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant shall be provided by the bidder. Any change in cabling sizes if desired by the bidder shall be approved after citing appropriate reasons. All cable schedules/ layout drawings shall be approved prior to installation.

q. 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 as specified below: BoS item / component Standard 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.

r. The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%.

s. The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%.

9. Net-Meter and Solar Meter:

a. All the meters shall adhere to the standards and provisions specified in CEA (Installation

and Operation of Meters), Regulations, 2006 and subsequent amendments thereof.

b. **Solar Generation Meter**: The appropriate meter shall be single phase or three phase as per requirement. An energy meter shall be installed in between the solar grid inverter and the building distribution board to measure gross solar AC energy production (the "Solar Generation Meter") for Pure Grid tied systems. For Hybrid Systems, **separate DC meter shall be installed between DCDB and PCU/Inverter. The Solar Generation Meter shall be of the same accuracy class as the JBVNL service connection meter or as specified by JSERC**.

c. **Net-Meter**: The appropriate meter shall be single phase or three phase as per requirement. The meter to be installed shall be of the same or better Accuracy Class Index as the existing meter installed at the premises.

d. The appropriate meter(s) at the premises of the consumer shall be procured and installed by the bidder.

10. Earthing and Lightning Protection:

Each array structure of the PV system should be grounded/earthed properly using adequate number of earthing kits as per IS: 3043-1987. In addition, the lighting arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department/JREDA as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly. **Earth conductor size should not be less than 16 sq. mm cu cable or equivalent. All electrical components (i.e., DCDB, ACDB, Battery, etc.) body earthing should be done in SPV plant.**

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. The earthing resistance values shall conform to relevant IS/ Indian electricity rules.

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 the required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 standards. The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and suitable earthing such that induced transients find an alternate route to earth. **The SPV plant above 50 kWp should have ESE type lightning arrestor. Should fulfils standards UNE 21 186 and NFC 17–102. Response time of lightning arrestor should not be less than 10µs. SPV plant below 50 kWp shall have either ESE type lightning arrestor or solid cu franklin type lightning arrestor. The earthing GI strip / Solid GI cable / Solid Cu cable should be laid down with insulator on the roof surface / wall. The lightning arrestor should be installed with insulator.**

Based on the available roof area solar PV panels will be installed on the roof of the building. The output of the panels (DC electricity) connects to the power conditioning unit / inverter which converts DC to AC. The inverter output will be connected to the control panel or distribution board of the building to utilize the power. The inverter synchronizes with grid and also with any backup power source to produce smooth power to power the loads with preference of

consuming solar power first. If the solar power is more than the load requirement, the excess power is automatically fed to the grid. For larger capacity systems connection through step up transformer and switch yard may be required to feed the power to grid. In case of grid failure, there should be provision of protection for isolating the SPV plant from the grid.

4. Battery Room and Control Room:

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

5. Quality and adaptability of the equipment:

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

6. Tools & Tackles and Spares:

After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder for approval of specifications and make from JREDA/ owner.

A list of requisite spares in case of PCU/Inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs / arrestors, MCCBs etc. along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant/service center itself for the entire period of warranty and Operation & Maintenance, which upon its use shall be replenished.

7. Danger Boards and Signage:

Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with JREDA/ owner.

8. Fire Extinguishers:

The firefighting system for the proposed power plant for fire protection shall be consisting of:

a. Portable fire extinguishers in the control room for fire caused by electrical short circuits.
b. Sand buckets in the control room
c. The installation of Fire Extinguishers should be confirmed to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

9. Drawings & Manuals:

Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.

Approved ISI and reputed makes for equipment be used.

For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to JREDA before progressing with the installation work.

10. Planning and Designing:

The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labour. The bidder should submit the array layout drawings along with Shadow Analysis Report to JREDA for approval.

JREDA reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/requirements.

The bidder shall submit a preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submits three sets and a soft copy in CD of final drawing for formal approval to proceed with construction work.

11. Drawings to be furnished by bidder after award of contract:

The Contractor shall furnish the following drawings Award/Intent and obtain approval:

a. General arrangement and dimensioned layout
b. Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
c. Structural drawing along with foundation details for the structure.
d. Itemized bill of material for complete SV plant covering all the components and associated accessories.
e. General Arrangement of Solar Power Plant
f. Single Line Diagram
g. Earthing Layout of Solar Power Plant
h. Shadow analysis of the roof

12. Safety Measures:

The bidder shall take entire responsibility for electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

13. Display Board:

The bidder has to display a board at the project site mentioning the following:

Plant Name, Capacity, Location, Type of Renewable Energy plant (Like solar wind etc.), Date of commissioning, details of tie-up with transmission and distribution companies, Power generation and Export FY wise.
The size and type of board and display shall be approved by the Engineer-in-charge before site inspection.

14. Manpower Training

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

Annexure-1: Format for Covering Letter for Bid fee
NIB No: 03/JREDA/GCRT/RD/25-26

(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: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Sir,

We are hereby submitting our offer in full compliance with the terms and condition of the above NIB No. …….. under category…… (General/MSE/NEW MSE). We have……..…. (submitted the requisite amount of "Bid Fee" through online mode **or** claimed exemption of MSEs bidder). Bid will be evaluated only for the applied category and no further claim for the change of category (Gen/MSE/New MSE) will be accepted.

The tender is uploaded on 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-1a

Undertaking by MSMEs of Jharkhand for availing preferential treatment

NIB No: 03/JREDA/GCRT/RD/25-26

(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, GoI 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-2: Format for Covering Letter for Earnest Money

NIB No: 03/JREDA/GCRT/RD/25-26

(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: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Sir,

We are hereby submitting our offer in full compliance with the terms and condition of the above NIB No. …… under category……. (General/MSEs/NEW MSE). We have…… (submitted the requisite amount of "Earnest Money" through online mode **or** Claimed exemption of MSEs bidder). Bid will be evaluated only for the applied category and no further claim for the change of category (Gen/MSE/New MSE) will be accepted.

The tender is uploaded on 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-3: Information about the Bidding Firm

NIB No: 03/JREDA/GCRT/RD/25-26

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

SL. No.	Particulars	
1.	Name of the Bidder	
2.	Address of Bidder with Telephone, Fax, email	
3.	Address of the Registered Office	
4.	Address of the works	
5.	GPS Co-ordinate of Registered Office	
6.	GPS Co-ordinate of Factory Campus	
7.	Name & Designation of Authorized Signatory for Correspondence (Attach Power of Attorney as per **Annexure-7**)	
8.	Nature of Firm (Proprietorship/Partnership /Pvt. Ltd./Public Ltd. Co./Public Sector)	
9.	Permanent Account Number (PAN)/TIN (Attach proof)	
10.	Firm's Registration Number (Attach proof)	
11.	GST Certificate (Attach proof)	
12.	Specify the Item Originally Manufactured (SPV module/PCU/Battery) (Attach copy of Registration Certificate of Industry Department)	
13.	Details of in-house testing facility (Attach Proof)	
14.	Office/ Dealer and Service network in Jharkhand with TIN No. (Give details)	
15.	Quoted Category & Quantity	
16.	Type of Bidder (General/MSEs/NEW MSEs)	
17.	Particulars of Earnest Money	
18.	Place where Materials will be Manufactured	
19.	Place where Materials will be Available for Inspection	
20.	Other details and remarks, if any	

Yours faithfully,

(Signature of Authorized Signatory)

Name:

Designation:

Company seal:

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

Annexure-4: Declaration by the Bidder

NIB No: 03/JREDA/GCRT/RD/25-26

(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 Category_____ (With/Withou document, DO HEREBY DECLARE THAT

1. The Bidder is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document.
2. The Bidder is capable of executing and completing the work as required in the tender.
3. The Bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.
4. The Bidder has no collusion with any employee of JREDA or with any other person or firm in the preparation of the bid.
5. The Bidder has not been influenced by any statement or promises of JREDA or any of its employees, but only by the tender document.
6. The Bidder is financially solvent and sound to execute the work.
7. The Bidder is sufficiently experienced and competent to perform the contract to the satisfaction of JREDA.
8. The information and the statements submitted with the tender are true.
9. The Bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
10. The Bidder has not been debarred from similar type of work by any SNA/ Government Dept. /PSU.
11. This offer shall remain valid for Six months from the date of opening of the tender.
12. The Bidder gives the assurance to execute the tendered work as per specifications terms and conditions.
13. The Bidder confirms the capability to supply and install required no. of systems per month.
14. The Bidder accepts that the earnest money be absolutely forfeited by JREDA if the Bidder fails to undertake the work or sign the contract within the stipulated period.

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

Annexure-5: Format For Financial Requirement – Annual Turnover

NIB No: 03/JREDA/GCRT/RD/25-26

[On the letterhead of Bidding Company /Chartered Accountant]

To,

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

Dear Sir,

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

We certify that the Bidding Company had an average Annual Turnover of Rs. ----------
-
- ------ based on audited annual accounts of the last three years ending 31.03.2024.

Sl. No.	Financial Year	Turnover (in Rupees)
1.	2021-22	
2.	2022-23	
3.	2023-24	
	Average Annual Turnover	

UID No.: .....

Authorized Signatory

(Power of Attorney holder)

Statutory Auditor

(Stamp & Signature)

Annexure-6: Format For Financial Requirement - Net Worth Certificate

NIB No: 03/JREDA/GCRT/RD/25-26

[On the letterhead of Bidding Company /Chartered Accountant]

To,

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

Dear Sir,

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

This is to certify that Net worth of _____{insert the name of Bidding Company}, as on 31st March 2024 is Rs _____. The details are appended below.

Particulars	**Amount (In Rs.)**
Equity Share Capital	
Add: Reserves	
Subtract: Revaluation Reserve	
Subtract: Intangible Assets	
Subtract: Miscellaneous Expenditure to the extent not written off and carried forward losses	
Net Worth as on 31st March 2024	

UID No.: .....

Authorized Signatory
Auditor

(Power of Attorney holder)

Statutory

(Stamp & Signature)

Annexure -7: Format of Power of Attorney for Signing Bid

NIB No: 03/JREDA/GCRT/RD/25-26

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: 03/JREDA/GCRT/RD/25-26,** 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 Accepted

by

…….... (Signature)

(Name, Title and Address of the Attorney)

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

Annexure-8: Details of Orders Received and Executed in Last 7 Years

NIB No: 03/JREDA/GCRT/RD/25-26

Details of Orders Received & Executed by the Manufacturer/Supplier for Supply of **SPV Power Plant** to SNA/ Govt. Organization during Last Seven Years.

SL. No.	Name of Agency/ Organization	Purchase Order No., Date & Ordered Qty.	Capacity of SPV Power Plant	Delivery Schedule	Qty. Supplied Within Delivery Schedule	Qty. Supplied After Delivery Schedule	Date of Full Supply

Yours faithfully,

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

Note:

(a) Attach Photocopies of Work Orders

(b) Attach Photocopies of Certificate of Satisfactory Performance Issued by Concerned Nodal Agency/*PSU*/ Govt. Organization

(c) A separate sheet may be used for giving detailed information in seriatim duly signed. This bid Performa must be submitted duly signed in case a separate sheet is submitted.

Annexure-9 Contact Person for the

NIB No: 03/JREDA/GCRT/RD/25-26

[On the letterhead of Bidding Company]

1	Name of Proprietor/ Partners/ CMD/Director	
2	Contact Person name for the NIB Contact Person name for Project Execution Contact Person Name for Project Administration	
3	Designation for the NIB Designation for the Project Execution Designation for the Project Administration	
4	Contact No. (mobile/phone) for the NIB for the Project Execution for the Project Administration	
5	Fax No. for the NIB for the Project Execution for the Project Administration	
6	e-mail ID for the NIB for the Project Execution for the Project Administration	
7	Corresponding address with pin code	
8	Remarks/ Alternate (if any changes)	

(Signature of Authorized Signatory)

Name:

Designation:

Company Seal:

Annexure-10: Format for Technical Details

NIB No: 03/JREDA/GCRT/RD/25-26

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

S. No.	Particulars	Details	Make
1	Mounting arrangement for Solar module		
2	Solar module frame material		
3	Module type		
4	No. of solar cells per module		
5	Make of Solar module (Attach IEC Certificate)		
6	Country		
7	Weather resistant HDPE junction Box (IP67)		
8	Max. Temperature rise of solar cells under severe working condition over max. ambient temperature		
9	Nominal voltage		
10	Operating voltage of solar module (nom)		
11	Peak power voltage (Vmp)		
12	Peak Power current (Imp)		
13	Open circuit voltage (Voc)		
14	Short circuit current (Isc)		
15	Make of PCU and Origin		
16	Make of Battery and Origin		
17	Type of Battery		
18	No. of Battery		
19	Each Battery Voltage		
20	Each Battery Ah		
21	Battery Bank rating (Voltage & Ah)		

Undertaking

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

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

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

Filling Instructions:

1. The **SPP** components will be generally guaranteed as per General Terms & Conditions. The manufacturer can also provide additional information about the system and conditions of Guarantee as necessary. The guaranteed card to be supplied with the system must contain the details of the system supplied as per the 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-11: Technical Detail Form

NIB No: 03/JREDA/GCRT/RD/25-26

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

Warrantee Card

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 27^0C	
	(g)	Guarantee Valid Up To	
6.	Details of PCU & 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 Warrantee Obligations		

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

Filling Instructions:

3. The Rooftop SPV Power Plants 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 guaranteed 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.
5. List of attached Component Test Certificate.

Sr. No.	Certificate No.	Test Certificate Description	Date of Issue	Issuing Authority

Annexure-12: Price Bid

NIB No: 03/JREDA/GCRT/RD/25-26

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Categories and group for bidding of capacities:

Cat. No.	SPV Power Plant Capacity (kWp)
1	Group "A" for 1 to 10 kWp (without battery system)
	Group "A-1" for 1 to 10 kWp (with battery system)
2	Group "B" for 11 to 50 kWp (without battery system)
	Group "B-1" for 11 to 50 kWp (with battery system)
3	Group "C" for 51 to 100 kWp (without battery system)
	Group "C-1" for 51 to 100 kWp (with battery system)
4	Group "D" for Above 100 kWp (without battery system)
	Group "D-1" for Above 100 kWp (with battery system)

Bidders shall quote the per kW rate in the below format as per above categories and Groups.

Cat. No.	SPV Power Plant Capacity (kWp)	Quoted quantity (kWp) (to be entered by bidder)	Rate per kWp (Excluding GST and including of all other taxes and charges) (In Rs.)

Note: Bidder shall participate only in one category (with/without battery system) mentioned above, in BOQ/Price bid otherwise participating in more than one category/group will lead to rejection of the bid.

The above quoted price for **Solar Power Plants** are complete in all respect as per Technical Specifications inclusive of all Central/State/Local taxes & duties, packing, forwarding, transit insurance, loading & unloading, transportation & other charges etc. FOR destination at any places in Jharkhand and inclusive of installation, testing, commissioning, operation & maintenance for five years, performance testing and training.

1. Certified that rates quoted for **Solar Power Plants** are as per specifications, terms & conditions mentioned in the bid document.
2. Price will be quoted in complete numeric figure and words.
3. For each category, more than one contractor will be empaneled.
4. The offered rate should be valid for one year which may be extended as per the requirement of JREDA.

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

Annexure-12 (A) : Price Break up

NIB No: 03/JREDA/GCRT/RD/25-26

(Important Notice – This Annexure shall be submitted in PDF format along with price bid only. In case bidder submit this Annexure in technical bid their bid shall be out rightly be rejected.)

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

1. For Category (Without Battery): .....(Please fill the name of quoted category i.e. A/B/C/D)

S. N	Component	Quantity	Bidders to quote Rate per kWp (Excluding GST and including of all other taxes and charges) (In Rs.)
1	SPV Modules		
2	Inverter (Grid Connected)		
3	Module Mounting Structure (MMS)		
4	ACDB, DCDB & Junction Boxes		
5	Cables		
6	Installation Cost		
7	Net Meter		
8	Other Cost (Mention items)		
9	CMC cost (5 years)		
Total			

2. For Category (With Battery/Hybrid): .....(Please fill the name of quoted category i.e. A-1/B-1/C-1/D-1)

S. N	Component	Quantity	Bidders to quote Rate per kWp (Excluding GST and including of all other taxes and charges) (In Rs.)
1	SPV Modules		
2	Inverter (Grid Connected)		
3	Inverter (Hybrid)		
4	Module Mounting Structure (MMS)		
5	ACDB, DCDB & Junction Boxes		
6	Cables		
7	Batteries		
9	Installation Cost		
10	Net Meter		
11	Other Cost (Mention items)		
12	CMC Cost (5 Years)		
Total			

Note: Need to be submit in .PDF file with price bid on company letterhead.

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

Annexure-13: Format for Submitting Bank Guarantee for Earnest Money

NIB No: 03/JREDA/GCRT/RD/25-26

(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.

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

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

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

1. We……..(Bank) hereby agree and undertake to pay you on demand the said amount of Rs. …….. (Rupees …… only) without any protest or demur in the event the Supplier/Tenderer after submission of his tender, resales from or withdraws his offer or modifies the terms and conditions thereof in a manner not acceptable to you or expresses his unwillingness to accept the order placed and/or letter of intent issued on the Supplier/Tenderer for the work under "Notice Inviting Bid Ref. No. **03/JREDA/GCRT/RD/25-26.**

   Your decision as to whether the Supplier/Tenderer has resoled from or has withdrawn his offer or has modified the terms and conditions thereof in a manner not acceptable to you or has expressed his unwillingness to accept the order placed and/or Letter of Intent issued by you on the Supplier/Tenderer for the work under "Notice Inviting Bid Ref. No.:**03/JREDA/GCRT/RD/25-26.**

   In this regard, shall be final and binding on us and we shall not be entitled to question the same.

   Not with standing anything contained in the foregoing, our liability under this Guarantee shall be restricted to Rs…….. (Rupees…….. only).

2. 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.
3. We shall not revoke this Guarantee during its currency except by your consent in writing.
4. This Guarantee shall not be affected by any change in the constitution of the Supplier/Tenderer or yourselves or ourselves but shall ensure to your benefit and be enforceable against our legal successors or assignees by you or your legal successors.
5. 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.
6. 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.
7. This Bank Guarantee must include SFMS (Structural Financial Management System) as per JREDA Bank Details Which is as:

Name of Bank: State Bank of India IFSC Code: SBIN0009010
Branch Details: Ashok Nagar Branch, Ranchi

Signed and delivered for and on behalf of Bank.
(Banker's Name)

Name of Bank Manager: …….

Address ……..……

……..….

Annexure-14: Project Report Format
NIB No: 03/JREDA/GCRT/RD/25-26

Certificate of Delivery of Grid Connected Rooftop SPV Power Plant received by the Consignee/ JREDA Official as Proof of Compliance by the Supplier

Name & Designation of Consignee……

Name of Department……..

Address of Department……..

……..

Certified that we have received following materials and handed over to supplier for installation of Grid Connected Rooftop SPV Power Plants:

1. Nos. & Capacity of SPV Modules: ----------
2. Nos. & Capacity of Batteries……...
3. Nos. & Capacity of PCUs……
4. Balance of Systems……...
5. Date of Supply……...

Above materials have been supplied by M/s……

Signature & Seal of Supplier

Signature of Consignee along with Seal/JREDA Official……

Date……...

Certificate of JREDA Representative

Certified that above-mentioned materials have been supplied as per PDI Report & NIB specification and handed over to the consignee at site for installation & commissioning.

Signature & Seal of JREDA Representative

Format for Summary Project Report for
Grid Connected Rooftop and Small SPV Power Plants

1. Name of Bidder
2. Rfs no.
3. Project details (Site location & Address)
4. Brief about the Rooftop Solar Power Generation System
5. Details of the beneficiary
6. Specifications of the Components and Bill of Material/ Quantities

Sl. no	Component	Specifications	Quantity	Make
A	Solar PV module			
A.1	Aggregate Solar PV capacity (kWp)			
B	Grid Tie inverter (Type and Capacity)			
B.1	Aggregate Inverter capacity (kVA)			
C	Module mounting structure (Certified by a Structural Engineer			
D	Array Junction Box			
E	AC Distribution Board			
F	Cable (All type)			
G	Earthing Kit (maintenance free)			
H	Meters			
I	Online monitoring System			
J	Any other component			

7. Unit cost of solar power generation
8. Cost benefit analysis, payback period
9. Expected output/annum
10. Respective drawings for layout, electrical wiring connections, earthing, components etc.
11. Connectivity details with grid and metering arrangement (with sketch diagram)
12. Copy of electricity bill of the beneficiary and consumer number
13. Any other information

(The above information should be limited up to 2-3 pages only)

Annexure 15: Project Completion Report for Grid-Connected Rooftop

NIB No: 03/JREDA/GCRT/RD/25-26

Certificate of Installation & Commissioning of Grid Connected Rooftop SPV Power Plant

Certificate

Name of Consignee…….. Designation: -……..

Name of Department……

Address of Department……

This is to certify that Solar Power Plant of... ... ... kWp have been installed successfully by M/s…….....on Dated…….……in Building.

This Solar Power Plant is working satisfactorily from last seven days.

Signature & Seal of Supplier

Signature of Consignee along with Seal……

Date……...

Certified that Grid Connected Rooftop Solar Power Plant has installed & commissioned as per PDI Report and per the specification of NIB.

Signature & Seal of JREDA Representative……

Date……..

JOINT COMMISSIONING REPORT OF ROOFTOP SOLAR POWER PLANTS

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

1. JREDA Work Order No.:
2. Name of Contractor:
3. Solar Power Plant Location:
4. Solar Power Plant Capacity:
5. Date of Commissioning:

Date:

Place:

Seal and Signature of the Contractor:
Name:
Designation

JOINT COMMISSIONING REPORT OF ROOFTOP SPV POWER PLANTS

1. Name of the Site: …….
2. Capacity of SPV Power Plants installed ---------- kWp.
3. Work Order No.:
4. Actual Date of Commissioning:
5. Stipulated Date of commissioning as per W.O.:
6. Extension granted till: Not Applicable vide JREDA letter no. Not Applicable
7. Name & address of the contractor: …….
8. This is hereby certified that the contractor ---------- has successfully installed & commissioned the ----------kWp SPV Power Plant at ----------on --.--.2025 with major components as mentioned in **Annexure I** appended hereto, as per the terms and conditions of the work order mentioned at serial No. (3) Above.
9. The work order has been fully executed as per the work order and the SPV Power Plant at ---------- of ---------- kWp handed over to the Consignee cum User Agency in good working condition. We shall provide complete warranty against all manufacturing defects and defective/erroneous installation for a period of five years from this date of Commissioning. The above-mentioned SPV Power Plant is hereby handed over by the contractor to the Consignee cum User Agency in fully satisfactory working condition.

Date: Seal and Signature of the Contractor:
Name:
Place: Designation:

SPV Power Plant Installed at ---------- of---------- kWp have been verified by JREDA Engineer-In -Charge and handed over to consignee in working condition.

Seal and Signature of Consignee cum User Agency
Name:
Designation:

Seal and Signature of JREDA Engineer-In –Charge/JREDA representative Name:
Designation:

Annexure-15(a)

	Forming integral part of the Joint Commissioning report dated ---------- showing details of major components installed at----------of SPVPP of ---------- kWp Capacity.				
S. N.	**Name of the items Installed/works commissioned at site**	**Size**	**Unit**	**Quantity**	**Remark**
1	**Control Room Building**: No cable is exposed. Proper casing capping (Conduit pipe) is provided with distribution line. Control Room has been provided by Consignee.	-------	Sq. Mtrs.	N/A	Provided
2	Matting as required for Control Room	Provided			
3	**Battery Bank**: Capacity – ------V/-------Ah VRLA/T Gel Battery each of 2 Volt having C/10 Rating as per the BIS, connected in series, each battery bank contains suitable rack and connecting lead of adequate size. (Serial No of Batteries enclosed in **Annexure II.)**	- ----- V - ------ Ah	V/Ah	Nos.	As per specification
4	**SPV Modules** of ----------Wp, ---------- Cells each of ---- ---------- make (Serial No's as mentioned in enclosed **Annexure III.**)		Wp	Nos.	As per specification
5	**SPV Module Mounting Structure** for the ----------Nos. of modules for ---------- kWp capacity unit on structure including design & construction of PCC/RCC foundation base for holding the above structures the work includes necessary excavation, concreting, back filling, shoring and shattering etc.)	------- Modules in ---------- structure		----- Nos.	As per specification
6	**PCU/Inverter**: Capacity --------KVA--------- V, Digital sine wave, Make of ---------- , suitable for grid tie and hybrid mode of operation along with all protection, controlling, arrangement and required accessories suitable for the power plant commissioned.		KVA	----- No's	As per specification
7	Lightening Protection System		Numbers	------- No	
8	Over Voltage protection System				
9	DCDB		Numbers	------ No	
10	ACDB		Numbers	----- No	
11	**Array Junction Box**:		Numbers	----- No's	
12	**Earthing Protection**: The earthling pit is as per IS:3043	0PITS	Numbers	----- Sets	
13	Cable/wire 4 Sq. mm PVC Copper	----------	Meters		
14	Cable/Wire 25 Sq. mm PVC Copper	----------	Meters		

Date:

Place:

Seal and Signature of the Contractor:
Name:

Designation:

<u>Verification Report of JREDA Engineer-In –Charge</u>:
Above mentioned **Annexure-I** w.r.t. installation of Rooftop Solar Power Plant of ---kWp at ---------- have been verified and found as per the specification.

Seal and Signature of JREDA
Engineer-In –Charge/JREDA representative
Name:
Designation:

:

Annexure-15(b)
Battery Bank Details

Make: ---------- Specification: --------~~Volts~~ ------~~AH~~ ---
Number of Batteries ---------- Nos.

S. N.	Battery Serial No.	S. N.	Battery Serial No.	S. N.	Battery Serial No.
1		9		17	
2		10		18	
3		11		19	
4		12		20	
5		13		-	
6		14		-	
7		15		-	
8		16		-	

Date: Seal and Signature of the Contractor:

Place: Name:
Designation

Verification Report of JREDA Engineer-In –Charge:
Above mentioned Battery Serial No. w.r.t. installation of Rooftop Solar Power Plant of ---kWp at ----------
---have been verified and found as per the specification.

Seal and Signature of JREDA Engineer-In –Charge/JREDA representative

Name:
Designation:

Annexure-15(c)

SPV Modules Details

SPV Modules Installed at ----------of--- -----kWp Capacity.

Total Capacity ----------kWp
Each Modules Capacity----------Wp
Total No of Modules ----------Nos.

S. No.	Module Sl. No.	S. No.	Module Sl. No.	S. No.	Module Sl. No.
1		9		17	
2		10		18	
3		11		19	
4		12		20	
5		13		-	
6		14		-	
7		15		-	
8		16		-	

Date:

Place:

Seal and Signature of the Contractor:
Name:
Designation

Verification Report of JREDA Engineer-In –Charge:

Above mentioned Module Sl. No. w.r.t. installation of Rooftop Solar Power Plant of ---kWp at ----------

- have been verified and found as per the specification and materials available as per PDI report.

Seal and Signature of JREDA Engineer-In –Charge/JREDA representative
Name:
Designation:

Power Conditioning Unit (PCU)/Inverter

Make: ---------- Sl. No: ----------

Photographs Enclosed:

Date:

Place:

Seal and Signature of the Contractor:
Name:
Designation

Verification Report of JREDA Engineer-In –Charge:

Above mentioned photograph w.r.t. installation of Rooftop Solar Power Plant of ---kWp at ---------- have been verified and found as per the specification.

Seal and Signature of JREDA
Engineer-In –Charge/JREDA representative
Name:
Designation

Photograph of Rooftop Solar Power Plants

Photographs:

Date:
Place:

Seal and Signature of the Contractor:
Name:
Designation

Verification Report of JREDA Engineer-In –Charge:
Above mentioned photograph w.r.t. installation of Rooftop Solar Power Plant of ---kWp at ---------- have been verified and found as per the specification.

Seal and Signature of JREDA
Engineer-In –Charge/JREDA representative
Name:
Designation

Warrantee Certificate

It is hereby certified that the Rooftop Solar Photovoltaic Power Plant of ----------kWp Capacity has been successfully Supplied, Installed & Commissioned against Work Order No----------of JREDA at site at ----------on dated ---.------

The Mechanical Structures, Electrical Works including Power Conditioner/Inverter/Charge Controller/MPPT Unit/ Distribution Boards/ Digital Meters/ Switch Gear/ Storage Batteries etc. overall workmanship of Rooftop SPV Power Plant/System remain warranted against any manufacturing /design/installation defects for a period of five years from the date of Installation & Commissioning.

However, for Solar PV Modules the warranty shall be in line with the warranty offered by the module manufacturer which is "PV modules used in solar power plant/ system will remain warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years."

Date:
Place:

Seal and Signature of the Contractor:
Name:
Designation:

Note: Original copy of warranty certificate issued by manufacturer for SPV Module, PCU/Inverter and Battery as applicable should also be submitted in JREDA, Ranchi.

PRECOMMISSIONING TEST REPORT

Installation & Commissioning Report of -------- kWp Rooftop SPV Power Plant at ----------

S. N	Particulars	Details
1	Place of commissioning of SPVPP	
2	Date of Commissioning of SPVPP	
3	Nos. of Modules	
4	Nos. of Battery	
5	Nos. of Module Mounting Structures.	
6	Nos. of ACDB	
7	Nos. of AJB	
8	Nos. of Earthing	
9	Nos. of DCDB	
10	Nos. of Battery Rack	
11	Nos. of Pedestal	
12	Series String-1 A1	Voc…….. Isc……
13	Series String-2 A2	Voc…….. Isc……
14	Series String-3 A3	Voc…….. Isc……
15	PCU Output Voltage (V)	
16	Battery Voltage (V)	
17	Output Frequency (Hz)	
18	Others if any	

Date:

Place:

Seal and Signature of the Contractor:
Name:
Designation:

Verification Report of JREDA Engineer-In –Charge:
Above mentioned data w.r.t. installation of Rooftop Solar Power Plant of ---kWp at---------- have been verified and found as per the specification.

Seal and Signature of JREDA
Engineer-In –Charge/JREDA representative
Name:
Designation

Project Completion Report for Rooftop Solar Power Plants

S. N	Component	Observation
1	Work Order No. & Date	
2	Contractor Name and Complete Address	
	Site/Location with Complete Address	
	Longitude/Latitude	
3	**Capacity of system installed (kWp)**	
4	**Specification of the Modules:**	
	Type of modules (multi/mono)	
	Make of Modules and year of manufacturing	
	Wattage and no. of modules	
	Module Efficiency	
	No. of series & Parallel combinations	
	Tilt Angle of Modules	
4.1	IEC certificate Date of issue Agency Validity Enclose a IEC certificate	
4.2	Whether imported or indigenous	
4.3	RFID tag is pasted inside or outside	
4.4	Type of RFID	
5	**PCU**	
	Make & rating Type of Charge controller/MPPT	

	Capacity of inverter and year of manufacturing	
	AC Output	
	Whether hybrid or stand alone	
	Whether indigenous or imported	
	Enclose test certificate as per MNRE requirement	
	Input Voltage to Inverter	
6	**Batteries**	
	Make of batteries and year of manufacturing	
	Type: Tubular Lead Acid/VRLA/GEL	
	Rating and No.	
	No. of series and parallel combinations	
	Enclose test certificate as per MNRE requirement	
7	Depth of Discharge Proposed	
	Autonomy (Days)	
8	**Structures**	
	Tracking or non-tracking	
	Indigenous or imported	
9	**Cables Make and size**	
	Enclose Certificate: -	
	Voltage of cable	
10	**Distribution Box**	
	Name	
	Make	
	Certificate	
11	**Earthling and protections**	
	Lighting Arrester (Type)	
12	Date of Commissioning	
13	Enclose Generation data for one month (for	

13(a)	Enclose energy consumption data for one month	
14	Monitoring Mechanism for the installed System	
	Technical Person Trained to maintain system	

Date:

Place:

Seal and Signature of the Contractor:
Name:
Designation:

Verification Report of JREDA Engineer-In –Charge:

Above mentioned Project Completion Report for Rooftop Solar Power Plants w.r.t. installation of Rooftop Solar Power Plant of ---kWp at --------have been verified and found as per the specification.

Seal and Signature of JREDA
Engineer-In –Charge/JREDA representative
Name:
Designation

Annexure-16: Format for Monthly O&M and CMC Report

NIB No: 03/JREDA/GCRT/RD/25-26

[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.

Dear Sir,

Sub: Rate Contract for Design, Manufacture, Testing, Supply, Installation & Commissioning of 03 MWp Grid connected Rooftop SPV Power Plants of different capacities including five years Comprehensive Maintenance Contract (CMC) on Turnkey basis on Government Residential Buildings anywhere in the state of Jharkhand.

Date of Installation.....

JREDA Work Order No..... Dated.....

Place of Supply.....

Project Capacity:

Address of the site:

Component	Activity	Description	Date	Name / Signature	*Remarks
PV Module	Cleaning	Immediately clean any Bird droppings / dark spots on module.			
	Cleaning	Clean PV modules with plain water or mild dishwashing detergent.			
	Inspection (for plants > 50 kWp)	Infrared camera inspection for hot spots; bypass diode failure.			

PV Array	Inspection	Check the PV modules And rack for any damage.			
	Inspection	If any new objects, such as Vegetation growth etc., are causing shading of the array. Remove if any.			
	Vermin Removal	Remove bird nests or vermin from array and rack area.			
Junction Boxes	Inspection	Inspect electrical boxes for corrosion, intrusion of water or vermin. Check position Of switches and breakers. Check status of all protection devices.			
Wiring	Inspection	Inspect cabling for signs of cracks, defects, lose connections, corrosion, overheating, arcing, short or open circuits, and ground faults.			
Inverter	Inspection	Observe instantaneous operational indicators on the faceplate. Inspect Inverter housing or shelter for any physical maintenance. Check for connection tightness.			

Inverter	Service	Clean or replace any air filters.			
Instruments	Validation	Verify monitoring instruments (Pyranometer etc.) with Standard instruments to verify their operation within tolerance limits.			
Transformer	Inspection	Inspect transformer oil level, temperature gauges, connections etc.			
Plant	Monitoring	Daily Operation and Performance Monitoring.			
Spare Parts	Management	Manage inventory of spare parts.			
Log Book	Documentation	Maintain daily log records.			
Tracker (if any)	Inspection	Inspect gears, gear boxes, motors.			
	Service	Lubricate bearings, gear as required.			

Date	Generation kWh	Grid outage (hh:mm)	Inverter down period (hh:mm)	Remarks
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				
31				

Total generation for the month in kWh:

Cumulative generation since commissioning in kWh:

CUF for month in %:

Cumulative CUF since commissioning in %:

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

*****Provide details of any replacement of systems/components, damages, plant/inverter shut down (planned/forced), breakdown, etc under remarks.

*Daily register is to be maintained by the bidder at each location greater than 50 kWp. The same may be inspected by JREDA or its authorized representative at any time 5 years of O&M period. The Register will have the information about the daily generation, Inverter downtime if any, Grid outages.

Annexure-17: Operation and Maintenance Guidelines of Grid Connected PV Plants

NIB No: 03/JREDA/GCRT/RD/25-26

For the optimal operation of a PV plant, maintenance must be carried out on a regular basis.
All the components should be kept clean. It should be ensured that all the components are fastened well at their due place.
Maintenance guidelines for various components viz. solar panels, inverter, wiring etc. are discussed below:

1. SOLAR PANELS

Although the cleaning frequency for the panels will vary from site to site depending on soiling, it is recommended that
The panels are cleaned at least once every fifteen days.

- Any bird droppings or spots should be cleaned immediately.
- Use water and a soft sponge or cloth for cleaning.
- Do not use detergent or any abrasive material for panel cleaning.
- Iso-propyl alcohol may be used to remove oil or grease stains.
- Do not spray water on the panel if the panel glass is cracked or the back side is perforated.
- Wipe water from module as soon as possible.
- Use proper safety belts while cleaning modules at inclined roofs etc.
- The modules should not be cleaned when they are excessively hot. Early morning is particularly good time for module cleaning.
- Check if there are any shade problems due to vegetation or new building. If there are, make arrangements for removing the vegetation or moving the panels to a shade-free place.
- Ensure that the module terminal connections are not exposed while cleaning; this poses a risk of electric shock.
- Never use panels for any unintended use, e. g. drying clothes, chips etc.
- Ensure that monkeys or other animals do not damage the panels.

2. CABLES AND CONNECTION BOXES

- Check the connections for corrosion and tightness.
- Check the connection box to make sure that the wires are tight, and the water seals are not damaged.
- There should be no vermin inside the box.
- Check the cable insulating sheath for cracks, breaks or burns. If the insulation is damaged, replace the wire.
- If the wire is outside the building, use wire with weather-resistant insulation.
- Make sure that the wire is clamped properly and that it should not rub against any sharp edges or corners.
- If some wire needs to be changed, make sure it is of proper rating and type.

3. INVERTER

- The inverter should be installed in a clean, dry, and ventilated area which is separated from, and not directly above, the battery bank.
- Remove any excess dust in heat sinks and ventilations. This should only be done with a dry cloth or brush.

- Check that vermin have not infested the inverter. Typical signs of this include spider webs on ventilation grills or wasps' nests in heat sinks.
- Check functionality, e.g. automatic disconnection upon loss of grid power supply, at least once a month.
- Verify the state of DC/AC surge arrestors, cable connections, and circuit breakers.

4. SHUTTING DOWN THE SYSTEM

- Disconnect system from all power sources in accordance with instructions for all other components used in the system.
- Completely cover system modules with an opaque material to prevent electricity from being generated while disconnecting conductors.
- To the extent possible, system shutdown will not be done during day time or peak generation.

INSPECTION AND MAINTENANCE SCHEDULE

Component	Activity	Description	Interval	By
PV Module	Cleaning	Clean any bird droppings/ dark spots on module	Immediately	User/Technician
	Cleaning	Clean PV modules with plain water or mild dishwashing detergent. Do not use brushes, any types of solvents, abrasives, or harsh detergents.	Fortnightly or as per the site conditions	User/Technician
	Inspection (for plants > 100 kWp)	Use infrared camera to inspect for hot spots; bypass diode failure	Annual	Technician
PV Array	Inspection	Check the PV modules and rack for any damage. Note down location and serial number of damaged modules.	Annual	User/Technician
	Inspection	Determine if any new objects, such as vegetation growth, are causing shading of the array and move them if possible.	Annual	User/Technician

	Vermin Removal	Remove bird nests or vermin from array and rack area.	Annual	User/Technician
Junction Boxes	Inspection	Inspect electrical boxes for corrosion or intrusion of water or insects. Seal boxes if required. Check position of switches and breakers. Check operation of all protection devices.	Annual	Electrician
Wiring	Inspection	Inspect cabling for signs of cracks, defects; lose connections, overheating, arcing, short or open circuits, and ground faults.	Annual	Electrician
Inverter	Inspection	Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions. Inspect Inverter housing or shelter for physical maintenance, if required.	Monthly	Electrician
Inverter	Service	Clean or replace any air filters.	As needed	Electrician
Instruments	Validation	Spot-check monitoring instruments (Pyrometer etc.) with standard instruments to ensure that they are operational and within specifications.	Annual	PV Specialist
Transformer	Inspection	Inspect transformer oil level, temperature gauges, breather, silica gel, meter, connections etc.	Annual	Electrician

Quality Certification, Standards and Testing for Grid-connected Rooftop Solar PV Systems/Power Plants:

Quality certification and standards for grid-connected rooftop solar PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and

rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected rooftop solar PV system/ plant must conform to the relevant standards and certifications given below:

Solar PV Modules/Panels:	
IEC 61215/ IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IEC 61701	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- Part 1/ IS 16170: Part 1	Photovoltaic (PV) module performance testing and energy rating –: Irradiance and temperature performance measurements, and power rating
IEC 62716	Photovoltaic (PV) Modules – Ammonia (NH3) Corrosion Testing (As per the site condition like dairies, toilets)
IEC 61730-1,2	Photovoltaic (PV) Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing
IEC 62804	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation. IEC TS 62804-1: Part 1 : Crystalline silicon (Mandatory for applications where the system voltage is > 600 VDC and advisory for installations where the system voltage is < 600 VDC)
IEC 62759-1	Photovoltaic (PV) modules – Transportation testing, Part 1: Transportation and shipping of module package units
Solar PV Inverters	
IEC 62109-1, IEC 62109-2	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)

IEC/IS 61683 (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
BS EN 50530 (as applicable)	Overall efficiency of grid-connected photovoltaic inverters: This European Standard provides a procedure for the measurement of the accuracy of the maximum power point tracking (MPPT) of inverters, which are used in grid-connected photovoltaic systems. In that case the inverter energizes a low voltage grid of stable AC voltage and constant frequency. Both the static and dynamic MPPT efficiency is considered.
IEC 62116/ UL 1741/ IEEE 1547 (as applicable)	Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures
IEC 60255-27	Measuring relays and protection equipment – Part 27: Product safety requirements
IEC 60068-2 (1, 2, 14, 27, 30 & 64)	Environmental Testing of PV System – Power Conditioners and Inverters a) IEC 60068-2-1: Environmental testing - Part 2-1: Tests - Test A: Cold b) IEC 60068-2-2: Environmental testing - Part 2-2: Tests - Test B: Dry heat c) IEC 60068-2-14: Environmental testing - Part 2-14: Tests - Test N: Change of temperature d) IEC 60068-2-27: Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock e) IEC 60068-2-30: Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle) f) IEC 60068-2-64: Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance
IEC 61000 – 2,3,5 (as applicable)	Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing of PV Inverters
Fuses	
IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): a) Low-voltage Switchgear and Control-gear, Part 1: General rules b) Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers c) Low-voltage switchgear and Control-gear, Part 3:

	Switches, disconnectors, switch-disconnectors and fuse-combination units d) EN 50521: Connectors for photovoltaic systems – Safety requirements and tests
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
Surge Arrestors	
IEC 62305-4	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD)	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control
IEC 61643-11:2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
Cables	
IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1 & 2)/ IEC69947	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing/Lightning	
IEC 62561 Series (Chemical earthing)	IEC 62561-1 Lightning protection system components (LPSC) - Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use
Energy Meters	
IS 16444 or as specified by the DISCOMs	A.C. Static direct connected watt-hour Smart Meter Class 1 and 2 — Specification (with Import & Export/Net energy measurements)

IS 2062/IS 4759	Material for the structure mounting
Solar PV Roof Mounting Structure	
IS 2062/IS 4759	Material for the structure mounting

Note: Equivalent standards may be used for different system components of the plants after due consultation with Engineer-in charge of work.

Annexure-18: Declaration by the Bidder

NIB No: 03/JREDA/GCRT/RD/25-26

(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

Sr. No.	Particulars	Name of Group	Quoted Quantity/Capacity (kWp)	Type of Bidder (General/MSEs/ NEW MSEs)
1	Bidder Quoted for Grid Connected Rooftop Solar plant (For category/Group – "A" & "A1"/" B" & "B1"/ "C" & "C1"/ "D" & "D1").			

NOTE**

a. The bidder will quote in only one Group each, each group consist of two sub-groups i.e. with battery system and Without battery system as shown below-

S.N.	Category	Group	Minimum Quoted Quantity
1	Category 1	Group "A" (Without Battery System) Group "A1" (With Battery System)	100kWp
2	Category 2	Group "B" (Without Battery System) Group "B1" (With Battery System)	250KWp
3	Category 3	Group "C" (Without Battery System) Group "C1" (With Battery System)	500KWp
4	Category 4	Group "D" (Without Battery System) Group "D1" (With Battery System)	500KWp

for example – An agency applying for Group/Category – 2 – can apply for both "B" & "B1". If the bidder will quote in more than one category, then bidder shall be liable to disqualification.

b. The bidder shall submit all valid Test certificate accordingly as per NIB terms & Conditions.

c. Bid will be evaluated under the provision of the applied category and no further claim will be considered for the change in the applied category.

(Signature of Authorized Signatory)

Name:

Designation: