

**RAJASTHAN ELECTRONICS & INSTRUMENTS LIMITED, JAIPUR****(An ISO 9001 : 2015 & 14001 : 2015 “Mini Ratna” Central Public Sector Enterprise)****2, KANAKPURA INDUSTRIAL AREA, SIRSI ROAD,****JAIPUR-302034**

Tel No: 0141- 2470879 / 0141 - 2470908

website: [www.reiljp.com](http://www.reiljp.com)**NIT for “Rate Contract for Survey, Design, Supply, Erection, Testing, Commissioning and Comprehensive Operation and Maintenance for 10 years Grid Connected Rooftop Solar Photovoltaic Power Projects on various Government buildings in Uttar Pradesh State”****TENDER NO.REIL/RE/2025-26/04 Dated 22.05.2025****Important Notes:**

1.	TENDER FEE	Rs. 1,000/- (Rupee One Thousand Only) through Demand Draft / RTGS
2.	EMD	Rs. 9,99,000/- only
3.	Estimated Rate of NIT Rate Contract (including GST)	Rs. 4,99,50,000/- only
4.	LAST DATE OF ONLINE TENDER SUBMISSION	11.06.2025 upto 15:00 HRS
5.	TECHNICAL BIDS OPENING DATE	12.06.2025 upto 15:00 HRS
6.	Pre Bid Meeting (Online)	02.06.2025 at 15:00 HRS Pre bid meeting Link (Google Meet) <a href="https://meet.google.com/cgb-igbt-waw">meet.google.com/cgb-igbt-waw</a>
7.	OFFER VALIDITY	90 Days from the last date of tender submission
8.	CONTACT PERSON(S) FOR TECHNICAL QUERIES	1. Sh. Kuldeep Singh Rathore, Sr. Engineer (RE), Email : <a href="mailto:kuldeep.rathore@reil.co.in">kuldeep.rathore@reil.co.in</a> , Contact : +91-7727007749  2. Sh. Deepak Gupta, AGM (RE), Email : <a href="mailto:deepak.gupta@reil.co.in">deepak.gupta@reil.co.in</a>
9.	CONTACT PERSON(S) FOR TENDER QUERIES & SUBMISSION OF HARD COPY OF TENDER FEE & EMD	1. Sh. Mukesh Gupta, Sr. Engineer (MM), Email : <a href="mailto:mukesh.gupta@reil.co.in">mukesh.gupta@reil.co.in</a> , Contact : +91-8387814090  2. Sh. Arun Kumar Dwivedi, AGM (MM), Email : <a href="mailto:arun.dwivedy@reil.co.in">arun.dwivedy@reil.co.in</a>

**Kindly note that only online bid will be considered against this tender**

**Bidders Details**

<b>Information Details</b>	<b>Primary Contract</b>	<b>Secondary Contract</b>
Name		
Designation		
Company Name		
Company Address		
Phone No.		
Mobile No.		
Email		
Website		

**RAJASTHAN ELECTRONICS & INSTRUMENTS LIMITED, JAIPUR****NOTICE INVITING TENDER NO.REIL/RE/2025-26/04**

This is a Notice Inviting Tender (NIT) for “**Rate Contract for Survey, Design, Supply, Erection, Testing, Commissioning and Comprehensive Operation and Maintenance for 10 years Grid Connected Rooftop Solar Photovoltaic Power Projects on various Government buildings in Uttar Pradesh State**” as per description and terms & conditions specified hereinafter:

**Item Description:**

<b>S. No.</b>	<b>Description</b>	<b>Total Rate Contract Cumulative Capacity of this NIT</b>
1.	Rate Contract for Survey, Design, Supply, Erection, Testing, Commissioning and Comprehensive Operation and Maintenance for 10 years Grid Connected Rooftop Solar Photovoltaic Power Projects on various Government buildings in Uttar Pradesh State	1350 kWp

**Note:**

1. This rate contract shall be valid for a period of One Year. It may be extended further as per requirement.
2. Individual work orders shall be allocated to successful bidders, after received of work order from end customer to REIL. Site Survey (if required by end customer), shall be carried out by successful bidder for submission of feasibility report before issue of work order.
3. The SPV Power Plant capacity on one building shall be in the range of 51 kWp to 1000 kWp.
4. Work shall be split to L-1 & L-2 in the ratio of 70% & 30% at L-1 rate. REIL is authorized to allocate final capacity as per end customer requirements.
5. The total rate contract capacity may vary  $\pm 25\%$ .

**E-Tendering Procedure:** The work shall be carried out through submission of online tenders only. No offer in physical form will be accepted and any such offer if received by REIL will be outrightly rejected. Tender documents can be downloaded from our website [www.reiljp.com](http://www.reiljp.com) or website of CPPP [www.eprocure.gov.in](http://www.eprocure.gov.in). Final bids are to be submitted on website [www.eprocure.gov.in](http://www.eprocure.gov.in). Any changes modification in the tender enquiry will be intimated through above websites only. Bidder are therefore, requested to visit our website regularly to keep themselves updated.

The bidder should have a valid Digital Signature certificate issued by any of the valid certifying Authorities to participate in the online tender.

The bids shall be uploaded in electronic form only through e-tendering system on website [www.eprocure.gov.in](http://www.eprocure.gov.in).

**Note: e- Procurement system does not allow submission of documents after due date of tender. Incomplete form or non-submission of documents to verify details may results into rejection of your offer and no communication shall be done for submission of documents.**

**Price Bid:**-Price Bid format given with tender is to be uploaded after filling all relevant information like basic prices, taxes & duties. The Price bid should be uploaded strictly as per the format available with the tender failing which the offer is liable for rejection (blank or changing format of price sheet will not be accepted by system). **REIL reserve the right to distribute the work.**

The bid shall comprise of technical bid and commercial Bid. The detailed scope of work, terms and conditions etc. are available with the Bid documents.

REIL reserves the right to reject the whole or part of any or all bids received, without assigning any reason.

**Addl. General Manager (MM)**

## Table of Contents

<b>S. No.</b>	<b>Description</b>	<b>Page No.</b>
1	Process Compliance Form (Annexure – I)	6
2	Instructions to Bidders (Annexure – II)	7-8
3	Eligibility Criteria (Annexure – III)	9-11
4	Detailed Scope of Work of Bidder (Annexure – III A)	12-17
5	Technical Specifications of all equipments (Annexure – III B)	18-37
6	Important Notes (Annexure – III C)	38
7	General Terms and Conditions of Contract (Annexure – III D)	39-45
8	Checklist of Tender Terms & Conditions (Annexure – IV)	46
9	Authorization Certificate (Annexure – V)	47
10	Undertaking of No Near Relative Clause (Annexure – VI)	48
11	Certificate of Non Black Listing (Annexure – VII)	49
12	CA Certificate towards Plant & Machinery (Annexure – VIII)	50
13	Certificate towards Legal / Contractual Disputes (Annexure – IX)	51
14	Certificate towards Completion of Works (Annexure – X)	52
15	Integrity Pact (Annexure – XI)	53-57
16	EMD Bank Guarantee Format (Annexure – XII)	58-59
17	Performance Security Bank Guarantee Format (Annexure – XIII)	60-61
18	REIL Bank Details (Annexure – XIV)	62
19	Checklist of all Annexure (Annexure – XV)	63

**Annexure-I****RAJASTHAN ELECTRONICS & INSTRUMENTS LIMITED, JAIPUR****Process Compliance Form**

(Tenders are required to print on their company's letter head and signed, stamp before uploading).

**To**

**Addl. General Manager (MM)  
M/s Rajasthan Electronics & Instruments Limited  
2, Kanakpura Industrial Area, Sirsi Road,  
Jaipur-302034**

**Sub:- Acceptance to the process related Terms and Conditions for the e-Tendering**

Dear Sir,

**This has reference to the Terms & Conditions for e-Tendering mentioned in the TenderNo.:-  
REIL/RE/2025-26/04 dated 22.05.2025.**

We hereby confirm the following:-

- 1) The undersigned is authorized representative of the company.
- 2) We have carefully gone through the NIT, Tender Documents and the Rules governing the e-tendering as well as this document.
- 3) We will honor the Bid submitted by us during the e-tendering.
- 4) We undertake that if any mistake occurs while submitting the bid from our side, we will honor the same.
- 5) We are aware that if REIL has to carry out e-tender again due to our mistake, REIL has the right to disqualify us for this tender.
- 6) We confirm that REIL shall not be liable & responsible in any manner whatsoever for my/our failure to access & submit offer on the e-tendering site due to loss of internet connectivity, electricity failure, virus attack problem with the PC, digital signature certificate or any other unforeseen circumstances etc.

With regards

Signature with company seal

Name:

Designation:

E-mail Id:

**INSTRUCTION TO BIDDERS**

1. The Bid forms containing the Terms and Conditions, the tender and the Schedule of contract, **should be submitted online** failing which the tender shall be liable for rejection. In the event of the space on the Schedule of contract / specifications of items/proforma being insufficient for the required purpose, additional pages may be added. Each such additional page must be numbered consecutively, bearing the Tender Number and be duly signed and stamped by the bidder. In such cases, reference to the additional pages must be made in the Tender Form. If any modification of the schedule is considered necessary, you should communicate the same by means of separate letter sent along with the Tender.

**2. PROCEDURE FOR SUBMISSION OF TENDERS / BIDS:**

The tender should be submitted in **“TWO BID” SYSTEM**:

**PART -1 TECHNICAL BID:**

Technical Bid along with tender documents (duly signed on each page) to be uploaded in the e-procurement portal. Technical Bid to be opened by the REIL committee. Board resolution/ Authorization letter for signing of the bid document from the bidder be submitted. Prices / Costs of the items should not be indicated anywhere in the Technical Bid. This should be followed meticulously failing which the bid is liable to be rejected.

All eligibility documents should be submitted with the technical bid.

**PART -2 FINANCIAL BID:**

Price Bid BOQ given with tender is to be uploaded strictly as per the format available with the tender failing which the offer is liable for rejection (renaming or changing format of BOQ sheet will not be accepted by the system).

**Note: e-Procurement system does not allow submission of documents after due date of tender.**

**Incomplete form or non-submission of required documents may results into rejection of your offer and no Communication shall be done for submission of documents.**

**1. OPENING OF TENDER:**

The **Price/Financial bids** of the bidders whose technical bids are found technically suitable only will be opened later. **The decision of the evaluation committee on technical suitability shall be final and binding.**

**2. PRICES:**

- i. Prices/Financial bid are to be in BOQ format in Indian Rupees and must be meaningful and measurable in the context.
- ii. Bidders should clearly specify whether prices quoted are inclusive of GST/duties/ statutory charges or such charges as extra. Where no specific mention GST or other duties quoted shall be **deemed to be inclusive of such taxes / charges.**
- iii. Price must be quoted in original sheet of BOQ failing which the same is liable to be rejected.
- iv. Evaluation will be done on total price quote by bidders.
- v. REIL has reserve to right for negotiation with L1 bidder.

**3. OFFER VALIDITY:** Validity of offer shall be 90 days from tender opening date.

**4. EMD:**

Interested bidder shall submit Earnest Money (EMD) as per NIT requirement. The EMD amount shall be deposited in form of Demand Draft/RTGS/Bank Guarantee to REIL. EMD should be valid for a period of 45 days beyond the bid validity period (i.e 135 days from last date of submission of bid). The bid shall be treated as non responsive in case of non submission of EMD amount. No interest shall paid towards EMD amount.

EMD shall be forfeited without prejudice to the bidder being liable for any further consequential loss or damage incurred to REIL under following circumstances :-

**100% of EMD amount, if a Bidder withdraws/revokes or cancels or unilaterally varies his bid in any manner.**

**Note:** MSE (Micro & Small Enterprises) shall be exempted from payment of Tender Document Fee & EMD. It is mandatory for MSE bidders to declare their UDHYOG AADHAR NUMBER on CPP Portal, failing which such bidders will not able to enjoy the benefits of procurement policy for MSE and also attach the relevant certificate with their bid submission.

**5. OTHERS -**

- i. Bidder has to submit per kW rates.
- ii. The tender fee and Bid Security as detailed under to be deposited in REIL office in hard copy as per the Bid timeline given in the Bid Information Sheet.

**SITE DETAILS, ESTIMATED RATES & EMD REQUIREMENTS**

S. No.	State / UT	Total Rate Contract Capacity (in kWp) AC Capacity	Maximum Ceiling Limit in Rs. (per kWp) including GST	Estimated Rate (in Rs.) including GST	EMD (in Rs.)
1.	Uttar Pradesh State	1350	37000	49950000	999000

**Note:** Maximum ceiling limit has been defined. These values are including O&M for 10 years & also inclusive of GST. Any bid price received higher than mentioned ceiling limit, shall be out rightly rejected

**ELIGIBILITY CRITERIA:****A) TECHNICAL ELIGIBILITY CONDITIONS:****Bidder must fulfill following criteria:-**

1. The Bidder should be a Company / Firm / Corporation, incorporated in India under the Companies Act, 1956 or 2013 and having experience in Design, Supply, and Installation & Commissioning of Grid Connected Solar Power Plants.

OR

A Limited Liability Partnership Firm (LLP) registered under section 12 of Limited Liability Partnership Act, 2008 and having experience in Design, Supply, and Installation & Commissioning of Grid Connected Solar Power Plants.

2. Experience of having successfully completed similar works (**Design, Supply, Installation & Commissioning of Grid Connected Solar Power Plants**), during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following:

- a) Three similar completed works costing not less than the amount equal to 40% of the estimated cost (Rs. 1,99,80,000/- only including GST).

OR

- b) Two similar completed works costing not less than the amount equal to 50% of the estimated cost (Rs. 2,49,75,000/- only including GST).

OR

- c) One similar completed work costing not less than the amount equal to 80% of the estimated cost (Rs. 3,99,60,000/- only including GST).

3. Out of above, bidder has to submit satisfactorily O&M report of minimum one year for at least one completed work.

**B) FINANCIAL ELIGIBILITY CONDITIONS:-**

1. Average Annual Financial Turnover during the last 3 years, ending 31<sup>st</sup> March of the previous financial year (2023-24), should be at least 30% of the estimated cost (Rs. 1,49,85,000/- only). Turnover of 3 years (2021-22, 2022-23 & 2023-24) is required duly certified by CA alongwith balance sheets.

2. The bidder should have positive net worth @ 10% of the estimated cost (Rs. 49,95,000/- only). Net worth certificate is required duly certified by CA.

3. The bidder should have adequate financial resources or should have sufficient resources audited financial statement to undertake the contract. Below mentioned documents are required:

Letter from a Financial Institution that it is willing to fund the project (estimated project cost to be mentioned in letter).

OR

Declaration on bidder's letter head (in case the bidder wish to use the internal resources for funds / shall be furnished). Estimated project cost to be mentioned in letter.

4. The bid shall be not considered for bidders, who is having prior contract terminations due to non-performance or litigation history against government entities. Annexure-IX is required from bidder duly notarized.

**Bidder should submit following documents along with Technical bid:-**

1. Company Incorporation Certificate / Company Registration Certificate.
2. Balance sheet & ITR for last three years i.e. 2021-22, 2022-23 & 2023-24.
3. Turnover of last 3 years and Networth value duly certified by CA.
4. Past Experience details as per technical eligibility asked in the NIT. Kindly attach verified documents from customer such as Work Orders, Completion Certificates and O&M Certificate. The technical experience documents should be duly certified by Chartered Engineer.
5. Photocopy of GST Registration no. & PAN no.
6. Any other relevant documents
7. All required annexure in tender

**OTHER CONDITIONS:**

- a) **Responsibility for executing Contract:** The contractor is to be entirely responsible for The execution of the contract in all respects in accordance with the terms and conditions as specified in the acceptance of tender.
- b) The contractor shall not sublet transfer or assign the contract to any part thereof without the written permission of the Addl. General Manager (MM). In the event of the contract or contravening this condition, Addl. General Manager(MM) be entitled to place the contract elsewhere on the contractors account at his risk and the contractor shall be liable for any loss or damage, which the Addl. General Manager(MM), may sustain in consequence or arising out of such replacing of the contract.
- c) **Document:** The bidder should have a valid **PAN / TAN /GST NO & other statutory document as applicable** and produce attested copies of such certificates along with the tender papers in Technical Bid, failing which the tender is liable to be rejected. Check list be attached.
- d) **Right to accept / reject:** REIL reserves the right to reject any or all tender without assigning any reason whatsoever. Also, the REIL authority reserves the right to **award** any or part or full contract to any successful agency at its discretion and this will be binding on the bidder.
- e) The capacity of SPV Power Plant shown in the tender can be increased or decreased to any Extent depending upon the actual requirement.
- f) **Assistance to contractor:** The contractor shall not be entitled for assistance either, in the procurement of raw materials required for the fulfillment of the contract or in the securing of transport facilities.

### **Electrical Contractor License**

- The work shall be carried out by the contractor, having valid Electrical Contractor License for carrying out installation work under the direct supervision of the persons holding valid certificates of competency issued by the State Government. The same shall be submitted to REIL by successful bidder after placement of work order.
- The successful BIDDER shall furnish the names and particulars of the certificate of competency of supervisor and workmen to be engaged for carrying out this work.

**Annexure – III A**
**DETAILED SCOPE OF WORK OF BIDDER**

<b>Annexure-A Particulars</b>	<b>Description</b>
Technology	(Mono-Perc Solar Panel $\geq$ 540Wp). Modules shall comply with MNRE Notification dated 29.04.2024 regarding Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirement for Compulsory Registration) Order, 2019 and its amendments issued time to time.  Inverters are to be purchased from Class-I local supplier only.
O&M Period	10 Years from the date of Completion of Facilities. However as per requirement, the O&M period may be reduced, and the payment shall be given up to O&M period only.
Completion of facilities	<b>As per Annexure A1</b>
Estimate life of solar PV plant	<b>25 Years</b>
<b>Location/Site Details</b>	
Location(s)	Govt. Buildings in Uttar Pradesh State
<b>Electrical Interconnection Details</b>	
Evacuation Voltage	As per State solar policy/SERC/Discom
Power for Construction	Construction power will be provided at one point of each location. Necessary arrangement including cabling, metering, etc. to draw power at required locations shall be done by bidder within the quoted price. The energy consumed shall be chargeable as per discom rates.
Water	Water shall be provided free of cost for construction and periodical cleaning of modules at one point of each location. Additional connection points may also be allowed subject to feasibility. However necessary arrangement including pipe laying, pumping, metering, etc. to draw water at required locations shall be done by bidder within the quoted price.
Access to Roofs	Bidder has to make permanent MS ladders at buildings wherever access to the Rooftops is not available
<b>Performance Parameters / Guarantees</b>	
Minimum CUF	Minimum 17% CUF is required. The minimum ratio of DC to AC is 1.10:1. However, vendor may increase the same to comply the CUF requirements. Bidder has to install min. 10% extra DC Capacity SPV Modules at site.
Minimum values of PR	75%.
GHI Values	Shall be as per PV Syst Software 7.4.5 version or

	latest version using Meteonorm 8.1 data.
Calculation of penalty in case of Shortfall of PR	In case of shortfall in PR, tariff factor is ₹ 5.00 /kWh for normal category states and shall be calculated as per tender.
calculation of penalty in case of shortfall in equipment performance	In case of shortfall in annual CUF, tariff factor is ₹ 5.00 /kWh for normal category states shall be calculated as per tender.
<b>Special conditions</b>	The capacity at a location shall be arrived based on preliminary assessment of data received from customers and shall be allocated to the vendor as per the allocation strategy stated in the bidding documents. However, if the capacity range changes during detailed engineering, then also same rate for the allocated capacity range shall be applicable.
	Premise/location wise Commissioning of rooftop solar with net metering/ net billing/behind the meter is allowed.
	The installation and O&M rates shall be minimum 30% of total cost, in which O&M rates shall be minimum 10% of total cost.
	The bidding shall be done for RCC Roof and price for RCC Roof shall be multiplied by discount factor 0.96 to arrive at the price for GI roof (including O&M and GST).
	Remote Metering Facility to be provided as per Technical Specifications.
	Contractor shall take Fire and peril insurance policy from the reputed/nationalized agency covering the risk of damage, theft of material/ equipment/ properties after completion of the work(s) throughout the O&M period <b>on replacement cost basis.</b>
	Contractor shall take third party liability insurance for deployed workmen, employees against any damage, loss, injury or death arising out of the O&M work.
	The insurance shall be for the replacement value of the project to ensure guaranteed minimum generation.
	<b>Contractor shall take following insurances:</b> <ol style="list-style-type: none"> <li>1. Transit insurance till delivery of material at site</li> <li>2. Work man compensation policy during installation of systems</li> <li>3. Contractor All Risk Insurance Policy during installation of systems</li> <li>4. Any other insurance policy required by end customer</li> <li>5. Liquidation, Death, Bankruptcy etc., shall be the responsibility of Bidder.</li> </ol>
BGs to be submitted by bidder	<b>1. During construction period:</b> Contract

performance bank guarantee for 10% of the total contract amount. It shall be released after completion of Defect Liability Period.

**2. During O&M period:**

- Equipment performance guarantee for 10% of the energy corresponding to applicable CUF for that year multiplied by the Tariff factor.
- O&M performance guarantee for 10% of the O&M amount. 10% of it shall be released every year.

**SCHEDULE A**

**1. SCOPE OF WORK**

- A. The Solar Photo Voltaic (PV) installation on Rooftop of various/multiple buildings of the government/private buildings in the state of Uttar Pradesh, shall be carried out preferably on shadow free area in such a way that the generation is maximized on each building suitable for installation of Solar PV power plants. The final plant capacity shall be as per the detailed engineering and approved design of each of the building's rooftops solar. Permanent MS Staircase/ladder of minimum width 1.0m & finished with primer & weather resistant enamel paint for roof top access must be provided for each building where the Roof Top Solar PV panels are to be installed and roof access is not available.
- B. The successful bidder shall be exclusively responsible for design, engineering, testing and all other relevant activities like preliminary visual assessment of roof, water arrangements, electricity, security and determining optimal capacity for setting up of Solar PV Plants and O&M activities for 10 years.
- C. The project site shall be handed over to the bidder on as is where is basis. The bidder should inspect and examine the site and its surroundings and should satisfy himself as to the nature of the roof, the quantities and nature of work, materials necessary for completion of the work and their availability, means of access to site and in general shall himself obtain all necessary information as to risks, contingencies and other circumstances which may influence or affect his offer.
- D. Design, engineering, supply, installation, testing and Commissioning of the Project as per standard design and specifications and connecting to existing Mains / ACDB and interfacing internal electrical loads of Project's License's network/electrical loads. The bidder would have to take approval for the interfacing of the Project with Grid/Electrical Loads from distribution licensee/ CEIG. The bidder shall be responsible for commissioning the project along with Net metering/Net Billing/ Group Net Metering/Behind the meter as per State Regulations.
- E. Commissioning of the system shall refer to the date on which the System at each location / premise starts generating electric energy for continuous Five (05) hours using instruments and meters including Net metering/ net billing/behind the meter.
- F. All materials, manpower, scaffolding materials, machinery, tools, and tackles, transportation & loading/unloading, packaging and unpacking, safe storage, watch and ward, etc. all inclusive, shall be arranged by the bidder within the quoted price. Scope shall cover all type of transportation of materials inside the working site and manpower etc. required to execute and complete the work. Underground cabling work, if required to evacuate solar project to the consumer's panels shall also be in the scope of bidder.

- G. Bidder also to provide comprehensive Operation and Maintenance (O&M) of the plants for a period of 10 years from the date of Completion of Facilities. "Completion of Facilities" means that the Solar system at all the premises/locations under the LOA / work order for specific site under this rate contract have been successfully commissioned, PG tests conducted and put in a tight and clean condition and punch points attended.
- H. During O&M period, the bidder shall be responsible for supply of all spare parts as required from time to time for scheduled and preventive maintenance, major overhauling of the plant, replacement of all defective equipment including defective PV Modules, Inverters, Transformers etc. and maintaining log sheets for operation detail, deployment of staff for continuous operations and qualified engineer for supervision of O&M work, complaint logging & its attending. All PV modules shall be cleaned regularly, and water washed at least once a fortnight. The Minimum Annual CUF at evacuation point/delivery point required to be achieved in the first year and subsequent years after acceptable module degradation factor are mentioned in the bid document.
- I. The bidder shall ensure that Project is Remote Monitoring System ("RMS") enabled. The bidder shall also provide API for the RMS system and shall be used for billing and monitoring. The data from such RMS enabled Projects would be monitored or analyzed remotely by REIL & end customer. The internal data logger of the RMS system shall work on a store-and-forward mechanism. It should be able to store data in case of connectivity outage and forward the stored data once the connectivity is attained. The Bidder shall ensure data for a minimum period of one year is stored in the data logger. The RMS system must also be capable of interfacing on an open protocol basis with external data loggers as may be installed by REIL & end customer. The Bidder shall ensure that the connectivity of the Project RMS with the REIL & end customer is always uninterrupted during O&M period and shall make all necessary arrangements for the same.  
REIL & end customer reserves the right to validate the authenticity of such data for which Bidder shall extend full access and its cooperation. The bidder shall arrange for Internet connection (Wi Fi / SIM or any other arrangement) and all necessary accessories for Operation of the RMS throughout the contract period within the quoted price.
- J. The bidder shall provide a suitable Solar PV module cleaning/ water washing system. The bidder shall also arrange water from the nearest service water line with necessary CPVC piping, pumping, metering or any other suitable arrangement and provide adequate number of waters taps with isolating valves depending on the roof area/location. Further bidder shall provide at least one portable water pressure cleaning system for any emergency.
- K. Any fee related to registration of project / NOC / net metering/group net metering/Behind the meter/Net Billing from any of the state departments shall be borne by the bidder.
- L. It should be ensured by the bidder that the roofs are not getting damaged during installation and O&M period. After installation of solar PV system, the roofs should remain waterproof as before. If any damage is caused to the roof by the bidder, the same is to be rectified immediately by the bidder within the quoted price and without any additional cost to REIL.
- M. Life-Line: The bidder shall provide suitable lifeline arrangement on the roof as per requirement, to enable the safety of workers while working at height during erection and O&M period. The workers working at site should have passed the Vertigo test and should have undergone proper training for safe working at height, should have been trained to use safety PPEs including Safety belts with double hooking system. The bidder shall follow the safety rules as mentioned in Bid Document. All safety PPEs like safety shoes, helmet, belt, lifeline, fall arrester etc. are to be provided by the bidder within the quoted price.

- N. Fall arrester: As per site requirement, bidder may also have to install fall arrester and safety net to ensure safe working, the design of fall arrester and specifications of safety net to be installed shall be submitted to REIL & end customer for review prior to start of work to ensure safety of workers during execution.
- O. Walkway: As per site requirement, the bidder must install and maintain G.I. walkway with anti-skid holes on the roof with toe guard to ensure safety during solar project work and during O&M period. The minimum width of the walkway shall be 300mm. Walkway shall be installed on the rooftop before the start of solar project installation work, so that the safety of worker can be ensured and damage to roof sheet can be avoided.
- P. Bidder shall take all necessary safety measures during erection as well as during operation and maintenance including compliance to specific safety guidelines of CEA safety regulations 2023.
- Q. Bidder has to submit the standard operating procedure (SOP) /Safety protocol before start of work for Engineer-In-Charge/REIL's authorized representative approval. Records of Toolbox Talk and Attendance of Labour shall form part of the supporting documents for claiming amount linked to safety.
- R. Warranty and guarantees: The Bidder shall warrant that the goods supplied under this tender are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials as per standards specified in the technical specifications of this tender. The Bidder shall provide warranty covering the rectification of any and all defects in the design of equipment, materials and workmanship including all spare parts for some of the items as stated in the tender. The responsibility of operation of warranty and guarantee clauses and claims/ settlement of issues arising out of said clauses shall be responsibility of the Bidder and REIL will not be responsible in any way for any claims whatsoever on account of the above for the period of the contract.

## **2. PROJECT INSPECTION**

The project progress will be monitored by REIL & end customer and the projects will be inspected for quality at any time during erection, commissioning or after the completion of the project either by officer(s) from REIL / end customer or any agency/ experts designated / authorised by end customer from time to time. REIL / end customer shall depute a technical person(s) from its list of empaneled experts/ agencies updated from time to time for inspection, Third party verification, monitoring of system installed to oversee, the implementation as per required standards and also to visit the manufacturer's facilities to check the quality of products as well as to visit the system integrators to assess their technical capabilities as and when required. The cost of Inspection to be carried out by REIL / end customer shall be borne by REIL / end customer. The cost of re-inspection, if any shall be borne by Bidder. The projects shall be inspected at any time during erection, commissioning or after the completion of the project.

## **SCHEDULE-B**

### **OPERATION & MAINTENANCE (O & M) GUIDELINES TO BE MANDATORILY FOLLOWED BY BIDDERS**

1. The bidder shall be responsible for all the required activities for successful operation and maintenance of the Rooftop Solar PV system for a period of 10 years from the date of Completion of Facilities of the entire package.

2. O&M of Solar Power Plant shall be compliant with grid requirements to achieve committed energy generation.
3. Deputation of qualified and experienced engineers / technicians throughout the O&M period at project site.
4. The modules shall be cleaned with a periodic interval of 15 days or earlier as per actual site conditions.
5. Periodic checks of the Modules, PCUs and BoS shall be carried out as a part of routine preventive and breakdown maintenance.
6. Immediate replacement of defective Modules, Inverters/PCUs and other equipment as and when required. Supply of all spares, consumables and fixtures as required. Such stock shall be maintained for equipment and materials as per the manufacturer's / supplier's recommendations.
7. All the testing and metering instruments required for Testing, Commissioning and O&M shall be calibrated or have valid calibration certificate.
8. If negligence/ mal-operation on part of the Bidder's operator results in failure of equipment, such equipment should be repaired/ replaced by the Bidder free of cost.
9. Co-ordination with owner / DISCOM / CEIG as per the requirement for Joint Metering Report (JMR). The bidder's site representative shall take a joint meter reading in the presence of rooftop owner monthly. The bidder shall furnish the previous month's generation data (JMR) to REIL & End Customer positively by 1st week of every month.
10. Online Performance Monitoring, controlling, troubleshooting, maintaining logs & records. A maintenance record register is to be maintained by the operator with effect from Commissioning to record the regular maintenance work carried out as well as any preventive and breakdown maintenance along with the date of maintenance, reasons for the breakdown, duration of the breakdown, steps taken to attend the breakdown, etc.
11. The bidder shall send the periodic plant output details to REIL & End Customer for ensuring the CUF. The periodic output report shall also include grid outage authenticated by customer and also monthly CUF and cumulative running CUF for the year.
12. In case of any fault in the system, the bidder has to ensure a response time of 24 hours and maximum expected turnaround time of 72 hours (under special circumstances, additional time limit may be considered).

#### **SUBMISSION OF PROJECT COMPLETION REPORT (PCR)**

The bidder shall submit the Project Completion Report (both in editable soft copy and signed hard copy) after commissioning of the project as per the Scope of RFS to REIL as per the Format provided by REIL.

## SCHEDULE - C

### TECHNICAL SPECIFICATIONS

#### 1. Solar PV modules:

- i. The PV modules shall be purchased from class-I local supplier. Bidder shall comply with MNRE Notification dated 29.04.2024 regarding Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirement for Compulsory Registration) Order, 2019 and its amendments issued time to time.
- ii. The PV modules used must qualify to the latest edition of IEC standards or equivalent BIS standards, i.e. IEC 61215/IS14286, IEC 61853-Part I/IS 16170-Part I, IEC 61730 Part-1 & Part 2 and IEC 62804 (PID). For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701.
- iii. The temperature co-efficient power of the PV module shall be equal to or better than - 0.40%/°C.
- iv. Solar PV modules of minimum capacity 540 Wp to be used.
- v. The PV Module efficiency should be minimum 21%.
- vi. Solar PV module shall have valid BIS registration.
- vii. All electrical parameters at STC shall have to be provided.
- viii. The PV modules shall be equipped with IP 65 or better protection level junction box with required numbers of bypass diodes of appropriate rating and appropriately sized output power cable of symmetric length with MC4 or equivalent solar connectors.
- ix. Solar PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years. If module(s) fail(s) to exhibit such power output in the prescribed time span, the Contractor will either deliver additional PV Module(s) to compensate the missing power output for complete period of 25 years with no change in area of land / rooftop used or replace the PV Module(s) with no change in area of land/rooftop used at Owner's sole option.
- x. The bidder should get a material warranty from the manufacturer for the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than **ten (10)** years from the date of purchase which shall not be before the date of LOA.
  - Defects and/or failures due to manufacturing.
  - Defects and/or failures due to quality of materials.
  - Nonconformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.
- xi. PV modules must be tested and approved by one of the NABL accredited and BIS approved test centers.
- xii. Modules deployed must use a RF identification tag laminated inside the glass. The following information must be mentioned in the RFID used on each module:
  - a) Name of the manufacturer of the PV module
  - b) Name of the manufacturer of Solar Cells.
  - c) Month & year of the manufacture (separate for solar cells and modules)
  - d) Country of origin (separately for solar cells and module)
  - e) I-V curve for the module Wattage, Im, Vm and FF for the module

- f) Unique Serial No and Model No of the module
- g) Date and year of obtaining IEC PV module qualification certificate.
- h) Name of the test lab issuing IEC certificate.
- i) Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.
- j) Nominal wattage +3%
- k) Brand Name, if applicable.
- xiii. Unique Serial No, Model No, Name of Manufacturer, Manufacturing year, Make in India logo and module wattage details should be displayed inside the laminated glass.
- xiv. The modules shall be fitted with water syphoning arrangement wherever necessary to prevent water stagnation on the bottom modules.
- xv. The PV cells in a crystalline silicon module shall be protected by encapsulation between front glass and back sheet/back glass. The glass shall be made of high transmissivity and front surface shall give high encapsulation gain.
- xvi. Bidder shall submit Self-certified Electro- Luminescence (EL) Test reports of all the Crystalline Silicon based PV Modules being offered to REIL.

## **2. Inverter/PCU:**

- i. Inverters/PCU should be purchased from Class I supplier and shall comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683, IS 16221 (Part 2), IS 16169 and IEC 60068-2(1,2,14,30) /Equivalent BIS Std.
- ii. Maximum Power Point Tracker (MPPT) shall be integrated in the inverter/PCU to maximize energy drawn from the array. Charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS standard. The junction boxes/enclosures should be IP 65 or better (for outdoor)/ IP 54 or better (indoor) and as per IEC 529 Specifications.
- iii. All inverters/PCUs shall be IEC 61000 compliant for electromagnetic compatibility, harmonics, Surge, etc. PCU/inverter should also be DG set interactive. The PCU should also have provision of charge controller in case of systems. The PCU shall have a minimum comprehensive warranty of 10 years.
- iv. The PCU/ inverter shall have an overloading capacity of minimum 20%.
- v. Typical technical features of the inverter shall be as follows-
  - a) Switching devices: IGBT/MOSFET
  - b) Control: Microprocessor/DSP
  - c) Nominal AC output voltage and frequency: as per CEA/State regulations
  - d) Output frequency: 50 Hz
  - e) Grid Frequency Synchronization range: as per CEA/State Regulations
  - f) Ambient temperature considered: -20°C to 60°C
  - g) Humidity: 95 % non-condensing
  - h) Protection of Enclosure: IP-54 (Minimum) for indoor and IP-65(Minimum) for outdoor.
  - i) Grid Frequency Tolerance range: as per CEA/State regulations
  - j) Grid Voltage tolerance: as per CEA/State Regulations
  - k) No-load losses: Less than 1% of rated power
  - l) Inverter efficiency (Min.): >93% (In case of 10 kW or above with in-built galvanic isolation)

Inverter efficiency (Min.): >97% (In case of 10 kW or above without inbuilt galvanic isolation)

Inverter efficiency (Min.): > 90% (In case of less than 10 kW)

m) THD: < 3%

n) PF: > 0.9 (lag or lead)

o) Should not inject DC power more than 0.5% of full rated output at the interconnection point and comply to IEEE 519.

p) The PCU / inverter shall have a minimum comprehensive warranty of 10 years from the date of purchase which shall not be before the date of LOA.

q) The PCU/Inverter shall be capable of controlling power factor dynamically. PCU/inverter should be equipped with components required to support reactive power. The output power factor of inverter should be suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustain fault in feeder line and against the lightning on feeder.

vi. The output power factor of inverter should be suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustain fault in feeder line and against the lightning on feeder.

vii. All the Inverters should contain the following clear and indelible Marking Label & Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:

a) The name or trademark of the manufacturer or supplier;

b) A model number, name or other means to identify the equipment,

*c) A serial number, code or other marking allowing identification of manufacturing location and the manufacturing batch or date within a three-month time period.*

d) Input voltage, type of voltage (a.c. or d.c.), frequency, and maximum continuous current for each input.

e) Output voltage, type of voltage (a.c. or d.c.), frequency, maximum continuous current, and for a.c. outputs, either the power or power factor for each output.

*f) The Ingress Protection (IP) rating*

viii. Marking shall be located adjacent to each fuse or fuse holder, or on the fuse holder, or in another location provided that it is obvious to which fuse the marking applies, giving the fuse current rating and voltage rating for fuses that may be changed at the installed site.

ix. In case the consumer is having a 3- $\phi$  connection, 3- $\phi$  inverter shall be provided by the bidder as per the consumer's requirement and regulations of the State.

x. Inverter/PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

xi. The Inverter should have a provision of remote monitoring of inverter data through sim card. Required website/mobile app platform, where REIL / End customer and the user (Consumer) can access the data, should be provided/explained to REIL / End Customer and user while installation. Additionally, if inverter has the facility of in-built wi-fi module, that should also be explained to the consumer. On demand, Inverter should also have provision to feed the data to the remote monitoring server using relevant API/ protocols. All the inverter data should be available for monitoring by giving web access. Charges for internet and website/mobile app platform shall be borne by the bidder throughout the contract period.

- xii. Integration of PV system with Grid & Grid Islanding:
- a) The output power from SPV would be fed to the inverters/PCU which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization.
  - b) In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided, if not available in inverter.
  - c) MCB/MCCB or a manual isolation switch, besides automatic disconnection to grid, would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.
- xiii. **PCU front panel shall be provided with display (LCD or equivalent) to monitor the following:**
- DC power input
  - DC input voltage
  - DC current
  - AC output power
  - AC voltage (all the 3 phases)
  - AC current (all the 3 phases)
- xiv. **Protection required in Inverter (minimum)**
- Input side disconnection switch
  - Earth leakage /Ground fault monitoring
  - DC reverse polarity protection
  - DC over voltage / current limitation protection
  - AC short circuit/Earth fault protection
  - AC over voltage / current limitation protection
  - DC and AC side surge protection (MOV)in built
  - Anti- islanding protection
- xv. The PCU shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.
- xvi. The PCU shall be able to withstand an unbalanced load conforming to IEC standard and relevant electricity condition. The PCU shall include appropriate self-protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters – beyond the PCU’s safe operating range due to internal or external causes.
- xvii. PCU shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay.
- xviii. When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to standby/shutdown mode.

- xix. The PCU control shall prevent excessive cycling of shut down during insufficient solar irradiance.

### **3. Module Mounting Structure (MMS):**

- i. Supply, installation, erection, and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the work.
- ii. The design calculations shall be supplemented with neat sketch and reference to various clauses of technical specification and Indian standards. For MMS design analysis and determination of forces, where computer program (preferably STAAD) is used, the contractor shall submit a write- up on computer program used and its input and output data for review and approval of REIL / End Customer. It may be ensured that the design has been certified by a recognized Lab/ Institution/chartered Engineer in this regard and submit wind loading calculation sheet to REIL / End Customer.
- iii. Module mounting structures can be made from three types of materials. They are Hot Dip Galvanized Iron, Aluminium and Hot Dip Galvanized Mild Steel (MS). However, MS will be preferred for raised structure.
- iv. MMS Steel shall be as per latest IS 2062:2011 and galvanization of the mounting structure shall be in compliance of latest IS 4759. MMS Aluminium shall be as per AA6063 T6. For Aluminium structures, necessary protection towards rusting need to be provided either by coating or anodization.
- v. All bolts, nuts, fasteners shall be of stainless steel of grade SS 304 or hot dip galvanized, panel mounting clamps shall be of aluminium and must sustain the adverse climatic conditions. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.
- vi. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame and associated fasteners, nuts & bolts.
- vii. The upper edge of the module must be covered with wind shield so as to avoid build air ingress below the module. Slight clearance must be provided on both edges (upper & lower) to allow air for cooling.
- viii. Suitable fastening arrangements such as grouting and calming should be provided to secure the installation against the specific wind speed. The bidder shall be fully responsible for any damage to SPV System caused due to high wind velocity within guarantee period as per technical specification.
- ix. The structures shall be designed to allow easy replacement, repairing and cleaning of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels. Necessary testing provision for MMS to be made available at site.
- x. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.
- xi. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.
- xii. Module Mounting Structures shall be designed to withstand the extreme weather conditions in the area (as per National Building Code 2016).
- xiii. The Mounting structure shall be designed to withstand the wind speed of 180 km/hour or cyclonic winds in coastal area. Further structure in coastal areas shall be painted with marine paint.

- xiv. Aluminum frames should be avoided for installations in coastal areas.
- xv. No welding is allowed on the mounting structure.
- xvi. The Bidder is responsible for the waterproofing of the roof disturbed/ pierced for installation of Project throughout the Project installation period and Comprehensive O&M period. The Bidder should immediately take necessary action to repair any damage to the waterproofing.
- xvii. The Rooftop Structures maybe classified in 3 broad categories.

**a) Ballast structure**

- i. For flat RCC Roofs, the mounting structure must be Non-invasive ballast type and any sort of penetration of roof to be avoided.
- ii. The minimum clearance of the structure from the roof level should allow ventilation for cooling, also ease of cleaning and maintenance of panels as well as cleaning of terrace.
- iii. The structures should be suitably loaded with reinforced concrete blocks of appropriate weight with Nominal Mix 1:1.5:3 with 20mm nominal size having compressive strength of 25MPa after 28 days of curing.

**b) Structure with Anchor fastener**

- i. For inclined/ Dome type RCC Roofs, the mounting structure shall be fixed on the roof with proper fasteners/bolts along with chemical grouting and sealing.
- ii. The roof should remain waterproof after erection of the structure.

**c) Metallic roof structure**

- i. The structure design should be as per the slope of the metallic roof.
- ii. Minimum thickness of the structural members shall be 2mm
- iii. Fixing of module mounting structures shall not cause any damage to the roof. The roof should remain waterproof.
- iv. Proper walk way and life line shall be provided.
- v. The inclination angle of structure can be done in two ways:
  - A. With same tilt angle based on the slope of roof to get the maximum output.
  - B. The base of structure should be connected on the Purlin of roof with the proper fastening arrangement.

**4. Metering:**

- i. A Roof Top Solar (RTS) Photo Voltaic (PV) system shall consist of following energy meters:
  - a) Net meter: To record import and export units and shall be as per DISCOM specifications.
  - b) Generation Solar meter(s): To keep record for total generation of the plant at each termination. The solar meter shall be having warranty for a minimum period of **10 years** from the date of purchase which shall not be before the date of LOA. In case solar meter is supplied by DISCOM and is not having warrantee of 10 years, Bidder has to bear the cost of its replacement in case of any defect.
  - c) The installation of meters including CTs & PTs, wherever applicable, shall be carried out by the bidder as per the terms, conditions and procedures laid down by the concerned SERC/DISCOMs.
  - d) In case access to the generation solar meter is not available for remote metering, another energy meter shall be provided for remote metering. Pl refer tender conditions in this regard for remote data monitoring.

### **5. Array Junction Boxes:**

The junction boxes are to be provided in the PV array for termination of connecting cables. The Junction 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 JB's shall be such that input & output termination can be made through suitable cable glands. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.

- i. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP 65 or better standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry, Single /double compression cable glands should be provided.
- ii. Polyamide glands and MC4 Connectors may also be provided. The rating of the junction box shall be suitable with adequate safety factor to interconnect the Solar PV array.
- iii. 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.
- iv. Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

### **6. DC Distribution Box (DCDB):**

- i. May not be required for small plants, if suitable arrangement is available in the inverter.
- ii. DC Distribution Box are to be provided to receive the DC output from the PV array field.
- iii. DCDBs shall be dust & vermin proof conform having IP 65 or better protection, as per site conditions.
- iv. *The bus bars are made of EC grade copper of required size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors. MCB shall be used for currents up to 63 Amperes, and MCCB shall be used for currents greater than 63 Amperes.*

### **7. AC Distribution Box (ACDB):**

- i. AC Distribution Panel Board (DPB) shall control the AC power from inverter, and should have necessary surge arrestors, if required. There is interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- ii. All switches and the circuit breakers, connectors should conform to IEC 60947:2019, part I, II and III/ IS 60947 part I, II and III.
- iii. The isolators, cabling work should be undertaken as part of the project.
- iv. All the Panels shall be metal clad, totally enclosed, rigid, floor mounted, air -insulated, cubical type suitable for operation on 1- $\phi$ /3- $\phi$ , 415 or 230 volts, 50 Hz (or voltage levels as per CEA/State regulations).
- v. The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- vi. All indoor panels will have protection of IP 54 or better, as per site conditions. All outdoor panels will have protection of IP 65 or better, as per site conditions.
- vii. Should conform to Indian Electricity Act and CEA safety regulations (till last amendment).

- viii. All the 415 or 230 volts (or voltage levels as per CEA/State regulations) AC devices / equipment like bus support insulators, circuit breakers, SPDs, Voltage Transformers (VTs) etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.
- Variation in supply voltage: as per CEA/State regulations
  - Variation in supply frequency: as per CEA/State regulations
- ix. The inverter output shall have the necessary rated AC surge arrestors, if required and MCB/MCCB. RCCB shall be used for successful operation of the PV system, if inverter does not have required earth fault/residual current protection.

**x. CODE AND STANDARDS:**

IS	Details
IEC 60947/ IS13947	Low-voltage switchgear and control gear
IS 2705	Current Transformers
IS 3043	Code of practice for earthing.
IS 3072	Code of practice for installation and maintenance of Switchgear
IS 3156	Voltage Transformers
IS 3202	Code of practice for climate proofing of electrical equipment.
IS 3231	Electrical relays for power system protection.
IS 13703 /IEC 60269	HRC Cartridge fuses
IS 10118 (4 parts)	Code of practice for selection, installation and maintenance of switchgear and control gear.
IEC 60255	Electrical Relays

**8. Protections:**

The system should be provided with all necessary protections like earthing, Lightning, and Surge Protection as per CEA Safety regulations 2023 as described below.

**i. Earthing Protection**

- a) The earthing shall be done in accordance with latest Standards. This specification is intended to outline the requirement of earthing for Solar Array (DC Side) and AC power block side of Solar PV Plant. It is not the intent of the specification to specify all details of design and construction since the bidder has full responsibility for engineering and implementation of earthing system meeting the functional requirement. Any additional equipment, material, services which are not mentioned herein but are required for installation, testing and commissioning of earthing system for safe and satisfactory operation of plant shall be included under scope of the bidder.
- b) Each array structure of the PV yard, Low Tension (LT) power system, earthing grid for switchyard, all electrical equipment, inverter, all junction boxes, etc. shall be grounded properly as per IS 3043-2018.

- c) Metallic frame of all electrical equipment shall be earthed by two separate and distinct connections to earthing system, each of 100% capacity.

## **ii. Lightning Protection**

- a) The SPV power plants shall be provided with lightning & over voltage protection, if required. The main aim in this protection shall be to reduce the overvoltage 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.
- b) The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors (LAs). Lightning protection should be provided as per NFC17-102:2011/IEC 62305 standard.
- c) Lightning Mast / conductor, placed at strategic locations, shall be used to protect the arrays against lightning protection.
- d) The protection against induced high-voltages shall be provided by the use of Metal Oxide Varistors (MOVs)/Franklin Rod type LA/Early streamer type LA.

## **iii. Surge Protection**

- a) Internal surge protection, wherever required, shall be provided.
- b) It will consist of three SPD type-II/MOV type surge arrestors connected from +ve and -ve terminals to earth.

## **9. CABLES:**

- i. All cables should be of the latest edition of IEC/equivalent BIS Standards (ISI marked) along with IEC 60227/IS 694, IEC 60502/IS 1554 standards.
- ii. Cables should be flexible and should have good resistance to heat, cold, water, oil, abrasion etc.
- iii. Armored cable should be used and overall PVC type 'A' pressure extruded insulation or XLPE insulation should be there for UV protection
- iv. Cables should have Multi Strand, annealed high conductivity copper conductor on DC side and copper/FRLS type Aluminum conductor on AC side. For DC cabling, multi-core cables shall not be used.
- v. Cables should have operating temperature range of -10°C to +80°C and voltage rating of 660/1000 V.
- vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop less than 2% (DC Cable losses).
- vii. The size of each type of AC cable selected shall be based on minimum voltage drop. However, the maximum drop shall be limited to 2%
- viii. The electric cables for DC systems for rated voltage of 1500 V shall conform to BIS 17293:2020.
- ix. All cable/wires are to be routed in a RPVC pipe/ GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable is easily identified.
- x. All cable trays including covers to be provided.
- xi. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.

**10. DRAWINGS & MANUALS:**

- i. Operation & Maintenance manual/user manual, Engineering and Electrical Drawings shall be supplied along with the power plant.
- ii. The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc.
- iii. The Manual should also include all the Dos & Don'ts of Power Plant along with Graphical Representation with indication of proper methodology for cleaning, Operation and Maintenance etc.
- iv. Step by step maintenance and troubleshooting procedures shall also be given in the manuals.
- v. Bidders should also educate the consumers during their O&M period.

**11. TRANSFORMERS (if required):**

- i. Dry type appropriate kVA, of transformer Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work. Dry Type Transformer shall be constructed in accordance to IS: 2026, IS: 11171, Indian Electricity Act 2003, BEE Guideline & CEA notifications and equivalent to any other international standard. Transformers shall be complete & functional in all respects. The other important construction particulars shall be as below:
  - a) The transformers shall be housed in metal protective housing, having a degree of ingress protection. The enclosure shall be provided with suitable hardware (as required).
  - b) The conductors shall be of electrolytic grade copper free from scales & burrs.
  - c) Dry Type Transformer windings shall be of class F insulation or better.
  - d) The core shall be constructed from non-ageing, cold rolled, grain oriented silicon steel laminations.
  - e) The maximum losses for dry type transformer shall not be more than the values specified in latest energy conservation building code (ECBC) of BEE.
  - f) The fittings/accessories, including protection/monitoring device generally required for satisfactory operation of the transformer, are to be provided.
  - g) Suitable rain shed arrangement shall be provided to keep transformer under that arrangement.
  - h) Painting shall be as per employer's requirement (will be finalized during detailed engineering)
  - i) Type and routine test shall be conducted as per IS11171.
- ii. In case the bidder/contractor has conducted such specified type test(s) within last ten years as on the date of techno commercial bid opening, he may submit the type test reports to the owner for waiver of conductance of such type test(s). These reports should be for the test conducted on the equipment similar to those proposed to be supplied under this contract and test(s) should have been either conducted at an independent laboratory or should have been witnessed by Owner. In case the bidder is not able to submit report of the type test(s) conducted within last ten years from the date of bid opening, or in case the type test report(s) are not found to be meeting the specification requirements the bidder shall conduct all such tests under this contract at no additional cost to the employer at an independent laboratory or in presence of the Owner's representative and submit the test reports.

## **12. Data Monitoring:**

- i. Remote monitoring of the generation of Solar Power shall be done through appropriate app which shall be provided by bidder. Provision for mobile app-based display shall be made for all the data display with a provision to interact with REIL / End Customer and Procurer and other stakeholders.
- ii. Remote Monitoring and data acquisition through Remote Monitoring System software with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and Comprehensive O&M/control to be ensured by the supplier. Provision for interfacing these data on any other Agency server and portal in future shall be kept. The Contractor must ensure the yearly availability and connectivity of the RMS system to be at least 99%.
- iii. Measurement of Solar PV parameters at Inverter level: These Inverter parameters shall have provision of data logging through Mod Bus (RS-485) protocol.
- iv. Solar Irradiance: An integrating Pyranometer (Class II or better) shall be provided, with the sensor mounted on a Horizontal plane at a shadow free suitable location near solar arrays at one of the Roof Top within premises.
- v. Temperature: Temperature probes for recording the PV Cell temperature shall be provided at one of the modules at shadow free area at one of the Roof Top within premises.
- vi. Regarding the generated power consumption, priority needs to be given for internal consumption first and thereafter any excess power can be exported to the distribution licensee network.
- vii. The bidder is also required to fetch the real time generation data from the solar meter for remote metering, billing and monitoring. In case the solar meter is not accessible due to DISCOM restrictions, the bidder shall install an additional meter just before the solar meter which shall be suitable for remote metering on open protocol, within the quoted price. Bidder shall also provide API for the Remote metering system which shall be used for billing and monitoring.

## **13. Miscellaneous:**

- i. Connectivity: The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the SERC regulation for Grid connectivity and norms of DISCOM and amended from time to time. The Bidder must take approval/NOC from the concerned DISCOM for the connectivity, technical feasibility, and synchronization of Project with DISCOM network and submit the same to REIL before Commissioning Project. Reverse power relay shall be provided by Bidder (if necessary), as per the DISCOM's requirement.
- ii. Safety measures: Electrical safety of the installation(s) including connectivity with the grid must be taken into account and all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA Safety Regulation 2023 etc. or its latest amendments must be followed.
- iii. Danger boards, Caution Boards should be provided as and where necessary as per IE Act /IE rules as amended up to date.
- iv. Shadow analysis: The shadow analysis report with the instrument such as Solar Pathfinder or professional shadow analysis software of each site should be provided and the system shall be installed only in shadow free space. Lower performance of the system due to shadow effect shall be liable for penalty for lower performance.
- v. Firefighting system – Portable fire extinguishers/sand buckets shall be provided wherever required as per norms.

- vi. Bidder should dispose off the packing material, surplus items, unused materials, waste etc. generated during construction, as per applicable Rules and standards. Concrete wastes and dead mortar if any are to be removed and the area is to be cleaned immediately.
- vii. The bidder shall take fully responsible for safety of manpower, materials and premises. The contractor shall take special care for safe working at height, electrical safety of the installation(s) including connectivity with the grid and follow all the safety rules & regulations applicable as per Electricity Act, 2003, CEA guidelines and other applicable standard practices.
- viii. The bidder shall provide a display board mentioning the details of the project.
- ix. Even if the plant is transferred by REIL to REIL's end consumer/ owner of the premises, all obligations of the successful bidder related to O&M of the plant up to 10 years shall remain the same as per the terms and conditions of the contract.
- x. Stickers as per REIL / End Customer requirements e.g. instructions/ guidelines/ danger mark.

## **SCHEDULE D**

### **i. PERFORMANCE GUARANTEE TEST FOR ROOFTOP SOLAR PV**

The Performance Guarantee (PG) Test shall be carried out after successful commissioning of the system. PG Test shall be carried out on any rooftop location by measuring Performance Ratio (PR) and comparing to the Guaranteed PR of 75%. The test shall be repeated for each location having inverter of having different make or type of control. In case there are more than one rooftop having similar inverter, the test rooftop shall be decided based on mutual consent. Further, the PG test shall be conducted once in the premise. The mathematical formula for calculating PR is given below:

$$\text{PR (\%)} = \frac{\text{AC Yield (KWh)} \times 100}{\text{Installed Capacity (kWp)} \times \text{Global Inclined Insolation (kWh/m}^2\text{)}}$$

- a) For the purpose of measuring Global Inclined Insolation (GII), another pyranometer shall be installed on returnable basis, mounted at the plane of the module, at free of cost.
- b) Measuring instruments to record on site data will include a pair of pyranometers (horizontal and inclined with sensitivity of  $7\mu\text{V}/(\text{W}/\text{m}^2)$ , temperature sensor, signal converter.
- c) The Bidder will be responsible to conduct the PG test only after achieving the physical completion and synchronization of the plant and complying the relevant requirements from utility.
- d) The PG test will be conducted for durations in which irradiance level is greater than  $750 \text{ W}/\text{m}^2$  and the test will continue until a total horizontal radiation of  $5 \text{ kWh}/\text{m}^2$  has been achieved.

- e) The PR values shall be computed based on actual energy generated at solar meters.
- f) If failed to achieve the guaranteed performance levels, the bidder will at its own cost rectify all the defects identified during the test and take necessary steps/efforts to pass the PR test within the stipulated time span. Subsequent to rectification the PR will be restarted.
- g) During PG test, if there is a grid outage, those time slots will not be considered. If the values are again below the guaranteed performance levels, bidder will be liable to pay Liquidated Damages (LD) to NVVN, which shall be calculated as below:

Short fall in PR(%)= $\Delta PR = \text{Target PR} - \text{Achieved PR}$

Shortfall in Generation= $\Delta E = (\Delta PR / \text{Achieved PR}) \times \text{measured Generation}$

• Yearly shortfall in Generation ( $\Delta E \text{ Yearly} = \Delta E \times (\text{Annual GHI}/5)$ )

Applicable Liquidated Damages (LD) =  $N \times R \times \Delta E_{\text{yearly}}$

Where R= tariff factor i.e. ₹5.0 / kWh (For illustration only. Actual amount is as per calculations)

N=11.37

A Sample Calculation for 40 kW Capacity of Plant Rooftop solar PV

Capacity of the plant=40 kW

Global Horizontal Insolation of Site (GY)=1977 kWhr/m<sup>2</sup>-year

Measured Global Horizontal Insolation- GHITEST=5 kWhr/m<sup>2</sup>

Measured Global Inclined Insolation- GIITEST=5.213 kWhr/m<sup>2</sup>

Capacity of the plant where PG test be conducted=40 kW

Metered Generation corresponding to radiation >750 W/m<sup>2</sup>=152 kWhr

Measured PR= $152 \times 100 / (40 \times 5.213) = 72.89\%$

Shortfall in PR= $75\% - 72.89\% = 2.11\%$

Shortfall in Generation for test period= $(2.11/72.89) \times 152 = 4.40 \text{ kWhr}$

Yearly Shortfall in Generation= $4.40 \times (1977/5) = 1739.78 \text{ kWhr}$

Applicable LD=  $N \times R \times \Delta E_{\text{yearly}} = 11.37 \times 5 \times 1739.78 = \text{INR } 98,906.50$

- h) The cap on LD for not achieving the desired and guaranteed PR of 75% shall be 25% of the contract value awarded excluding the O&M Cost.

**ii. Equipment performance guarantee:**

- a) Further the Bidder is liable to maintain the minimum guaranteed Annual CUF measured at Delivery Point for the 10 operational years, failing which the Bidder is liable to pay the LD for shortfall in generation. The LD shall be equal to shortfall in energy corresponding to energy equivalent to modified guaranteed Annual CUF multiplied by the Tariff factor (as mentioned in Annexure A) i.e. INR  $\Delta E \times \text{Tariff factor}$ , where  $\Delta E$  is yearly shortfall in energy corresponding to energy equivalent to modified guaranteed Annual CUF and Tariff factor (as mentioned in Annexure-A of 'Scope of Work and Technical specifications'). The LD shall be recovered from O&M BG and thereafter from O&M payment.

The cap on LD for shortfall in generation shall be 10% of the Annual Energy corresponding to guaranteed CUF for that year multiplied by Tariff Factor. In the case of invocation of the O&M BG due to shortfall in generation, the bidder shall resubmit a BG of originally envisaged value immediately.

- b) b. The modified guaranteed annual CUF shall be calculated based on the shortfall in energy during PG Test, if any.
- c) For determining the Annual CUF, the annual module degradation shall be taken as 0.7% cumulative from 2nd operational year. The duration for which the Generation was interrupted due to non-availability of Grid during solar hours or any other reasons not attributable to Bidder shall not be taken into account for calculation of Annual CUF.
- d) Let us understand with the illustrative example already given,

**Case 1: If there is no shortfall in generation during PG test:**

The capacity of Solar plant considered is 40 kW and the desired minimum annual CUF is 16% for 1st year of O&M i.e. generation (G) of 56102.40 kWhr.

Further, for the 2nd operational year, considering the module degradation of 0.7% per annum, the annual target generation for 2nd operational year shall be equal to  $=56102.40*(1-0.007)$  i.e. 55709.68 kWhr.

Further for the 3rd operational year, considering the module degradation of 0.7% per annum, the annual target generation for 3rd operational year shall be equal to  $=56102.40*(1-2*(0.007))$  i.e. 55316.97 kWhr.

This will continue till the end of 10th operational year.

**Case 2: If there is shortfall in generation during PG test:**

The capacity of Solar plant considered is 40 kW and the desired minimum annual CUF is 16% for 1st year of O&M i.e. generation (G) of 56102.40 kWhr. Now if the shortfall in annual energy during PG test is 1739.8 kWhr, then the modified annual energy generation (G1) target for 1st year shall be 54362.6 kWhr. The modified guaranteed annual CUF for the 1st year shall be equal to  $54362.6*100/(8766*40)=15.50\%$ .

Futher, for the 2nd operational year, considering the module degradation of 0.7% per annum, the annual target generation for 2nd operational year shall be equal to  $=54362.6*(1-0.007)$  i.e. 53982.06.

Further for the 3rd operational year, considering the module degradation of 0.7% per annum, the annual target generation for 3rd operational year shall be equal to  $=54362.6*(1-2*(0.007))$  i.e. 53604.19.

This will continue till the end of 10th operational year.

**Appendix 1**
**Quality Certification, Standards and Testing for  
Grid-Connected Solar PV Systems/Power Plants**

<b>Solar PV Modules/Panels</b>	
IEC 61215 and IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IEC 61701:2011	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- 1:2011 / IS 16170-1:2014	Photovoltaic (PV) module performance testing and energy rating –: Irradiance and temperature performance measurements, and power Rating.
IEC 62716	Photovoltaic (PV) Modules – Ammonia (NH <sub>3</sub> ) Corrosion Testing (as per the site condition like dairies, toilets etc)
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 method for detection of potential induced degradation. IEC 62804-1: Part 1: Crystalline Silicon
<b>Solar PV Inverters</b>	
IEC 62109 or IS : 16221	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 or better for outdoor mounting, IP 54 or better for indoor mounting)
IS/IEC 61683 latest (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC 60068-2 /IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters
IEC 62116:2014/ IS16169	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures

<b>Sample Project Completion Report for Grid-Connected Rooftop</b>		
Financial year :		
Approval No.:		
Proposal Title :		
Installed by agency :		
Project initiated by :		
Title of the Project :	Capacity	
Category of the organization / beneficiary:	Name of the contact person:	
Address of contact person :		
State :	District/City :	
Mobile:	Email :	
Telephone No. :	Website :	
Other info		
Electricity Distribution Company Name :		
Electricity consumer account no. as per electricity bill :	as on Date :	
<b>Technology Description &amp; System Design /Specification</b>		
<b>Compliance to BIS/IEC Standards is mandatory)</b>		
<b>1. Module</b>		
Capacity/Power of each PV Module(Wp) :	1.	1. Nos: 2. Nos:
Cumulative Capacity of Modules (KWp):		
Solar cell technology :		
Module efficiency (in Percentage) :		
<b>2. Inverters</b>		
Type of inverter :		
Make of inverter :		
Capacity/Power of each PCU/inverters (VA) :	Capacity / Power Nos.	
Capacity/Power of PCU / inverters (KVA) :		
Inverter efficiency (Full load) :		
<b>3. Metering Arrangement</b>		
Any other details:		
Make and Type of Meter :		
Metering Details:		
<b>4.. Other informations</b>		
Units of electricity generated by the solar plant as per meter (in KWh):		
Monitoring Mechanism :		
No. of personnel to be trained in O&M		
Grid connectivity level		
Grid connectivity level phase :	Grid connectivity level Voltage :	

The following to be included in Project Completion Report:

1. Warranty period of panels, inverters, and meters.
2. Module ALMM reference no. in latest MNRE List.
3. Inverter supplier certificate for Class 1 Supplier.
4. PR test report.
5. Discom connectivity certificate/approval.
6. Layout of Panel.

**APPENDIX 3**
**INSPECTION AND MAINTENANCE SCHEDULE**

Component	Activity	Description	Interval	By
Module Mounting structure	Inspection	Check whether the MMS are properly in tightened position and check for corrosion.	Quarterly	Site in charge
PV Module	Cleaning	Clean any bird droppings/ dark spots on module	Immediately	Site in charge
Cleaning	Clean PV modules with plain water or mild dishwashing detergent. Do not use brushes, any types of solvents, abrasives, or harsh detergents.	As per the site conditions and at least once a week		Site in charge
Inspection (for plants > 100 kWp)	Use infrared camera to inspect for hot spots; bypass diode failure	Annual		Site in charge
PV Array	Inspection	Check the PV modules and rack for any damage. Note down location and serial number of damaged modules.	Annual	Site in charge
Inspection	Determine if any new objects, such as vegetation growth, are causing shading of the array and move them if possible.	Quarterly		Site in charge
Vermin Removal	Remove bird nests or vermin from array and rack area.	Quarterly		Site in charge
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	Site in charge
Component	Activity	Description	Interval	By
Wiring	Inspection	Inspect cabling for signs of cracks, defects, loose connections, overheating, arcing,	Annual	Site in charge

		short or open circuits and ground faults.		
Spare Parts	Management	Manage inventory of spare parts. to ensure that the amount of power being generated is typical of the conditions. Inspect Inverter housing or shelter for physical Maintenance, if required.	As needed	Site in charge
Inverter	Service	Clean or replace any air filters.	As needed	Site in charge
Instruments	Validation	Spot-check monitoring instruments (pyranometer etc.) with standard instruments to ensure that they are operational and within specifications.	Annual	Site in charge
Transformer	Inspection	Inspect transformer oil level, temperature gauges, breather, silica gel, meter, connections etc.	Annual	Site in charge
Tracker (if present)	Inspection	Inspect gears, gear boxes, bearings as required.	Annual	Site in charge
Service	Lubricate tracker mounting bearings, gearbox as required.	Bi-annual		Site in charge
Plant	Monitoring	Daily Operation and Performance Monitoring	Daily	Site in charge
Log Book	Documentation	Document all O&M activities in a workbook available to all service personnel	Continuous	Site in charge

**APPENDIX 4**
**Monthly O & M Report**

**Month and year:**  
**Name of the Bidder:**  
**LOA No:**  
**Project Capacity:**  
**Address of the site:**

**Part A**

Component	Activity	Description	Date	Signature of contractor	Signature of custodian of building	*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 > 100 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.				
Component	Activity	Description	Date	Signature of contractor	Signature of custodian of building	*Remarks
Wiring		Inspection				Inspect cabling for signs of cracks, defects, loose 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
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, breather, silica gel, meter, 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, bearings, motors.
Service	Lubricate bearings, gear as required.	

**Signature of the Authorized signatory of the Contractor**

**Part B**

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 %: Date:  
 Signature of the Authorized signatory of the custodian of the building  
 Signature of the Authorized signatory of the Contractor

**Annexure – III C****IMPORTANT NOTES**

1. Contractor shall carry out detailed site survey first and shall submit design and drawings to REIL for approval. All design calculations will be required for selection of equipments.
2. Contractor shall submit make & technical specifications of each item to REIL for approval before procurement.
3. Contractor shall submit third party test reports of major items i.e. SPV Module, String Inverter, MMS, and Transformer etc. (if required by end customer).
4. Contractor shall submit all test reports & certificates required as per tender prior to finalization of make.
5. Ladders shall be installed by Contractor wherever required.
6. Appropriate Walkways and Lifelines shall be provided by Contractor on shed type roof.
7. Contractor shall place well qualified and dynamic graduate engineer at site to handle all the activities at site.
8. Safety, Health and Environment Protocols to be followed by the contractor as per rules and regulations of Customer.
9. Timely delivery of material is required.
10. Parallel teams are required for installation of Solar Power Plant at difference sites.
11. SIMs shall be provided by contractor for remote monitoring of systems. The charges pertaining to recharge the SIM of all inverters, shall be borne by Contractor till completion of the 10 years O&M period.
12. Module cleaning arrangements to be done by the contractor at all sites. Appropriate size of Tank and suitable Motor (to lift the water) shall be provided by the contractor. The water shall be provided the customer.
13. Cable Tranches (wherever required) shall be done as per requirement and upto satisfaction level of the REIL / customer.
14. Solar Meters, Energy meters, Net Meters (as per DISCOM specifications) shall be installed at each location by the contractor and shall be sealed by the DISCOM to fulfill RPO / any other obligations. Contractor shall arrange approvals with concerned DISCOM & Electrical Inspector for required clearances.
15. After delivery at site, the bidder shall be solely responsible for the safekeeping and security of all equipment and materials until the date of commissioning. REIL shall not be responsible for any theft, damage, loss, or pilferage occurring during this period.
16. The bidder shall maintain a secure storage/godown at or near the project site at its own cost.
17. In the event of loss or theft of any material supplied or installed, the bidder shall immediately lodge a complaint/FIR with the local police and provide a copy of the same to REIL. Failure to report such incidents shall be treated as a material breach.

**Annexure – III D****GENERAL TERMS & CONDITIONS OF THE CONTRACT****1) AMENDMENT**

Except as otherwise provided herein, no addition, amendment to or modification of the Contract shall be effective unless it is in writing and signed by and on behalf of both parties.

**2) SEVERABILITY**

In the event that any or any part of the terms conditions or provisions contained in the Contract shall be determined invalid, unlawful or unenforceable to any extent such term, condition or provision shall be severed from the remaining terms, conditions and provisions that shall continue to be valid and enforceable to the fullest extent permitted by law.

**3) CONFIDENTIAL TREATMENT**

It is understood and agreed that data, know-how and other such proprietary information that was provided or will be provided by either party, will remain confidential.

**4) RELATIONSHIP OF THE PARTIES**

REIL relationship with Vendor will be that of a Business Associate, and nothing in this Contract shall be construed to create a relationship, joint venture, partnership.

**5) INDEMNITY**

The bidder shall indemnify and hold harmless REIL, its officers, employees, and agents against any and all claims, damages, losses, liabilities, penalties, and expenses arising out of or in connection with:

- Any negligence or willful misconduct of the bidder.
- Breach of any statutory obligations by the bidder or its subcontractors.
- Loss or damage to REIL's or third party property due to bidder's acts.
- Any third-party claims arising from the execution of the contract."

**6) RESTRICTION ON EMPLOYMENT**

Both the parties have agreed that they will not recruit any members of staff of other party directly or indirectly.

**7) DISPUTE RESOLUTION**

The parties agree to use their best efforts to resolve any dispute that may arise under the Agreement through good faith negotiations. No party shall commence any litigation in relation to this Agreement unless it has first invited the Chief Executive of the other party (or any person duly authorized to act on his behalf) to meet with its own Chief Executive (or any person duly authorized to act on his behalf) for the purpose of endeavoring to resolve the dispute on mutually acceptable terms. Any dispute arising under this Agreement which cannot be settled by negotiation/mediation between the parties, or their respective representatives shall be submitted to the competent court of law. The courts situated at Jaipur only shall have the jurisdiction.

All disputes arising out of or in connection with this contract shall be resolved amicably. Failing amicable resolution, they shall be referred to a mediator under the Mediation Act. The venue of all proceedings shall be Jaipur. Courts at Jaipur shall have exclusive jurisdiction."

**8) RISK AND COST**

In the event of failure on the part of the contractor in the supply, installation and commissioning of goods and services, which is required in view of the pending orders, REIL shall be entitled to cancel the remaining order and procure the outstanding quantity through other sources at risk and costs of the contractor.

**9) TERMINATION OF CONTRACT:**

REIL may terminate the contract, in whole or in part, by giving 15 days' written notice to the bidder in the following cases:

- Material breach not cured within 10 days of notice.
- Repeated delay in execution.
- Fraud, misrepresentation, or insolvency.
- Any violation of statutory or regulatory provisions.”

**10) DURATION OF CONTRACT**

This contract shall take effect on the day of execution of this contract and shall endure until commissioning and hand over the Power Plant(s) to beneficiary and renewable as per mutual agreement.

**11) GOVERNING LAW**

This contract and its validity, interpretation and performance will take effect and be governed under the laws of India. Venue in any action in law or equity arising from the terms and conditions of this contract shall be the court of appropriate jurisdiction in Jaipur, Rajasthan (India)

**12) PREFERENCE TO MSE**

Preference to MSE will be given and procurement from SC/ST and Women Entrepreneurs shall be done as per the government guidelines. Start Ups are exempted from condition of prior turnover and prior experience subject to meeting of quality and technical specifications as per clause mentioned in Eligibility Criteria ( Annexure - III)

**13) CONTRACT:**

Before execution of the work, performance security deposit be submitted and a contract agreement for execution of the work shall be signed by the Vendor with REIL as per terms & conditions mentioned in work order / tender. In case agreement is not executed within the stipulated time, earnest money will be forfeited. In case of sub-contracting of work, contractor has to take prior approval from REIL. The main contractor shall be liable for all acts of its subcontractors.

**14) NO NEAR RELATIVE CLAUSE**

The bidder should give a certificate that none of his/her near relative is working in REIL as defined below along with their technical bid as per the attached Annexure . In case of proprietorship firm certificate will be given by the proprietor. For partnership firm certificate will be given by all the partners and in case of limited company by all the Directors of the company excluding Government of India/Financial institution nominees and independent non-Official part time Directors appointed by Govt. of India or the Governor of the state and full time Directors of PSUs both state and central. Due to any breach of these conditions by the company or firm or any other person the tender will be cancelled and Bid Security will be forfeited at any stage whenever it is noticed and REIL will not pay any damage to the



company or firm or the concerned person. The company or firm or the person will also be debarred for further participation in REIL's Tender. The near relatives for this purpose are defined as:- (a) Members of a Hindu undivided family. (b) They are husband and wife. (c) The one is related to the other in the manner as father, mother, son(s) & Son's wife (daughter in law), Daughter(s) and daughter's husband (son in law), brother(s) and brother's wife, sister(s) and sister's husband (brother in law).

REIL/RE/2025-26/04

#### **15) FORCE MAJEURE:**

- i. Notwithstanding the provisions contained in the Bidding Documents; the Contractor shall not be liable to forfeit (a) Bid Security for delay and (b) termination of contract; if it is unable to fulfill its obligation under this Contract due to force majeure conditions.
- ii. For purpose of this clause, "Force majeure" means an event beyond the control of the Contractor and not involving the Contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not limited to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by REIL and its decision shall be final and binding on the Contractor. REIL may extend the date of completion for a further period corresponding to the period of force majeure.
- iii. If a force majeure situation arises, the Contractor shall notify REIL in writing promptly, not later than 7 (seven) days from the date such situation arises. The Contractor shall notify REIL not later than 3 days of cessation of force majeure conditions. After examining the cases, REIL shall decide and grant suitable additional time for the completion of the work, if required.

#### **16) OTHER TERMS & CONDITIONS:**

- i. Compliance with Regulations and Indian Standard:- All works shall be carried out in accordance with relevant regulations, both statutory & those specified by the Indian standard related to the works covered by this specification. In particular the equipment and installation will comply with the following:-
  - a. Work man's compensation act.
  - b. Minimum wages Act.
  - c. Payment wages Act.
  - d. Contract Labour regulation & abolition Act.
  - e. ESI, PF & Bonus Act.
  - f. Regulation under Indian Electricity Rules,
  - g. Safety & electrical Standard as applicable
- ii. Watch & Ward:-

The Vendor shall supply material for installation work at site, shall continue to be responsible for their safe custody till they are installed in position, tested, commissioned and handed over to beneficiary as per format provided by REIL.
- iii. Vendor shall arrange for compliance with statutory provision of safety regulation and departmental requirements of safety codes in respect of labour employed on the work by the Vendor. Failure to provide such safety requirements would make the Vendor liable for penalty. The department will make arrangement for the safety requirements at the cost of the Vendor & recover the cost thereof from him.
- iv. Company shall not be held liable or responsible for any illness and for physical harm sustained by the Vendor authorized representative during the execution of this agreement as they will not be deemed in any manner as employee of the company.

- v The Vendor authorized representative shall take due care in handling the SPV system under this contract. Unwarranted activities, if found any, the company shall be authorized to recover the same from the Vendor.
- vi Correction, over-writing and alteration should be initialed and dated by the Vendor otherwise the bid is liable to be rejected. The bid shall be typed or written in ink. Unit rates should be mentioned in the specified format failing which the bids are not likely to be considered.
- vii All Vendors shall therefore, furnish declaration that their firm is not involved in any litigation that may have an impact of affecting or compromising the delivery of services as required under this assignment. It is also to be declared that their firm has not been black listed by any Central/State/ Public Sector Undertakings in India. The declaration should be verified by the Notary Public.
- viii The Vendor shall sign these conditions on each page at the end in token of acceptance of all the terms and it would be attached with the bid along with the declaration mentioned in above. He should also sign at the bottom of each of the pages of his bid to be submitted.
- ix The company reserves the right to visit and inspect any site under this contract at any time and if defects are noted, payments may be stopped / recovered from Vendor. The company reserves the right to terminate this contract without giving any notice, if in the opinion of the company, the performance of the Vendor is not found satisfactory and according to terms stipulated by this contract.
- x The company shall be fully absolved from the third party claims and damages during the execution of the contract..
- xii The contract agreement shall be executed at Jaipur and shall be subject to Jaipur court jurisdiction alone.
- xiii The company shall deduct the TDS as per the Income Tax Act.
- xiv The Vendor shall be fully responsible for all repairs of the defects in maintenance during the period under contract.

**NOTE:**

1. **If Bidder/ Contractor is found deficient/non-adherent to the provisions of the above work, then they may not be awarded any assignment in future.**

**17. Work Completion period:** Within 90 days from the date of placement of work order.

**18. Performance Security (Site Wise):**

Contract Performance Security @10% of total contract value shall be submitted by successful bidder within 14 days after placement of work order of site. This security shall be valid till a period of 18 months. However, in case of delay in Completion of Facilities, the validity of all the contract performance securities shall be extended by the period of such delay.

After the end of successful completion of period mentioned above, Contract Performance Security shall be returned to agency provided agency has submitted CPG @10% of O&M Contract price and Security against Equipment Performance Guarantee during O&M Period.

The BG towards O&M Performance shall be submitted prior to return of the Contract Performance Guarantee (CPG) under the subject package. The above O&M Performance Security shall be initially valid upto 90 days after the end of Operation & Maintenance (O&M) period as specified in

the Technical Specifications. The above security amount shall be payable to the Employer without any condition whatsoever.

**Security against Equipment Performance Guarantee during O&M Period: BG for O&M.**

The successful Bidder, to whom the work is awarded, shall provide security equal to  $0.1 \times G \times R$  (Where G is Annual Generation corresponding to CUF applicable for that year and  $R = \text{Rs.}5.00$  per kWh) in million INR for ten years as per contract.

The Performance Bank Guarantee shall be invoked by REIL in case of non-performance, default, or breach of any of the obligations by the bidder without prior notice.”

**19. LD / Penalty against delay in completion of work:**

If the contractor fails to achieve the successful Completion of Facilities within the agreed work schedule, the Contractor shall pay to the Employer as liquidated damages and not as penalty, a sum calculated at the following rates:

1. 0.5% per week of the contract value corresponding to the capacity not commissioned for the premises.
2. The total amount of liquidated damages for delay under the contract will be subject to a maximum of five percent (5%) of the total Contract Price excluding O&M. Beyond 5%, termination of contract shall be considered.

**Further, REIL is authorized to terminate the contract for non-performance, delays and quality related issues. REIL shall terminate the contract without any liability in cases of fraudulent representation by the contractor.**

**The bidder shall ensure commissioning within the stipulated period; any delay beyond this period shall attract penalties as prescribed under this contract.**

**20. Defect Liability Period:**

Defect Liability Period shall be as per guarantees and warranties mentioned in Technical Specification for Solar Modules, Inverter and Solar Generation Meters and/or any other item for which guarantee/warranty is specifically mentioned in Technical Specification. For all other items/equipments in Technical specification, the Defect Liability Period shall be twelve (12) months from the date of Completion of Facilities of Entire Project.

If during the Defect Liability Period any defect should be found in the design, engineering, materials and workmanship of the Plant and Equipment supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace or otherwise make good (as the Contractor shall at its discretion, determine) such defect as well as any damage to the Facilities caused by such defect.

## **21. Payment Terms (Site Wise):**

### **1. Supply of Equipments:**

- a) Sixty Percent (60%) of Supply Part of Contract price on receipt of SPV Modules, Module Mounting Structures with complete hardware accessories & String Inverters at site and physical verification and certification by the Project Manager for the equipment received and stored at site. Release of REIL payment is required from end customer.
- b) Twenty Percent (20%) of Supply Part of Contract price on receipt of Balance of Material at site and physical verification and certification by the Project Manager for the equipment received and stored at site. Release of REIL payment is required from end customer.
- c) Ten Percent (10%) of Supply Part of Contract price on successful Commissioning of the Premise (i.e net metering/net billing/behind the meter etc) on certification by the Project Manager. Release of REIL payment is required from end customer.
- d) Ten Percent (10%) of Supply Part of Contract price on Completion of Facilities of Entire Project and issuance of Completion Certificate by the project manager of End Customer. Release of REIL payment is required from end customer.

### **2. Installation & Commissioning of Equipments:**

- a) Ninety Percent (90%) of the installation Services component of contract price shall be paid on pro-rata basis on completion of installation of equipments. Release of REIL payment is required from end customer.
- b) Ten Percent (10%) of the installation Services component of contract price on Completion of Facilities of Entire Project and issuance of Completion Certificate by the project manager. Release of REIL payment is required from end customer.

### **3. Operation and Maintenance Charges:**

Operation and maintenance charges including all consumable, spares and equipment's included in operation and maintenance charges shall be paid on pro-rata basis every three months on the certification of completion of work by Project Manager. Release of REIL payment is required from end customer.

### **Notes:**

- i. The bidder shall furnish a detailed break-up, including bill of materials, for the Price Component which shall be mutually discussed and finalized with REIL. Progressive payment for Design, Engineering, Erection and Civil works will be made for each set of plant based on certification by the REIL / Customer for the work completed.
- ii. The release of first progressive payment for Civil/structural Works shall also be subject to submission of documentary evidence by the Bidder towards having taken the insurance policy (ies) in terms of relevant provisions of GCC (Insurance) and acceptance of the same by the REIL / Customer.
- iii. In accordance with the provisions of GCC, it shall be the responsibility of the Bidder to comply with all the statutory requirements of EPFO and ESIC within due time period. It shall be the



responsibility of the Bidder to duly deposit all the PF and ESIC contribution to the Authorities, of the manpower deployed by them on the project.

REIL/RE/2025-26/04

- iv. Above payment, terms shall be applicable for each set of solar PV plants separately. Successful bidder shall provide break-up price for each set of solar PV plants as per schedule of rates.
- v. Amount towards PF and ESI Contribution will be presumed to be included in Services Part of the Contract. Accordingly, respective progressive/stage payments under Service Contract will be released to the Bidder after ensuring/obtaining copies of following documents from the Bidder:-
1. Copies of EPF/ESIC Challan.
  2. Wage Sheet duly certified by the Customer / REIL.
  3. Attendance Sheet of the manpower deployed by the Bidder on the Project which will be duly counter certified by Customer / REIL.
- vi. In case the Bidder could not produce the required documents at the time of its claim for any progressive/stage payment under Service Contract, REIL shall be at liberty to deduct the amount equivalent to the PF/ESIC (for the period for which manpower has been deployed on the project) from that stage payment which will be released to the Bidder later on only on production of required documents
- vii. All payments shall be made in Indian Rupees, unless otherwise specified in the Work Order / Contract Agreement. All payment shall be made on the basis of actual measurement for the quantified items as per schedule of works and approved by REIL within 30 days of submission of duly certified invoice by the Bidder. The Bidder shall submit the bill / invoice for the work executed showing separately GST, and any other statutory levies in the bill /invoice.
- viii. No payment made by the REIL herein shall be deemed to constitute acceptance by the REIL / Customer of the Facilities or any part(s) thereof.

**ix. PRICE ESCALATION**

No Price escalation is allowed. The rate(s) quoted against the work shall remain firm during the entire Rate Contract period.

**Annexure -IV****CHECKLIST OF TENDER TERMS & CONDITIONS**

<b>S. No.</b>	<b>Term</b>	<b>Description</b>	<b>Complied / Not Complied</b>	<b>Deviation if any</b>
1.	GST / Taxes	As applicable.		
2.	Tender EMD	As per given in tender document		
3.	Technical & Financial Eligibility Criteria	As per given in tender document		
4.	Terms of payment	As per given in tender document		
5.	Contract period	As per given in tender document/LOI /Work order		
6.	Performance Security	As per given in tender document		
7.	Comprehensive O&M	As per given in tender document		
8.	LD Clause	As per given in tender document		
9.	Warranty of equipment supplied	As per given in tender document		
10.	Completion Period	As per given in tender document/LOI /Work order		
11.	Special Terms & Conditions	As per given in tender document		
12.	General Terms & Conditions	As per given in tender document		
13.	Udhyam Registration	As per recent Government guide line, manufacturer / Service provider has to take Udhyam registration to avail benefit of MSME. Attach your copy of Udhyam Registration with tender.		
<b>SIGNATURE WITH STAMP</b>				



**Annexure -V**

**(To be submitted on Bidder's Letter Head)**

**Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025**

**Authorization Certificate**

To

Date

Addl. General Manager(MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area,  
Jaipur-302034  
Rajasthan

Dear Sir,

Mr. .... is hereby authorized to sign and submit tender document in reference to your tender no **REIL/RE/2025-26/04 Dated 22.05.2025 on behalf of M/s** ..... for "Rate Contract for Survey, Design, Supply, Erection, Testing, Commissioning and Comprehensive Operation and Maintenance for 10 years Grid Connected Rooftop Solar Photovoltaic Power Projects on various Government buildings in Uttar Pradesh State".

On behalf of company .....

Name and Designation

Signed and sealed (who has signed the tender)



**Annexure-VI**

**(To be submitted on Bidder's Letter Head)**

**Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025**

**UNDERTAKING OF NO NEAR RELATIVE**

Date

To

Addl. General Manager (MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area,  
Jaipur-302034  
Rajasthan

Dear Sir,

We, M/s. \_\_\_\_\_ hereby certify that none of our relative(s) as defined in the tender document is/are employed in Rajasthan Electronics & Instruments Limited (REIL) as per details given in tender document. In case at any stage, it is found that the information given by me is false/incorrect, REIL shall have the absolute right to take any action as deemed fit/without any prior intimation to us

On behalf of company .....

Name and Designation

Signed and sealed (who has signed the tender)



(To be submitted on Bidder's Letter Head)

Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025

**CERTIFICATE FOR NON BLACK LISTING**

Date

To

Addl. General Manager (MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area,  
Jaipur-302034  
Rajasthan.

Dear Sir,

We, M/s. ....confirm that we are not blacklisted in any PSUs/Government/Semi Government / Quasi Government department in India, as on date of submission of bid. This undertaking is submitted to the best of my knowledge. If at any stage it is found wrong, then REIL may take necessary action against us.

“REIL reserves the right to blacklist or debar the bidder for a period up to 5 years in case of any default, misrepresentation, non-performance, fraudulent activity, or breach of contract terms.”

On behalf of company .....

Name and Designation

Signed and sealed (who has signed the tender)

**Annexure -VIII****Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025****CA CERTIFICATE TOWARDS PLANT & MACHINERY**

Date

To

Addl. General Manager (MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area,  
Jaipur-302034  
Rajasthan.

Dear Sir,

It is certified that M/s ..... is falling under MSE category as per guidelines contained in the provisions of the MSMED Act,2006 and notification No. S.P. 1722(E) dated 05.10.2006 and having Udhog Adhar no. ....

We also certify that the investment in plant and machinery (Imported and indigenous) as on date ..... is Rs.....

Chartered Accountant

Firm name:-

Signature with seal

UDIN .....



**Annexure-IX**

**(To be submitted on Bidder's Letter Head)**

**CERTIFICATE TOWARDS LEGAL / CONTRACTUAL DISPUTES**

**Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025**

Date.....

To

Addl. General Manager (MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area, Jaipur-302034  
Rajasthan

Dear Sir,

We M/s ..... do hereby confirm that we do not have any legal /contractual disputes with REIL / Any other PSU / Any Govt. Organization.

Also, we confirm that we do not have any prior contract terminations due to non-performance or litigation history against any government entity.

On behalf of company .....

Name and Designation



(To be submitted on Bidder's Letter Head)

**CERTIFICATE TOWARDS COMPLETION OF WORKS**  
**(APPLICABLE ONLY FOR REIL PAST CONTRACTORS)**

**Tender ref.: REIL/RE/2025-26/04 Dated 22.05.2025**

Date.....

To

Addl. General Manager (MM),  
Rajasthan Electronics & Instruments Limited,  
2, Kanakpura Industrial Area, Jaipur-302034  
Rajasthan

Dear Sir,

We, M/s ..... do hereby confirm that we do not have any pending work, assigned by REIL till FY 2021-22.

On behalf of company.....

Name and Designation

## INTEGRITY PACT

### Between

Rajasthan Electronics & Instruments Limited (REIL), a company registered under the Companies Act 1956 and having its registered office at 2, Kanakpura Industrial Area, Jaipur-302012 (India) hereinafter referred to as “The Principal”, which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

and

\_\_\_\_\_, (description of the party along with address), hereinafter referred to as “The Bidder/ Contractor” which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

### Preamble

The Principal intends to award, under laid-down organizational procedures, contract/s for \_\_\_\_\_ . The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint Independent External Monitor(s), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

### Section 1 – Commitments of the Principal

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles:-
  - 1.1.1. No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
  - 1.1.2. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  - 1.1.3. The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

## **Section 2 – Commitments of the Bidder(s)/ Contractor(s)**

2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.

2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he / she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.

2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant IPC/ PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.

2.1.4 The Bidder(s)/ Contractor(s) of foreign origin shall disclose the name and address of the agent(s)/ representative(s) in India if any. Similarly the Bidder(s)/ Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principal(s) if any. Further details as mentioned in the "Guidelines on Indian Agent of Foreign Suppliers" shall be disclosed by the Bidder(s)/ Contractor(s). Further as mentioned in the guidelines all the payments made to the Indian Agent/ Representative have to be in Indian Rupees only.

2.1.5 The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.

2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

## **Section 3 – Disqualification from tender process and exclusion from future contracts**

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidders(s)/ Contractor(s) from the tender process or take action as per the separate "Guidelines for Suspension of Business Dealings with Suppliers/ Contractors" framed by the Principal.

## **Section 4 – Compensation for Damages**

4.1 If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.

4.2 If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages equivalent to 5% of the contract value or the amount equivalent to Security Deposit/Performance Bank Guarantee, whichever is higher.

#### **Section 5 – Previous Transgression**

5.1 The Bidder declares that no previous transgressions occurred in the last 3 years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.

5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason.

#### **Section 6 – Equal treatment of all Bidders/ Contractors/ Sub-contractors**

6.1 The Bidder(s)/ Contractor(s) undertake(s) to demand from his sub-contractors a commitment in conformity with this Integrity Pact. This commitment shall be taken only from those sub-contractors whose contract value is more than 20% of Bidder's/ Contractor's contract value with the Principal.

6.2 The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.

6.3 The Principal will disqualify from the tender process all bidders who do not sign this pact or violate its provisions.

#### **Section 7 – Criminal Charges against violating Bidders/ Contractors Subcontractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to Vigilance Office.

#### **Section 8 –Independent External Monitor(s)**

8.1 The Principal appoints competent and credible Independent External Monitor for this Pact. The task of the Monitor is to review independently and objectively, whether and to what extent the parties comply with the obligations under this agreement.

**Ms. Arundhaty Ghosh, Director General ( Postal Services) (Retd.)** has been appointed as IEM for this contract. Her address is as below.

CG 151 ,1st Floor, Sector II, Salt Lake, Kolkata – 700091

E- Mail :arundhatyg@gmail.com

**Mr. Shekhar Prasad Singh, IAS (Retd.)** has been appointed as IEM for this contract. His address is as below.  
Plot No. 176, Road No. 11, Prashasan Nagar, Jubilee Hills, Hyderabad - 500033

E- Mail :spsinghias1983@gmail.com

8.2 The Monitor is not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the MD, REIL.

8.3 The Bidder(s)/ Contractor(s) accepts that the Monitor has the right to access without restriction to all contract documentation of the Principal including that provided by the Bidder(s)/ Contractor(s). The Bidder(s)/ Contractor(s) will grant the monitor, upon his request and demonstration of a valid interest, unrestricted and unconditional access to his contract documentation. The same is applicable to Sub-contractor(s). The Monitor is under contractual obligation to treat the information and documents of the Bidder(s)/ Contractor(s) / Sub-contractor(s) with confidentiality.

8.4 The Principal will provide to the Monitor sufficient information about all meetings among the parties related to the contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the Monitor the option to participate in such meetings.

8.5 As soon as the Monitor notices, or believes to notice, a violation of this agreement, he will so inform the Management of the Principal and request the Management to discontinue or take corrective action, or to take other relevant action. The Monitor can in this regard submit non-binding recommendations. Beyond this, the Monitor has no right to demand from the parties that they act in a specific manner, refrain from action or tolerate action.

8.6 The Monitor will submit a written report to the MD, REIL within 8 to 10 weeks from the date of reference or intimation to him by the Principal and, should the occasion arise, submit proposals for correcting problematic situations.

8.7 If the Monitor has reported to the MD, REIL, a substantiated suspicion of an offence under relevant IPC / PC Act, and the MD, REIL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the Monitor may also transmit this information directly to the Central Vigilance Commissioner, Government of India.

8.8 The word 'Monitor' would include both singular and plural.

### **Section 9 – Pact Duration**

9.1 This Pact begins when both parties have legally signed it. It expires for the Contractor 12 months after the last payment under the respective contract and for all other Bidders 6 months after the contract has been awarded.

9.2 If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified as above, unless it is discharged/ determined by the MD, REIL.

### **Section 10 – Other Provisions**

10.1 This agreement is subject to Indian Laws and jurisdiction shall be registered office of the Principal, i.e. Jaipur.

10.2 Changes and supplements as well as termination notices need to be made in writing. Side agreements have not been made.

10.3 If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.



10.4 Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.

10.5 Only those bidders/ contractors who have entered into this agreement with the Principal would be competent to participate in the bidding. In other words, entering into this agreement would be a preliminary qualification.

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For & On behalf of the Principal

For & On behalf of the Bidder/ Contractor

(Office Seal)

(Office Seal)

Place-----

Date-----

Witness: \_\_\_\_\_

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

(Name & Address) \_\_\_\_\_

**Annexure–XII****FORMAT FOR EMD BANK GUARANTEE**

M/s. \_\_\_\_\_ (Name & Address of the Firm) having their registered office at \_\_\_\_\_ (Address of the firms Registered office) (Hereinafter called the 'bidder') wish to participate in the tender No. \_\_\_\_\_ for \_\_\_\_\_ Rajasthan Electronics & Instruments Limited (REIL) and WHEREAS a Bank Guarantee for (Hereinafter called the "Beneficiary") Rs. \_\_\_\_\_ (Amount of EMD) valid till \_\_\_\_\_ (Mention here date of validity of this Guarantee which from the date of the submission of Tender's offer) which is required to be submitted by the bidder along with the tender.

We, \_\_\_\_\_ (Name of the Bank and address of the Branch giving the Bank Guarantee) having our registered office at \_\_\_\_\_ (address of Bank's Registered office) hereby give this Bank Guarantee No. \_\_\_\_\_ dated \_\_\_\_\_ and hereby agree unequivocally and unconditionally to pay immediately on demand in writing from the Rajasthan Electronics & Instruments Limited or any officer authorized by it in this behalf any amount not exceeding Rs. (Amount of E.M.D.), (Rupees \_\_\_\_\_ (In words) to the said Rajasthan Electronics & Instruments Limited on behalf of the bidder.

We \_\_\_\_\_ (Name of the Bank) also agree that withdrawal of the tender or part thereof by the bidder within its validity or Non submission of Security Deposit by the bidder within one month from the date tender or a part thereof has been accepted by the Rajasthan Electronics & Instruments Limited would constitute a default on the part of the bidder and that this Bank Guarantee is liable to be invoked and en-cashed within its validity by the Beneficiary in case of any occurrence of a default on the part of the bidder and that the en-cashed amount is liable to be forfeited by the Beneficiary.

This agreement shall be valid and binding on this Bank upto and inclusive of \_\_\_\_\_ (mention here the date of validity of Guarantee) and shall not be terminable by notice or by Guarantor change in the constitution of the Bank or the firm of bidder or by any reason whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, conceded with or without our knowledge or consent by or between the bidder and the REIL.

"Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this Guarantee shall not be assignable, transferable by the beneficiary (i.e. REIL). Notice or invocation by any person such as assignee, transferee or agent of beneficiary shall not be entertained by the Bank. Any invocation of the Guarantee can be made only by the beneficiary directly.

NOTWITHSTANDING anything contained hereinbefore, our liability under this guarantee is restricted to Rs. \_\_\_\_\_ (Amt. of E.M.D.) (Rupees \_\_\_\_\_ ) (in words). Our Guarantee shall remain in force till \_\_\_\_\_ (Date of validity of the Guarantee). Unless demands or claims under this Bank Guarantee are made to us in writing on or before \_\_\_\_\_ (Date of validity of the Guarantee), all rights of Beneficiary under this Bank Guarantee shall be forfeited and we shall be released and discharged from all liabilities there under:

Place:

Date:-

Please mention here Complete Postal Address of the Bank with Branch Code, Telephone.

SIGNATURE OF THE BANK'S  
AUTHORISED SIGNATORY WITH  
OFFICIAL ROUND SEAL

NAME OF DESIGNATED BANKS:

Note -1: The Bank Guarantee (B.G) shall be from the Nationalize Banks or any other Banks, as Notified by the Finance Department, from time to time.

Note -2: The B.G shall be signed by two bank officer jointly if the amount of B.G is more than Rs 50,000/- and B.G must have proper B.G number as per R.B.I guidelines.

**Annexure–XIII****FORMAT FOR PERFORMANC SECURITY BANK GUARANTEE**

(To be stamped in accordance with Stamp Act If any, of the Country of the issuing Bank)

Bank Guarantee No.....

Date.....

To [Purchaser's Name & Address]

Dear Sirs,

In consideration of the...\*Purchaser's Name].....(Hereinafter referred to as the 'Purchaser' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to M/s....\*Contractor's Name].....with its Registered/Head Office at.....(Hereinafter referred to as the 'Contractor'. Which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a Contract by issue of Purchaser's Purchase Order No.....dated.....and the same having been acknowledged by the contractor, for.....(Contract sum in figures and words] for.....\*Name of the work] and the Contractor having agreed to provide a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to -----% (\*).....of the said basic value of the aforesaid work under the Purchase Order.

We.....[Name & Address of the Bank].....having its Head Office at.....(hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context of meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Purchaser's on demand any and all monies payable by the Contractor to the extent of.....(\*) as aforesaid at any time up to.....(@).....\*days/month/year] without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the Purchaser's on the Bank shall be conclusive and binding notwithstanding any difference between the Purchaser's and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the Purchaser's and further agrees that the guarantees herein contained shall continue to be enforceable till the Purchaser discharges this guarantee or till....\*days/month/year] whichever is earlier.

The Purchaser shall have the fullest liberty, without affecting in any way the liability of the Bank under this guarantee, from time to time to extend the time for performance of the Contract by the Contractor. The Purchaser shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the Purchaser and the Contractor or any other course or remedy or security available to the Purchaser.

The Bank shall not be released of its obligation under these presents by any exercise by the Purchaser of its liberty with reference to the matters aforesaid or any of them or by reason of any other act or forbearance of other acts of omission or commission on part of the Purchaser's or any other indulgence shown by the Purchaser or by any other matter or thing whatsoever which under law would, but for this provision have the effect of relieving the Bank.

The Bank also agrees that the Purchaser at its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Purchaser may have in relation to the Contractor's liabilities.

Notwithstanding anything to the contrary contained herein.

1. Our liability under this Guarantee shall not exceed Rs. ----- (Rupees ----- Only).
2. This Bank Guarantee shall be valid up to -----
3. Further, a claim period of 60 days after validity period -----is available to you to make a demand under the Bank Guarantee, in respect of a cause of action which has arisen during the validity period only.
4. We are liable to pay up to the guarantee amount only and only if we receive from you a written claim or demand duly received by authorized Bank officials within the validity period of the guarantee as above or within claim period, if any.

The said letter of guarantee has been transmitted through SFMS gateway to your bank. It is advised that in your own interest, you may verify the genuineness of above letter of guarantee from your bank/branch

WITNESSES: Signature.....  
Name.....  
Official Address.....  
Address.....  
Designation.....

Signature.....  
Name.....  
Official  
Seal

Signature.....  
Name.....  
No.....  
Address.....

**Annexure–XIV****REIL BANK DETAILS**

Name of Organization	Rajasthan Electronics & Instruments Limited (REIL), Jaipur, Rajasthan, India
PAN Number	AABCR1528G
GST Number	08AABCR1528G1ZL
Banker Name	Punjab National Bank
Branch Name	Large Corporate Branch, M.I.Road, Jaipur, Rajasthan, India
Bank Account Number	0221008700000152
IFSC Code	PUNB0022100
Type of Account	Cash Credit Account

**Annexure -XV****(To be submitted on Bidder's Letter Head)****CHECK LIST OF ALL ANNEXURES**

<b>Sr. No.</b>	<b>Required Documents</b>	<b>Remark</b>
1.	Sealed and signed process compliance form. (Annexure-I)	
2.	Sealed and signed Instruction to Bidders (Annexure-II)	
3.	Sealed and signed Annexure-III	
4.	Sealed and Signed Annexure-IV (Checklist of Tender terms & conditions)	
5.	Authorization certificate ( Annexure-V)	
6.	Sealed & signed Undertaking of No Near Relative (Annexure-VI)	
7.	Sealed & signed Certificate for Non Black listing (Annexure-VII)	
8.	Sealed & signed CA Certificate for MSME firms(Annexure -VIII)	
9.	Certificate towards Legal / Contractual Disputes (Annexure-IX)	
10.	Certificate towards Completion of Works (Annexure -X)	
11.	Integrity Pact (Annexure -XI)	
12.	Format for EMD Bank Guarantee (Annexure -XII)	
13.	Format for Performance Security Bank Guarantee (Annexure -XIII)	
14.	REIL Bank Details for preparation of BG (Annexure -XIV)	
15.	Checklist (Annexure -XV)	