

# **DETAILED e-TENDER DOCUMENT**

**FOR**

**Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis**

**DNIe-T No.F. 6(246)/TREDA/NCES/2019/3865, dated 07/02/2022**



**TRIPURA RENEWABLE ENERGY DEVELOPMENT AGENCY**

(Department of Power, Government of Tripura)

Vigyan Bhawan, Pandit Nehru Complex, Gorkhabasti, Agartala, Tripura

Tele-fax: 0381-2325900, 2326139, email-tredaagartala@gmail.com

URL: www.treda.nic.in

**TRIPURA RENEWABLE ENERGY DEVELOPMENT AGENCY**

(Power Department, Government of Tripura)

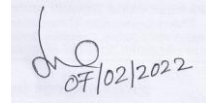
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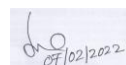
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**NAME OF WORK:** Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.

1. Certified that this DNIE-T contains **91 (ninety one)** pages numbered from 1 to 91.
2. Header of each page of DNIE-T bears the text “**e-TENDER FOR GRID CONNECTED SPV POWER PLANT IN RESCO MODEL IN TRIPURA**”.
3. The schedule of above e-Tender is shown in Page No. **3** to Page No. **4**.



(D S DAS)  
Joint Director



**TRIPURA RENEWABLE ENERGY DEVELOPMENT AGENCY**

(Power Department, Government of Tripura)

Vigyan Bhawan, Pandit Nehru Complex, Gorkhabasti, Agartala, Tripura

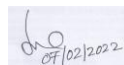
Tele-fax: 0381-2325900, 2326139, email-tredaagartala@gmail.com

**BID INFORMATION SHEET**

1.	Name of work	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.
2.	Completion period for the work	12 (twelve) months from the date of issue of Letter of Award (LoA)
3.	Tender Fee	<b>Rs. 10,000/- (Rupees ten thousand)</b> only are to be paid electronically using on-line facility provided in the e-procurement portal (Non-refundable).
4.	Bid Security / Earnest Money Deposit	<b>Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten)</b> only are to be paid electronically using on-line facility provided in the e-procurement portal.
5.	e-procurement portal	<b>https://tripuratenders.gov.in</b>
6.	Date of Publishing of Tender	<b>07/02/2022</b>
7.	Document download Start date & Time from e-procurement portal	<b>07/02/2022 at 06:00 PM</b>
8.	Date of start of seeking clarification	<b>07/02/2022 at 06:00 PM</b>
9.	Closing date for seeking clarification	<b>14/02/2022 at 05:30 PM</b>
10.	Online Pre-bid meeting	<b>16/02/2022 at 03:30 PM</b>
11.	Reply of queries after Pre-bid meeting	<b>18/02/2022 by 05:30 PM</b>
12.	Bid Submission End Date & time	<b>02/03/2022 at 03:30 PM</b>
13.	Online Bid Opening Date & time of Technical bid	<b>02/03/2022 at 04:00 PM</b>
14.	Online Bid	Date, time and venue for Price bid opening shall be communicated to Technically Qualified Bidders

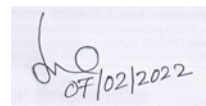
**SIGNATURE OF BIDDER WITH SEAL & DATE**

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	Opening Date & time of Price bid	through e-tender portal.
15.	Place of Opening of Bids	In the office of the Director General & Chief Executive Officer, Tripura Renewable Energy Development Agency (A constituent organization of Department of Power, Govt. of Tripura), Vigyan Bhawan, 2 <sup>nd</sup> Floor, Pandit Nehru Complex, Gorkhabasti, Agartala, West Tripura District, Pin: 799006.
16.	Bid Validity	180 (One hundred eighty) days from the date of opening of the tender.
17.	Officer Inviting Bids	Sri Debabrata Sukladas, Joint Director, TREDA

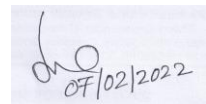
**NOTE: All the above-mentioned time are as per clock time of website <https://tripuratenders.gov.in>.**



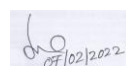
(D S DAS)  
Joint Director

**IMPORTANT NOTE:**

- 1) Tender documents may be downloaded from Central Public Procurement Portal <https://tripuratenders.gov.in>. Aspiring Bidders who have not enrolled/registered in e-procurement should enroll/register before participating through the website <https://tripuratenders.gov.in>. The enrollment for the bidder is free of cost. Bidders need to go through the tender document where instructions are given.
- 2) Bidders can access tender documents on the website, fill them with all relevant information and submit the completed tender document into electronic tender on the website <https://tripuratenders.gov.in>.
- 3) Tender and supporting documents as per DNIE-T should be uploaded through website <https://tripuratenders.gov.in>. Hard copy of the tender documents will not be accepted. The successful bidder(s) may be required to produce original documents on getting communications from TREDA before issue of formal work order.
- 4) Prospective bidders are requested to remain updated for any Notices/Amendments/Corrigendum etc. to the DNIE-T document through the website [www.tripuratenders.gov.in](http://www.tripuratenders.gov.in). No separate Notices would be issued for such Notices/Amendments/Clarifications etc. in the print media or individually. All the information related to this DNIE-T shall only be uploaded in the website [www.tripuratenders.gov.in](http://www.tripuratenders.gov.in).



(D S DAS)  
Joint Director



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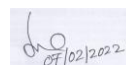
(D S DAS)  
Joint Director

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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07/02/2022

# PART – A

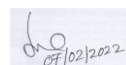
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# PART - 1

**SIGNATURE OF BIDDER WITH SEAL & DATE**



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**TRIPURA RENEWABLE ENERGY DEVELOPMENT AGENCY**

(Power Department, Government of Tripura)

Vigyan Bhawan, Pandit Nehru Complex, Gorkhabasti, Agartala, Tripura

Tele-fax: 0381-2325900, 2326139, [email-tredaagartala@gmail.com](mailto:email-tredaagartala@gmail.com), URL: [www.treda.nic.in](http://www.treda.nic.in)

**DNIe-T No.F. 6(246)/TREDA/NCES/2019/3865**

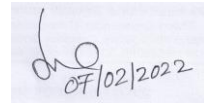
**Date 07/02/2022**

**NOTICE INVITING e-TENDER**

On behalf of Tripura Renewable Energy Development Agency (TREDA), Joint Director, TREDA invites e-tenders from prospective bidders engaged in the business of Solar PV applications for the following works:

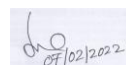
Sl. No.	Name of work	Aggregated capacity	Tender Fee	Bid Security / Earnest Money Deposit	Period of completion
1	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis	1000 KW	Rs. 10,000/- (Rupees ten thousand only)	Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten)	12 (twelve) months

- The other details related to this e-tender can be seen and downloaded from the website <http://tripuratenders.gov.in>.
- Notification / Corrigendum / Addendum, if any, will be published only on the above website.



(D S DAS)  
Joint Director

**SIGNATURE OF BIDDER WITH SEAL & DATE**





**2. CHECKLIST OF ANNEXURE/DOCUMENT TO BE UPLOADED:** The following information/documents are to be annexed, flagged and uploaded by the Bidders along with the Technical BID). The list is indicative, any other document as required / specified in this DNIE-T are to be uploaded.

Sl. No.	Annexure No.	Particulars	Folder Number	Yes / No.
2.1	Annexure I	Blank copy of the e-tender document signed and stamped on each page	FOLDER 1	
2.2	Annexure – II	Documents in support of General Eligibility as per Clause No. 3.1 of SECTION 3	FOLDER 2	
2.3	Annexure – III	Documents in support of Technical Eligibility as per Clause No. 3.2 of SECTION 3	FOLDER 3	
2.4	Annexure – IV	Documents in support of Financial Eligibility as per Clause No. 3.3 of SECTION 3	FOLDER 4	
2.5	Annexure V (A)	Declaration to submit “PART 6” along with Type Test Report(s) and Declaration of concerned component within 30 (thirty) days from the issue of the Letter of Award (LoA).	FOLDER 5	
	Annexure V (B)	Declaration by the bidder as per <b>FORMAT 8.</b>		
	Annexure V (C)	Covering Letter as per <b>FORMAT 9.</b>		
2.6	Annexure VI (A)	Power of Attorney as per <b>FORMAT 5</b> and Authorization Letter as per <b>FORMAT 6.</b>	FOLDER 6	
	Annexure VI (B)	Affidavit to confirm that bidder has not been Debarred or Blacklisted by any Government Department or Undertaking as per <b>FORMAT 7.</b>		
2.7	Annexure VII (A)	CHECKLIST OF ANNEXURE / DOCUMENT TO BE UPLOADED	FOLDER 7	
	Annexure VII (B)	Any other document, as per DNIE-T (Pl. specify)		

**NOTE:**

- All the documents mentioned above as per DNIE-T are mandatory qualifying requirements.
- The bidder shall ensure that all the required documents, as mentioned in this bidding document, are uploaded along with the bid and in the prescribed formats only. Non - submission of the required documents or submission of the documents in a different format/ contents may lead to the rejections of the bid.
- Please mark the Annexure number in **right upper corner** in **all pages** of the relevant uploaded documents and **write Folder Name** in the box.
- Bids received without supporting documents as specified and mentioned in DNIE-T shall be rejected.

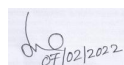
**3. PARTICULARS OF e-TENDER:**

3.1	e-tender No.	DNIE-T No.F. 6(246)/TREDA/NCES/2019/3865, dated 07/02/2022
3.2	Particulars of work	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis
3.3	Period of Agreement	Rate contract for 12 (twelve) months
3.4	Period of validity of rates for acceptance	180 (one hundred eighty) days from the date of opening of tender
3.5	Place of opening of e-tender	In the office of the Director General, Tripura Renewable Energy Development Agency (A constituent organization of Department of Power, Govt. of Tripura), Vigyan Bhawan, 2 <sup>nd</sup> Floor, Pandit Nehru Complex, Gorkhabasti, Agartala, West Tripura District, Pin: 799006.

- 3.6 The bidders can view the DNIE-T and the time schedule (Key Dates) for all the tenders floated through the single portal e-procurement system on the Home Page at <https://tripuratenders.gov.in>.
- 3.7 Bidders are advised to study the tender Document carefully. Submission of e-Bid against this tender shall be deemed to have been done after careful study and examination of the procedures, terms and conditions of the tender Document with full understanding of its implications.
- 3.8 The bid should be submitted through e-Procurement website <https://tripuratenders.gov.in>.
- 3.9 The e-Bids will be electronically opened and bidders may view the bid opening through e-procurement portal. Physical presence of bidder at the venue will not be allowed.
- 3.10 In the event of date specified for e-Bids opening being declared a holiday for TREDA's office then the due date for opening of e-Bids shall be the following working day at the appointed time and place.
- 3.11 All the required documents including Price Schedule/BOQ should be uploaded by the Bidder electronically in the PDF/XLS format. The required electronic documents for each document label of Technical (Qualification details, e-Bid Form and Technical Specification details) schedules can be clubbed together to make single different files for each label. All the enclosures should be scanned and uploaded with bid as per requirement of e-procurement portal <https://tripuratenders.gov.in>.

SIGNATURE OF BIDDER WITH SEAL & DATE

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## **PART -2: INSTRUCTION TO BIDDER**

### **SECTION -1: The e-tender document**

1.1 *Contents of e-tender document:*

#### **1.1.1 PART – A**

##### **1.1.1.1 PART – 1**

- 1.1.1.1.1 e-tender Notice
- 1.1.1.1.2 Covering letter
- 1.1.1.1.3 Checklist of Annexure
- 1.1.1.1.4 Particulars of e-tender
- 1.1.1.1.5 General Particulars of bidders
- 1.1.1.1.6 Declaration by bidder

##### **1.1.1.2 PART 2: Instruction to bidder**

- 1.1.1.2.1 Section -1 Contents of e-tender document
- 1.1.1.2.2 Section-2 Bidder to inform fully
- 1.1.1.2.3 Section -3 Eligibility condition
- 1.1.1.2.4 Section-4 Preparation of e-tender
- 1.1.1.2.5 Section-5 Uploading of e-tender
- 1.1.1.2.6 Section -6 e-tender opening and evaluation
- 1.1.1.2.7 Section-7 Procedure for Finalisation of Bid

##### **1.1.1.3 PART 3: General Condition of the Contract**

##### **1.1.1.4 PART 4: Scope of Work & Technical specifications**

##### **1.1.1.5 PART 5: Details of Warranty and Operation & Maintenance (O&M) Obligations**

##### **1.1.1.6 PART 6: Technical Information**

##### **1.1.1.7 PART 7: Quality certification, standards and testing for grid-connected rooftop Solar PV Power Plants**

#### **1.1.2 PART – B: PRICE BID**

**[NOTE: The Bidder is expected to examine all instructions, forms, terms and specifications as mentioned in the e-tender document. Failure to furnish all information required by the e-tender documents or submission of a bid not substantially responsive to the Bid Document in every respect will be at the Bidder's risk and is likely to result in out-right rejection of the e-tender.]**

**1.2 LOCAL CONDITIONS:** It shall be imperative on each bidder to fully inform him of all local conditions and factors, which may have any effect on the execution of the works covered under these documents and specifications. TREDA shall not entertain any request for clarifications from the Bidder, regarding such local conditions.

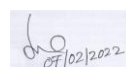
#### **1.3 CLARIFICATION:**

**1.3.2** A prospective Bidder requiring any clarification of the e-tender Documents may contact TREDA in writing through mail at the TREDA's mailing in **FORMAT 10** address **[tredaagartala@gmail.com](mailto:tredaagartala@gmail.com)** or by post / courier to the office of the undersigned within the timeline specified at **BID INFORMATION SHEET**, reply to the clarification will be sent through e-mail or through e-procurement portal only after pre-bid meeting.

**1.3.3** The TREDA is not under any obligation to entertain or respond to the **SIGNATURE OF BIDDER WITH SEAL & DATE**

clarifications sought by bidder after deadline for submission as specified at **BID INFORMATION SHEET**.

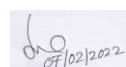
- 1.3.4** TREDA will not be responsible for non-receipt of above communications.
- 1.3.5** Verbal clarifications and informations given by the TREDA or its employees or its representatives shall not be in any way entertained.
- 1.3.6** The bidders have to remain updated with the e-procurement portal **<https://tripuratenders.gov.in>**.
- 1.3.7** The TREDA is not under any obligation to entertain or respond to suggestions made or to incorporate modifications sought for.
- 1.4 AMENDMENT OF e-tender DOCUMENT:**
- 1.4.2** At any time prior to the due date for submission of the e-tender, TREDA may for any reason, whether at its own initiative or as a result of a request for clarification / suggestion by a prospective bidder, amend the tender document by issuing a notice.
- 1.4.3** The amendments will be notified on the **e-Tender website <http://tripuratenders.gov.in>** at least **5 (five) days** before the last date of submission of the tender. TREDA will bear no responsibility or liability arising out of non-receipt of the information in time or otherwise. Bidders must check the website for any such amendment before submitting their bid.
- 1.4.4** If any Notification is to be issued within 5 (five) days from the last date of submission of tender, suitable time extension for bid submission would be given.
- 1.4.5** All the notices related to this bid which are required to be publicized shall be uploaded on website **<http://tripuratenders.gov.in>**.
- 1.5** The Bidder shall make independent enquiry and satisfy itself with respect to all the required information, inputs, conditions, including site conditions and circumstances and factors that may have any effect on its Bid. Once the Bidder has submitted the Bids, the Bidder shall be deemed to have examined the laws and regulations in force in India, the grid conditions, and prepare the Financial Bid and other sections taking into account all such relevant conditions and also the risks, contingencies and other circumstances which may influence or affect the implementation of power plants. Accordingly, the Bidder acknowledges that, on being selected as the Selected/Empanelled Bidder, it shall not be relieved from any of its obligations foreseen under this Document nor shall be entitled to any extension of time for commissioning of the plants or financial compensation for any reason whatsoever.
- 1.6** The Bidders should particularly acquaint themselves with the technical requirements of integrating the power plant with the distribution system of the respective distribution licensee of the State, the regulations specified by Central Electricity Authority, grid operation as per the regulations / Codes as specified for the state of Tripura. The Tripura State Grid Code and the Tripura State Distribution Code should also be followed.
- 1.7** In their own interest, the Bidders are requested to familiarize themselves with the Electricity Act, 2003, scheme announced by Ministry of New and Renewable Energy for promotion of grid connected rooftop solar photovoltaic power plants, Regulatory Framework specified by the Tripura State Electricity Regulatory Commission and any other local laws affecting the implementation of grid connected rooftop solar photovoltaic power plants and all other related

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acts, laws, rules and regulations prevalent in India, as amended from time to time. The TREGA shall not entertain any request for clarifications from the Bidders regarding the same. Non-awareness of these laws or such information shall not be a reason for the Bidder to request for extension in the Bid Deadline. The Bidder undertakes and agrees that, before submission of its Bid; all such factors as generally stated above, have been fully investigated and considered while submitting the Bid.

- 1.8** The Bidder shall familiarize itself with the procedures and time frames required to obtain all the Consents, Clearances and Permits required for the supply of power to the Procurer. The Bidder shall arrange all the Consents, Clearances and Permits required for setting up of the generation facilities for Primary Beneficiary. It should also arrange for the grid interconnection of the plant as well as commissioning certificate from respective Government Department.

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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## **SECTION-2: INFORMATION TO BIDDER FULLY**

### **2.1 INTRODUCTION:**

- 2.1.1. Govt. of India has set a target for generation of 175 GW of Renewable Energy Power by 2022 comprising of 100 GW from Solar projects. Tripura has been allocated for generation of 105 MW comprising of land & rooftop solar projects.
- 2.1.2. TREDA has envisaged a cumulative capacity of approximately 1.0 MW grid interactive Rooftop power plants in Government Buildings / offices in Tripura under RESCO Model.
- 2.1.3. TREDA as State Nodal Agency (SNA) has invited e-tender for selection of vendors for design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.
- 2.1.4. The bidder, who is techno-commercially qualified, shall be selected who wish to provide their services on lowest fixed tariff discovered through bidding. The tenure for completion of the projects shall be 12 (twelve) months from the date of Letter of Award issued by TREDA. TREDA at its sole discretion and as per the requirement may extend the tenure of selected bidder. The entire responsibility of evaluating the capacity, getting necessary approvals and installing the systems will be the responsibility of the Vendor.
- 2.1.5. Under RESCO Mode, the entire system is owned by the developer. Responsibility of Operation and maintenance (O&M) for the system lifetime (25 years) is also with the developer. Rooftop owners may consume the electricity generated; Excess generation may be exported to the grid under net metering facility. The rooftop owner has to pay discovered fixed tariff on a monthly basis for energy generated from the solar power plant.

### **2.2 ELIGIBLE BENEFICIARIES:**

2.2.1	Govt Buildings	Buildings of both Central & State Government Local Government covering all Government Offices.
2.2.2	Government Institutions	Government Institutions, Public Sector Undertakings, all buildings owned by Government directly or by any Government owned societies, companies, corporations, Institutions or Organizations, Government educational/ health institutions

**2.3 SUBSIDY:** This project does not have any subsidy. Bidder should quote the fixed tariff based on the same.

### **2.4 SIZE OF THE PROJECT:**

- 2.4.1 The total aggregate capacity is spread across multiple offices of different capacity.
- 2.4.2 There is no maximum or minimum size of the individual Plants to be installed in the Government offices/Institutions. The successful bidder will be responsible for evaluating the capacity, getting necessary approvals and installing the systems.
- 2.4.3 Each office may however comprise of several rooftop units. Each roof top unit can separately connect with the grid if they have separate meters.

**2.5 MODE OF EXECUTION OF PROGRAMME:**

- 2.5.1 The basis of evaluation of the bids shall be the cost/rate quoted in the Price Schedule. To further clarify, installation and commissioning cost and taxes etc. shall be inclusive to the cost of supply of complete system including 25 years comprehensive maintenance for comparison and evaluation. Proposers are required to quote rate / cost on firm basis and no price variation on any account shall be considered.
- 2.5.2 The successful bidder may also indemnify beneficiaries to supply, install, commission systems and provide maintenance services for 25 years with free replacement warranty on spare parts against manufacturing defects. They shall also be required to set up their operation, repair and maintenance centers for providing effective repair/maintenance services to the beneficiaries / users.
- 2.5.3 The Programme shall be carried out as given here under:-
- 2.5.3.1 The contractor shall be allowed to install the systems conforming to the specifications / mentioned in this document after clearance from TREDA.
- 2.5.3.2 For this TREDA shall give specific targets / limits to each selected manufacturers and fix tariff for sale of systems to the user (beneficiaries).
- 2.5.3.3 The work covers design, supply, installation, commissioning and comprehensive maintenance for TWENTY FIVE years and 25 years Performance Warranty for PV Modules.
- 2.5.3.4 TREDA reserves the right to allot any area(s) / districts to any approved bidder among the all approved suppliers.

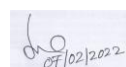
**2.6 TENDER FEE:- Rs. 10,000/- (Rupees ten thousand)** only to be paid electronically using the Online Payment Facility provided by the e-procurement Portal (Non-refundable).

**2.7 BID SECURITY / EARNEST MONEY DEPOSIT (EMD): a) Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten)** only to be paid electronically using the Online Payment Facility provided by the e-procurement Portal.

**2.8 PROCEDURE FOR DEPOSITING TENDER FEE (TF) AND BID SECURITY / EARNEST MONEY DEPOSIT (EMD):**

- 2.8.1 Tender Fee and Bid Security / Earnest Money Deposit are to be paid electronically using the Online payment Facility provided in the e-procurement Portal.
- 2.8.2 After initiating the Bid Submission Process from “My Tender” option, an “Online Payment” page will appear which will display the total TF & EMD.
- 2.8.3 On submission of TF & EMD payment option, System will redirect to the SBI Bank MOPS window.
- 2.8.4 SBI MOPS will have two options for Net Banking – “SBI” & “Other Bank”. Bidder can choose any of the options as desired and can complete the Online Payment process.

**2.9** The facilities may be extended to SSI Units registered with NSIC under its single point registration scheme having manufacturing unit (For one of the solar components specified at SECTION 3 of the DNIE-T) at Tripura as per norms of Tripura Industrial Investment Promotion Incentive Scheme – 2017 of Department of Industries & Commerce, Govt. of Tripura. The certificate issued by District Industries Office for having SSI units setup & other



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necessary documents is mandatory to avail facilities and should be uploaded along with technical bid.

**2.10 RELEASE OF BID SECURITY / EARNEST MONEY DEPOSIT (EMD):**

2.10.1 EMD amount shall be refunded to all the bidders including successful bidder in their respective Bank accounts, after the Letter of Award (LoA) is uploaded in the e-procurement Portal <http://tripuratenders.gov.in>, on receipt of Performance Security (Performance Bank Guarantee) from the successful bidder.

2.10.2 The EMD of the successful bidder may be forfeited along with other penal actions as deemed fit by the TRED A if the L1 bidder fails to submit the Performance Security within the deadline defined in the DNIe-T document.

2.10.3 If any bidder withdraws his offer after opening Technical Bid before opening of Price bid or makes any modification in the terms and conditions of the quotation which are not acceptable to the Tendering Authority, deposited EMD may be forfeited.

2.10.4 If any bidder withdraws his offer after opening of Price Bid within the period of bid validity or makes any modification in the terms and conditions of the quotation which are not acceptable to the Tendering Authority, the deposited EMD may be forfeited.

2.10.5 If document(s) / certificate(s) submitted by the bidder(s) is/are found fake/false/fabricated, 100% EMD of the bidder(s) will be forfeited and the bidder will be suspended for 3(three) years from being eligible to submit Bids / proposals for contracts with TRED A along with forfeiture of Performance Security & other penal actions deemed found suitable by TRED A will be initiated.

2.10.6 The EMD by the bidders will not carry any interest.

**2.11 PERFORMANCE SECURITY / PERFORMANCE BANK GUARANTEE:**

2.11.1 Successful bidder within 15 (fifteen) days of the issue of Letter of Intent (LoI) shall provide "Performance Bank Guarantee" as Performance Security for Erection Phase with a validity period of 1 (one) year + 60 (sixty) days claim period.

2.11.2 Performance Bank Guarantee Amount for Erection Phase to TRED A = **Rs. 14,68,215/- (Rupees fourteen lakh sixty eight thousand two hundred fifteen)** only.

2.11.3 Performance Bank Guarantee should be submitted in favour of Director General, TRED A in the **FORMAT 4** (Performance Security Bond Form).

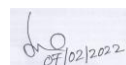
2.11.4 The Performance Security denominated in Indian Rupees shall be in the form of Bank Guarantee (BG) on Nationalized / Scheduled Bank guaranteed by the Reserve Bank of India.

2.11.5 Request for time extension by the bidder for submission of "Performance Bank Guarantee" will not be accepted.

2.11.6 On receipt of "Performance Bank Guarantee" from the selected bidder, TRED A shall scrutinize the received instrument for its authenticity and validity for the Amount & Period.

2.11.7 The Performance Security shall be forfeited as follows without prejudice to the Bidder being liable for any further consequential loss or damage incurred to TRED A.

2.11.7.1 If the Successful Bidder is not able to commission the sanctioned / allocated capacity to the satisfaction of TRED A, hundred percent (100%) Performance Security amount would be forfeited.

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- 2.11.7.2 If the Successful Bidder is not able to commission the projects to the satisfaction of Consumer/TREDA, PBG amount, pro-rata to the capacity not commissioned by the Successful Bidder.
- 2.11.7.3 In the event of breach / violation or contravention of any terms and conditions contained herein by the agency i.e. if the selected bidder fails to execute the contract including compliance to warranty, operation & maintenance obligations for satisfactory performance of the system, the Performance Security, part / whole as per decision of Tendering Authority, will be forfeited from the guarantor.
- 2.11.7.4 In all the above cases corresponding non-commissioned capacity shall stand cancelled.
- 2.11.7.5 If any information/document provided by the bidder is found to be incorrect/false/fabricated at any stage, the bidder will be suspended for 3(three) years from being eligible to submit Bids / proposals for contracts with TREDA along with forfeiture of Performance Security & other penal actions deemed found suitable by TREDA will be initiated.
- 2.11.8 The Performance security shall be released after 1 (one) year of successful operation of plant and with the compliance of entire obligations in the contract from the date of commissioning.

**2.12 BID INFORMATION:**

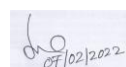
2.12.1	Document Description	The bidding process under this Rooftop scheme is for 1 MWp of RESCO Model.
2.12.2	Broad Scope	<b>2.12.2.1</b> Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis <b>2.12.2.2</b> Total timeline up to Commissioning for the above Scope of Work is <b>12 (twelve) months</b> from the date of issue of Letter of Award (LoA).
2.12.3	Tender Fee	Rs. 10,000/- (Rupees ten thousand) only to be paid electronically using the Online Payment Facility provided by the e-procurement Portal (Non-refundable).
2.12.4	Bid Security / Earnest Money Deposit	Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten) only to be paid electronically using the Online Payment Facility provided by the e-procurement Portal.
2.12.5	Performance Security	Successful bidder within 15 (fifteen) days of the issue of Letter of Intent (LoI) shall provide "Performance Bank Guarantee" as per Performance Security for an amount of Rs. 14,68,215/- (Rupees fourteen lakh sixty eight thousand two hundred fifteen) only with a validity period 1 (One) year + 60 (sixty) days claim

		period.
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- 2.13** The bidder shall be responsible for Operation and Maintenance of the Roof top Solar PV system for a period of 25 years, during which TRED A will monitor the project for effective performance in line with conditions specified elsewhere in the bid document.
- 2.14** The rooftop SPV power plant must get electrical safety inspection certificate for the system more than 10 KW capacities.
- 2.15** Intimation to the concerned DISCOM: All the bidders shall intimate the concerned DISCOMs regarding implementation of grid connected roof top solar PV projects as per the given format in TERC Regulations and submit the copy of the same to TRED A for reference.
- 2.16** Tender not accompanied with Cost of Tender fee & EMD shall not be accepted.
- 2.17** Any damage of the existing structure, building etc. made by the successful bidder during execution of this work shall be made good as it was at his own cost & risk.
- 2.18 COST OF BIDDING**
  - 2.18.1 The bidder shall bear all the costs associated with the preparation and submission of his offer, and the company will in no case be responsible or liable for those costs, under any conditions. The Bidder shall not be entitled to claim any costs, charges and expenses of and incidental to or incurred by him through or in connection with submission of bid even though TRED A may elect to modify / withdraw the invitation of Bid.
- 2.19 ZERO DEVIATION:** This is a ZERO Deviation Bidding Process. Bidder is to ensure compliance of all provisions of the Bid Document and submit their Bid accordingly. Tenders with any deviation to the bid conditions shall be liable for rejection.
- 2.20 RIGHT TO ACCEPT / REJECT THE BID:** Tendering Authority reserves the right to accept or reject any Bid and to annul the tender process and reject all such bids at any time prior to award of contract, without thereby incurring any liability to the affected applicant(s) or any obligation to inform the affected applicant(s) of the ground for such decision.

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**SIGNATURE OF BIDDER WITH SEAL & DATE**



**SECTION - 3 ELIGIBILITY CONDITION**

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3.1	General Eligibility	<p><b>3.1.1 The bidder must have any of the following legal status:</b></p> <p>3.1.1.1 Body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment there to <b>OR</b></p> <p>3.1.1.2 Body incorporated in India under Limited Liabilities Partnership (LLP) Act, 2002 including any amendments thereto <b>OR</b></p> <p>3.1.1.3 Firm Registered Partnership Firm registered under Partnership Act. 1932 in India <b>OR</b></p> <p>3.1.1.4 Government of India / State Government Undertakings.</p>	<p><b>The bidder must have to upload applicable document to ascertain the legal status:</b></p> <p>a) <u>Copy of Certificate of Incorporation from Registrar of Companies</u> for Body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment there to <b>OR</b></p> <p>b) <u>LLP Registration Certificate issued Registrar of Companies</u> for Body incorporated in India under Limited Liabilities Partnership (LLP) Act, 2002 including any amendments thereto <b>OR</b></p> <p>c) Certificate of Registration of Firms / Registered Partnership Deed for Firm Registered Partnership Firm registered under Partnership Act. 1932 in India <b>OR</b></p> <p>d) Documents to satisfy the legal status as Government of India / State Government Undertakings.</p>
		<p><b>3.1.2 The bidder must have to full fill any one of the following criteria:</b></p>	
		<p>3.1.2.1 <u>SPV SYSTEM MANUFACTURER:</u> The bidder should be a manufacturer of either <u>SPV Module</u> or <u>Power Conditioning Unit (PCU)</u> of SPV Power Plants</p>	<p><b>The following documents shall be uploaded along with technical bid:</b></p> <p>a) Duly filled <b>FORMAT 1</b>.</p> <p>b) Documents to ascertain the legal status as per <b>Clause No. 3.1.1</b> above.</p> <p>c) Test Report of <u>SPV Module</u> or <u>Power Conditioning Unit (PCU)</u> of SPV Power Plants from one of the MNRE approved/IEC/NABL accredited test laboratories / BIS Certificate to justify the eligibility as</p>

			manufacturer.
		3.1.2.2 <u>SYSTEM INTEGRATOR</u> : The bidder may be System Integrator i.e. the components of SPV Power Plants may be procured by the bidder through outsourcing.	<b>The following documents shall be uploaded along with technical bid:</b> a) Duly filled <b>FORMAT 1</b> . b) Documents to ascertain the legal status as per <b>Clause No. 3.1.1</b> above.
<b>3.2</b>	<b>Technical Eligibility</b>	<p>3.2.1 The bidder should have experience of successful installation of grid interactive Solar Power Plant Plants (Individual capacity should be <math>\geq</math> <b>10 KWp</b>).</p> <p>3.2.2 The bidder should have cumulative experience of executing <math>\geq</math> <b>250 KWp</b> installed capacity grid connected SPV Power Plants in India. The projects commissioned in last 5 (five) financial years including the current financial year as on the date of publication of this DNIe-T should only be considered.</p> <p>3.2.3 Experience of any JV Partner / collaborator / sister concern / principal manufacturer of the bidder submitted as experience proof of the bidder will not be accepted.</p> <p>3.2.4 Works completion / Commissioning Certificates / documents should be issued by the State Nodal Agency / Govt. Departments / Government Organization, in case of installations in the private establishments, the Commissioning Report / Certificate</p>	<b>The following documents shall be uploaded along with technical bid:</b> a) Copies of the Works completion certificates and corresponding Letter of Award / Work orders from the Client/Owner as proof of credential of the bidder in regard to technical eligibility. b) <b>FORMAT - 2</b> should be uploaded. c) <u>In case of SPV SYSTEM MANUFACTURER</u> (Specified at Clause No. 3.1.2.1 above): If the bidder has submitted Works completion certificates and corresponding Letter of Award / Work orders for supplying SPV Module or Lithium Battery or LED Luminaire of SPV Street Lighting Systems or Electronics of SPV Street Lighting Systems to successful bidder (some other firm) who got that work from Government tender, <b>then</b> , such works completion / commissioning certificates shall only be considered on submission of Letter of Award / Work orders and corresponding Works completion / Commissioning certificates issued by Government to the firm for which supply work has been completed by the bidder. The Letter of Award

		<p>should be certified with State Nodal Agency /Govt. Department / Government organization of the concerned State.</p>	<p>/ Work orders / Contracts / Agreements and Works completion / Commissioning certificates shall be in line with the documents as asked in the tender document.</p> <p>d) In case of Power Purchase Agreement (PPA) PPA signed between Government Department and the bidder for Grid connected SPV Power Plants, Installation Certificate from concerned Department shall be submitted along with PPA.</p>
<b>3.3</b>	<b>Financial Eligibility</b>	<p>3.3.1 The financial capability of the bidder to take up the proposed work to be supported by Audited balance sheet for any three financial years out of last four financial years [i.e. 2017-18, 2018-19, 2019-20 and 2020-21 (In case of 2020-21, provisional balance sheet along with CA certificate should be uploaded)].</p> <p>3.3.2 The Minimum Average Annual Turnover (MAAT) &amp; Profitability in <b>FORMAT 3</b> should be certified by practicing CA of the bidder.</p> <p>3.3.3 MAAT of the bidder in the any three financial years out of last for financial years (i.e. 2017-18, 2018-19, 2019-20 and 2020-21) should be <b><u>Rs. 1,46,82,000/- (Rupees one crore forty six lakh eighty two thousand).</u></b></p> <p>3.3.4 The MAAT submitted along with the bid shall be of individual bidder, MAAT of group of</p>	<p><b>The following documents shall be uploaded along with technical bid:</b></p> <p>a) Audited balance sheet for any three years out of last 4 financial years [i.e. 2017-18, 2018-19, 2019-20 and 2020-21 (In case of 2020-21, provisional balance sheet along with CA certificate should be uploaded)].</p> <p>b) The Minimum Average Annual Turnover (MAAT) of &amp; Profitability in <b>FORMAT 3</b>.</p> <p>c) Documents specified at <b>Clause No. 3.3.6</b>.</p>

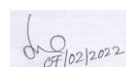
		<p>Companies will not be considered as financial eligibility of the bidder.</p> <p>3.3.5 The bidder should have positive net worth.</p> <p>3.3.6 The bidder must have the followings:</p> <p>3.3.6.1 PAN Card</p> <p>3.3.6.2 GST Registration Certificate</p> <p>3.3.6.3 Income Tax Return for 3 Assessment Years out of last 4 Assessment Years (i.e. 2017-18, 2018-19, 2019-20, 2020-21).</p>	
<b>3.4</b>	<b>TENDER FEE</b>	Rs. 10,000/- (Rupees ten thousand) only	Payment through e-procurement portal
<b>3.5</b>	<b>BID SECURITY / EMD</b>	Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten) only	Payment through e-procurement portal

**3.6** Bidders shall maintain strict adherence while filling the formats as specified in this document during submission of bids. Wherever, information has been sought in specified formats, the Bidder shall refrain from referring to brochures /pamphlets. Non-adherence to formats and / or submission of incomplete information may be a ground for declaring the Bid as non-responsive. Each format has to be duly filled in, signed and stamped by the authorized signatory of the Bidder then scanned and uploaded in the Technical Bid.

**SIGNATURE OF BIDDER WITH SEAL & DATE**

## **SECTION-4 PREPARATION OF e-TENDER**

- 4.1 **LANGUAGE OF BID AND MEASURE:** The e-tender prepared by the Bidder and all correspondence and documents relating to the bid exchanged by the Bidder and TREDATA shall be written in the **English** provided that any printed literature furnished by the Bidder may be written in another language so long as accompanied by an English translation of its pertinent passages for purpose of interpretation, the English translation should be attested by Public Notary. Units of measurement shall be MKS system.
- 4.2 **DOCUMENTS COMPRISING THE BID:** The e-tender prepared by the Bidder shall comprise the following components and should be uploaded in the e-procurement portal in the respective folders as specified at Checklist Of Annexure / Documents to be Uploaded:
- 4.2.1 Blank copy of the e-tender document signed and stamped on each page, as a confirmation by the Bidder to accept all technical specifications / commercial conditions along with all necessary enclosures.
- 4.2.2 Documents in support of General Eligibility as per Clause No. 3.1 of SECTION 3
- 4.2.3 Documents in support of Technical Eligibility as per Clause No. 3.2 of SECTION 3
- 4.2.4 Documents in support of Financial Eligibility as per Clause No. 3.3 of SECTION 3
- 4.2.5 DECLARATION in the letter head of the bidder to submit the “PART 6: TECHNICAL INFORMATION along with Type Test Report(s) in compliance with for all type tests wherever prescribed in the relevant latest edition of MNRE/BIS (as applicable) as mentioned at PART – 7 of this DNIE-T along with declaration in the letter head of concerned component manufacturers for post-installation maintenance & performance warrantee/guarantee of the components” within 30 (thirty) days from the issue of the Letter of Award (LoA).
- 4.2.6 Power of Attorney and letter of authorization for the person representing bidder in the format as provided in e-tender document
- 4.2.7 Affidavit to confirm that bidder has not been Debarred or Blacklisted by any Government Department or Undertaking in the format as provided in e-tender document
- 4.2.8 Declaration by the bidder in the format as provided in e-tender document.
- 4.2.9 Covering Letter in the format as provided in e-tender document
- 4.2.10 CHECKLIST OF ANNEXURE/DOCUMENT TO BE UPLOADED as provided in e-tender document
- 4.2.11 Any other document, as per DNIE-T (Pl. specify).
- 4.3 BID PRICE:**
- 4.3.1 The Bidder shall indicate FIXED TARIFF on the appropriate financial bid schedule.
- 4.3.2 The fixed tariff quoted in the Bill of Quantity (BOQ) which is in MS-Excel (Macro enabled) should be in Indian Rupees and be firm inclusive of all the charges including GST etc. as required for successful completion of entire Scope of Work as per DNIE-T on a single responsibility basis.
- 4.3.3 The quoted fixed tariff should be up to 2 decimal places.**
- 4.3.4 DUTIES AND TAXES:
- 4.3.4.1 The fixed tariff quoted should include all taxes as applicable for successful completion of entire Scope of Work as per DNIE-T on a single



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responsibility basis. Except otherwise, specifically provided in the contract, the bidder shall bear and pay all taxes, duties, levies and charges assessed on the bidder by all Municipal, State or National Govt. Authorities. All taxes, duties & levies on the works Contract, if any, shall be to the bidders account and no separate claim in this regard will be entertained by TREDA.

**4.1 FIXED TARIFF:**

- 4.1.1 **Fixed Tariff** of 25 years shall include all the costs related to above Scope of Work. Bidder shall quote for the entire facilities on a “single responsibility” basis such that the total Bid Price covers all the obligations mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance (for a period of 25 years), goods and services including spares required if any during O&M period. The Bidder has to take all permits, approvals and licenses, Insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.
- 4.1.2 Fixed Tariff quoted for is on turnkey basis and the bidder is responsible for the total Scope of work as per PART 4 of the DNIE-T.
- 4.1.3 Fixed Tariff shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work irrespective of his actual cost of execution of the project. No escalation will be granted on any reason whatsoever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever.
- 4.1.4 Fixed Tariff shall be inclusive of all duties and taxes, insurance etc. The prices quoted by the firm shall be complete in all respect and no price variation /adjustment shall be payable by TREDA. However, statutory variation of taxes and duties may be paid by the roof top owner.
- 4.1.5 Operation & Maintenance of Solar PV Power Plant would include wear, tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU) spares, consumables & other parts for a period of 25 (Twenty five) years.
- 4.1.6 Fixed Tariff shall be specified in letter of Award and letter of Intent based on Selected Vendor’s quote. The Fixed tariff shall be in accordance with all terms, conditions, specifications and other conditions of the Contract as accepted by the TREDA and incorporated into the letter.

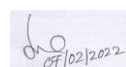
**4.2 BID CURRENCIES:** Fixed Tariff shall be quoted in Indian Rupees (INR) only.

**4.3 PERIOD OF VALIDITY OF e-TENDER:**

- 4.3.1 Validity of the offer should be 180 (one hundred eighty) days from the date of opening of the tender. Without this validity the e-tenders will be rejected.
- 4.3.2 In exceptional circumstances; the TREDA will solicit the Bidder’s consent to an extension of the period of validity. The request and the response there of, shall be made in writing.

**4.4 BID SECURITY / EARNEST MONEY DEPOSIT (EMD):**

- 4.4.1 The bidder shall submit, as part of its bid, BID SECURITY / EMD electronically using the Online Payment Facility provided by e-procurement Portal.
- 4.4.2 Any bid not secured with the TENDER FEE and BID SECURITY / EARNEST MONEY DEPOSIT will be rejected by the TREDA as non-responsive.





4.4.3 BID SECURITY / EMD amount shall be refunded to all the bidders including success bidder in their respective Bank accounts after the Letter of Award (LoA) is issued through e-procurement Portal <http://tripuratenders.gov.in> on receipt of Performance Bank Guarantee from the successful bidder within the stipulated time period stipulated in DNIe-T.

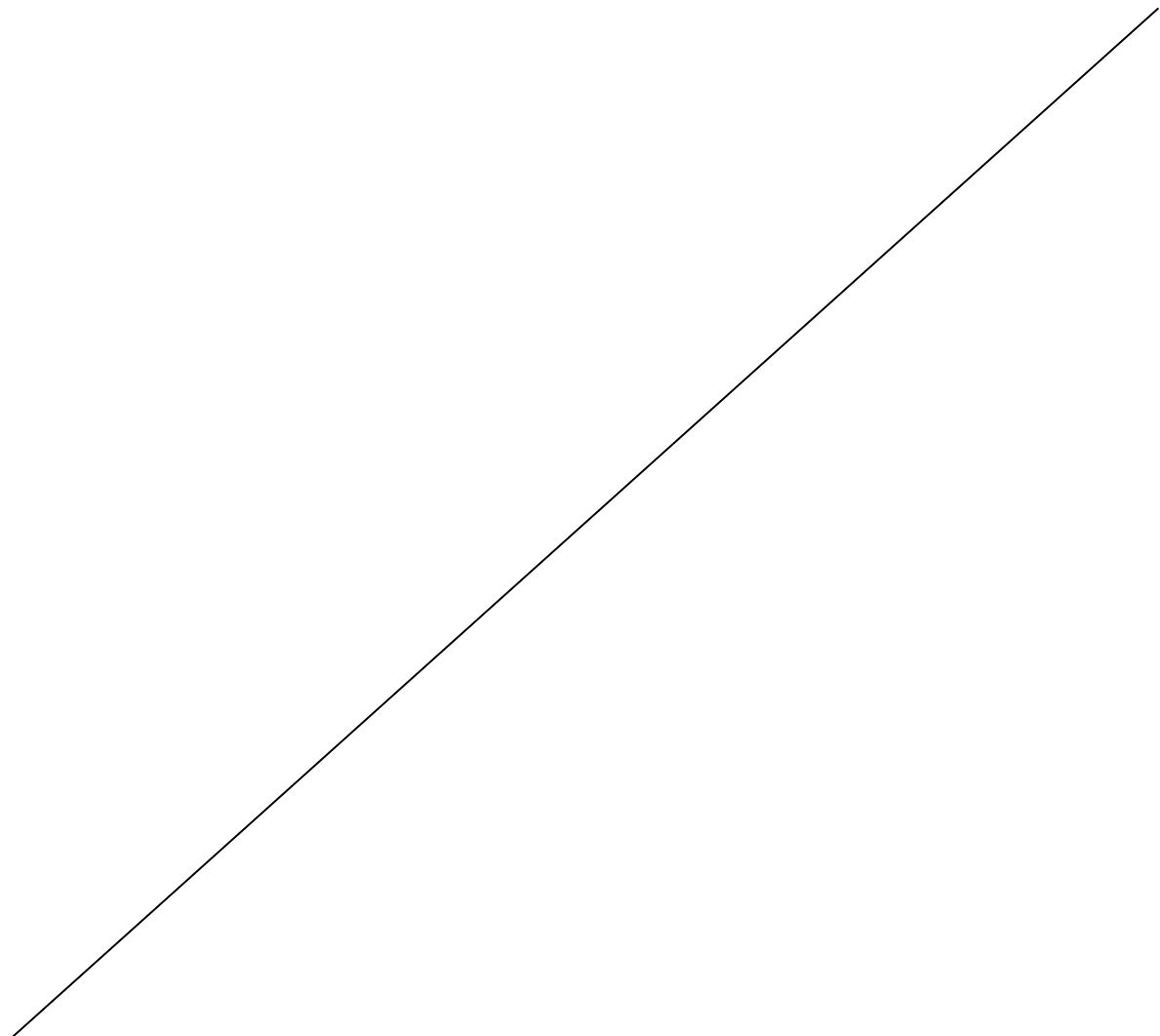
**4.5 FORMAT AND SIGNING OF e-TENDER:**

4.5.1 The bid must contain the name, residence and places of business of the persons making the e-tender and must be signed and sealed by the Bidder with his usual signature. The name and designations of all persons signing should be typed or printed below the signature.

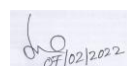
4.5.2 e-tender by Corporation/ Company must be signed with the legal name of the Corporation/ Company/Firm by the "President", "Managing Director" or by the "Secretary" or other designation or a person duly authorized.

4.5.3 The downloaded copy of the e-tender shall be signed by the Bidder or a person duly authorized. A letter of authorization shall be submitted along with power-of-attorney. All the pages of the bid shall be initialled by the person or persons signing the e-tender.

4.5.4 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the Bidder in which case such corrections shall be initialled by the person or persons signing the e-tender.



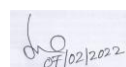
**SIGNATURE OF BIDDER WITH SEAL & DATE**



## **SECTION-5 UPLOADING OF e-TENDER**

- 5.1 Bid should be uploaded online in e-procurement portal **<https://tripuratenders.gov.in>**.
- 5.2 The tender must be complete in all technical and commercial respect and should contain requisite certificate, drawings, informative literature etc. as required in the specification.
- 5.3 First part **(PART-A)** should contain technical specification, brochure literature etc. All parts of tender documents except price bid should be uploaded as per e-procurement mode within due date and time. Scanned copy of documents as specified in DNle-T should be uploaded.
- 5.4 The Bidder should submit price bid in Second part. Second part **(PART-B)** should contain price bid only and should be uploaded as per e-procurement mode within due date and time. Anything in regard of financial condition, payment terms, rebate etc. mentioned in price bid may make the tender invalid. Therefore, it is in the interest of the Bidder not to write anything extra except price.
- 5.5 The original copy of uploaded document i.e. First part **(PART-A)** is not required to be submitted to TREDA. However, if it is required so, may be submitted on getting letter from TREDA.
- 5.6 **DEADLINE FOR SUBMISSION OF BIDS:** Bids must be uploaded by the bidder in e-procurement portal **<https://tripuratenders.gov.in>** on or before **02/03/2022 up to 03:30 PM.**

SIGNATURE OF BIDDER WITH SEAL & DATE



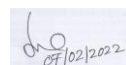
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## **SECTION - 6: e-TENDER OPENING AND EVALUATION**

- 5.1 **OPENING OF e-TENDER:** The procedure of opening of the e-tender shall be as under:
- 5.1.1 **First part (PART-A)** i.e. Technical bid of the tender would be opened online by TREDA on **02/03/2022 at 04:00 PM** in the office of the Director General, TREDA, Vigyan Bhawan, Gorkhabasti, Agartala, West Tripura District, Pin – 799006. Bidders can view the opening of tender through e-procurement portal **<https://tripuratenders.gov.in>**.
- 5.1.2 **RESPONSIVENESS CHECK OF TECHNICAL BID:** The Technical Bid (PART A) submitted by Bidders shall be scrutinized to establish responsiveness to the requirements laid down in the SECTION 3 and Clause No. 4.2 (DOCUMENTS COMPRISING THE BID) under SECTION-4 of the DNIE-T. Any of the following may cause the Bid to be considered “Informal / Non-responsive”, at the sole discretion of TREDA:
- 5.1.2.1 Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney supported by a board resolution, other documents specified at Clause No. 4.2 under SECTION 4 of the DNIE-T etc.
- 5.1.2.2 Bid not signed by authorized signatory and /or stamped in the manner indicated in this DNIE-T;
- 5.1.2.3 Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria;
- 5.1.2.4 Information not submitted in the formats specified in this DNIE-T;
- 5.1.2.5 Bid being conditional in nature;
- 5.1.2.6 Bid not received by the Bid Deadline;
- 5.1.2.7 Bid having Conflict of Interest;
- 5.1.2.8 Bidder delaying in submission of additional information or clarifications sought by TREDA as applicable;
- 5.1.2.9 Bidder makes any misrepresentation.
- 5.1.3 **Second Part (PART-B)** containing Price Bid shall be opened (after obtaining clarifications and establishing technical suitability of the offer) as per schedule. Second part (PART B) of only those Bidders shall be opened whose first part (PART-A, technical bid) is found substantially responsive as per terms & conditions of DNIE-T and evaluated as technically qualified.
- 5.1.4 The date of opening of Price bid of technically qualified bidders would be intimated through e-procurement portal **<https://tripuratenders.gov.in>**.

### **5.2 CLARIFICATION ON SUBMITTED e-TENDER DOCUMENT:**

- 5.2.1 During the process of evaluation of the tender (Technical & Price bid), TREDA at its discretion may ask the bidder for a clarification of his tender either in written or fixing meeting inviting bidders at TREDA Office, Agartala or through on-line meeting. The request for clarification and the response shall be in writing & in English only.
- 5.2.2 Any query regarding any clarification required by TREDA on the information submitted by the bidder, must be replied by the bidder within the allowed time schedule.
- 5.3 TREDA reserves the right to interpret the Bid submitted by the Bidder in accordance with the provisions of this document and make its own judgment regarding the interpretation of the same. In this regard TREDA shall have no liability towards any Bidder and no Bidder shall have any recourse to TREDA with respect to the selection process. TREDA shall evaluate the Bids using the evaluation process specified in this document or as amended, at its sole discretion. TREDA's decision in this regard shall be final and binding on the Bidders.



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## **SECTION-7: PROCEDURE FOR FINALISATION OF BID**

- 7.1 The Procedure for Finalization of BID would be as follows:
- 7.1.1 First the Technical bids shall be opened and evaluated as per SECTION 6 of the DNIE-T.
- 7.1.2 Then the price bid of technically qualified bidders shall be opened.
- 7.1.3 Based on Tariff quoted by the bidders in the BOQ, TREDA shall arrange the bids in the ascending order i.e. L1, L2, L3, \_ \_ \_ and so on (L1 being the lowest quote).
- 7.1.1 The lowest evaluated fixed tariff (i.e. L1) shall be considered as Approved Lowest Fixed Tariff for awarding the contract.
- 7.2 Finalization of RESCO:
- 7.2.1 The lowest fixed tariff (i.e. L1) (and in turn approved by the competent authority) would be the "APPROVED FIXED TARIFF".
- 7.2.2 Lowest bidder will be declared as the successful bidder and the L1 bidder shall be allocated the entire aggregate capacity.
- 7.2.3 If the L1 bidder fails to accept the Letter of Intent (LoI) / Allocation (LoA) within the given timeline, L2 (Being the second lowest bidder), L3, L4 and so on, on matching with "APPROVED FIXED TARIFF", will be allocated the entire aggregated capacity, such bidders will be given 7 (seven) days' time for acceptance of "APPROVED FIXED TARIFF".
- 7.2.4 The selection process shall stand completed once the Tender Capacity has been achieved through the allocation of the capacity offered to the Successful Bidder.
- 7.3 **VALIDITY OF TENDER & FINALIZED RATE:** The Approved L1 rates will be valid for 12 (twelve) months from the date of issue of Letter of Award (LoA). However, the validity of L1 rates may be extended on mutual agreement between TREDA & the successful bidder for another period of 6(six) months. The PERFORMANCE SECURITY / PERFORMANCE BANK GUARANTEE (PBG) as per Clause 2.11 under SECTION 2 of the DNIE-T shall also be suitably extended.
- 7.4 **LETTER OF INTENT (LoI):** Prior to the expiration of the period of Bid validity, TREDA will notify successful bidder in writing by issuing Letter of Intent (LoI) as per **FORMAT 11** either through scanned e-mail or through registered / speed post / courier that his bid has been accepted and will request the bidder to submit "Performance Bank Guarantee" as Performance Security as per Clause No. 2.11 under SECTION 2 of the DNIE-T.
- 7.5 **LETTER OF AWARD (LoA):**
- 7.5.1 After receipt of Performance Security (Performance Bank Guarantee) from successful bidder, TREDA will notify the successful bidder in writing through issuing Letter of Award (LoA).
- 7.5.2 **LoA will be uploaded in e-procurement portal <https://tripuratenders.gov.in>.**
- 7.5.3 The LoA will also be sent through registered / speed post / courier.
- 7.5.4 The LoA will constitute the formation of the contract and the successful bidder has to return the duplicate copy of the LoA with duly signed as acceptance of LoA within 10 (ten) days, otherwise LoA will be deemed to be accepted by the successful bidder on whom the award is given.
- 7.5.5 The Successful Bidder shall not assign or make over the work, the benefit or burden thereof to any other person or persons or body corporate for the execution of the contract or any part thereof without the prior written consent of TREDA. TREDA reserves its right to cancel

the Letter of Award (LoA) either in part or full, if this condition is violated.

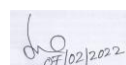
**7.6 CONTRACT AGREEMENT:**

- 7.6.1 A contract agreement for execution of the work shall be signed by the successful bidder with TREDA within 20 (twenty) days of issuance of Letter of Award (LoA) by TREDA.
- 7.6.2 In case agreement is not executed within the stipulated time, the LoA will be treated as cancelled and necessary actions as per DNIE-T will be initiated.
- 7.6.3 Successful bidder is to make in his own cost 2 (two) copies of Contract Agreement with TREDA in non-judicial Stamp paper of Rs. 100/- (Rupees one hundred) each and make 2 (two) Original copies of Contract document in bind volume containing Contract Agreement at the top, Letter of Award (LoA), Techno-commercial Offer of the bidder, Copy of Price Bid and copies of all tender documents in support of your proposal submitted against the DNIE-T which are to be jointly signed by TREDA & the successful bidder within 20 (twenty) days from the issue of the LoA.
- 7.6.4 Five more copies of Contract Agreement bind volume are to be submitted by the successful bidder to TREDA at the cost of the successful bidder.
- 7.6.5 The denial of the successful bidder of each category to undertake the work after issue of Letter of Award (LoA) shall be treated as breach of contract and TREDA may forfeit Performance Bank Guarantee (PBG) amount submitted by successful bidder.

**8 INCREASE/DECREASE OF BIDDER ALLOCATED CAPACITY:**

- 8.1 TREDA reserves the right to vary the aggregated capacity by +/- 25% of the tendered capacity.
- 8.2 TREDA reserves the right to increase/decrease the Bidder(s) Allocated Capacity at the sole discretion of TREDA on the request of the successful bidder.
- 8.3 In case capacity is enhanced by TREDA, successful bidder shall submit the PERFORMANCE SECURITY / PERFORMANCE BANK GUARANTEE (PBG) as per Clause 2.11 under SECTION 2 of the DNIE-T from the date of issue of such Letter of Intent (LoI), failing which additional capacity shall stands cancelled.

SIGNATURE OF BIDDER WITH SEAL & DATE

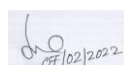


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## **PART – 3: GENERAL CONDITION OF THE CONTRACT**

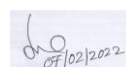
### **1 DEFINITIONS AND ABBREVIATIONS:**

- 1.1 **“Appropriate Commission”** shall mean the Central Electricity Regulatory Commission referred to in section 76 of the Electricity Act or the State Electricity Regulatory Commission referred to in section 82 of the electricity Act, as the case may be.
- 1.2 **“CEA”** shall mean Central Electricity Authority.
- 1.3 **“TERC”** shall mean the Tripura Electricity Regulatory Commission.
- 1.4 **“MNRE”** shall mean Ministry of New and Renewable Energy, Government of India;
- 1.5 **“BIS”** shall mean specifications of Bureau of Indian Standards (BIS);
- 1.6 **“IEC”** shall mean specifications of International Electro-technical Commission;
- 1.7 **“Electricity Act 2003”** shall mean the Electricity Act, 2003 and any rules, amendments, regulation, notifications, guidelines or policies issued there under from time to time
- 1.8 **“Bid”** shall mean the Technical Bid and the Price Bid submitted by the Bidder electronically at the prescribed web portal, in response to the e-bid document, in accordance with the terms and conditions hereof;
- 1.9 **“Bid Deadline”** shall mean the last date and time for submission of Bid in response to the DNIE-T and as may have been extended in accordance with the e-bid document;
- 1.10 **“DNIE-T”** shall mean Detailed Notice Inviting e-Tender.
- 1.11 **“Bidder”** shall mean a Bidding Company complying with the provisions of SECTION 3 of the DNIE-T;
- 1.12 **“Bid Capacity”** shall mean capacity offered by the bidder in his Bid under invitation.
- 1.13 **“Commissioning”** means Successful operation of the Project / Works by the Contractor, for the purpose of carrying out Performance Test(s) as defined in DNIE-T.
- 1.14 **“Capacity Utilization Factor” (CUF)** shall mean the ratio of actual energy generated by SPV project over the year to the equivalent energy output at its rated capacity over the yearly period. [ $CUF = \text{actual annual energy generated from the plant in kWh} / (\text{installed plant capacity in kW} \times 365 \times 24)$ ].
- 1.15 **“Consents, Clearances and Permits”** shall mean all authorizations, licenses, approvals, registrations, permits, waivers, privileges, acknowledgements, agreements, or concessions required to be obtained from or provided by any concerned authority for the purpose of installation of the generation plant or captive consumption of such generation;
- 1.16 **“Electricity”** means the electrical energy in kilowatt hours;
- 1.17 **“Price Bid”** shall mean the e-Bid, containing the Bidder’s Quoted Tariff in the PART - B of the e-bid document;
- 1.18 **“Bid Capacity”** shall mean 1000 KW for which the Bidder can submit its Bid. Bidder(s) quoting less the minimum bid capacity shall be out-



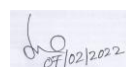
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- rightly rejected;
- 1.19 **"O&M"** shall mean Operation & Maintenance of Rooftop Solar PV system for 25 years;
- 1.20 **"Owner of the project"** Owner of the project" shall mean legal owner of all equipment's of the project. Owner of the project should enter into a PPA with the consumer (s) of power for supply of solar power for at least 25 years from the date of Commissioning of project.
- 1.21 **"Performance Ratio" (PR) means** the ratio of plant output versus installed plant capacity at any instance with respect to the radiation measured.  $PR = (\text{Measured output in kW} / \text{Installed Plant capacity in kW}) * (1000 \text{ W/m}^2 / \text{Measured radiation intensity in W/m}^2)$ .
- 1.22 **"Successful Bidder / Contractor / Solar Project Developer (SPD)"** shall mean the Bidder(s) selected by TREDATA pursuant to this DNIE-T for implementation of Grid Connected Roof Top Solar PV System as per the terms of the DNIE-T, and to whom an letter of Award (LoA) has been issued;
- 1.23 **"RESCO"** shall mean Renewable Energy Service Companies.
- 1.24 **"Fixed Tariff"** shall mean the tariff offered by the Bidder for 25 years for the Scope of work as per DNIE-T.
- 1.25 **"RESCO model"** shall mean where the bidders intend to take a rooftop owned by some other entity on mutually agreed terms and conditions including lease agreement from the roof top owner(s) and enters into the PPA with rooftop owner for supply of Solar power for 25 years at a tariff as per bid from the date of Commissioning of project.
- 1.26 **"PPA"** shall mean Power Purchase Agreement to be executed between successful bidder / project developer and the rooftop owner.
- 1.27 **"EPC"** shall mean engineering, procurement and construction of a plant or facility with obligation to meet minimum performance standards along with requisite warranties for the plant or facility.
- 1.28 **"Plant"** shall mean rooftop solar photovoltaic power generation plants implemented on the individual site;
- 1.29 **"PV"** shall mean photovoltaic;
- 1.30 **"DNI"** means Direct Normal Irradiation.
- 1.31 **"GHI"** shall mean Global Horizontal Irradiation.
- 1.32 **"Solar Company"** shall mean the Selected Bidder who submits the Security deposit /Performance Guarantee and implements the rooftop solar photovoltaic power generation plant in accordance with the scope of work as elaborated in this tender.
- 1.33 **"Statutory Auditor"** shall mean the auditor of a company appointed under the provisions of the Companies Act, 1956 or under the provisions of any other applicable governing law;
- 1.34 **"Chartered Accountant"** shall mean a person practicing in India or a firm whereof all the partners practicing in India as a Chartered Accountant(s) within the meaning of the Chartered Accountants Act, 1949;
- 1.35 **"Contract Year"** shall mean the period beginning from the Effective Date and ending on the immediately succeeding March 31 and thereafter each period of 12 months beginning on April 1 and ending

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on March 31 provided that:

- 1.35.1 in the financial year in which the Scheduled Commissioning Date would occur, the Contract Year shall end on the date immediately before the Scheduled Commissioning Date and a new Contract Year shall commence once again from the Scheduled Commissioning Date and end on the immediately succeeding March 31, and thereafter each period of twelve (12) months commencing on April 1 and ending on March 31, and
- 1.35.2 provided, further that the last Contract Year of this Agreement shall end on the last day of the Term of this Agreement.
- 1.36 **“Inter-connection point / Delivery / Metering Point”** shall mean the point at distribution voltage level where the power from the solar power Project is injected. Metering shall be done at this interconnection point where the power is injected into the Distribution System i.e. the Delivery Point. For interconnection with grid and metering, the SPD shall abide by the relevant TERC Regulations, Grid Code, Central Electricity Authority (Technical Standards for Connectivity of the Distributed Generation Resources) Regulation, 2013 and Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended and revised from time to time;
- 1.37 **“Security Deposit/Performance Guarantee”** shall mean the bank guarantee to be provided from a Selected Bidder to the TREDA in accordance with the prescribed Format;
- 1.38 **“Model(s)”** shall mean RSCO;
- 1.39 **“Wp”** shall mean Watt Peak;
- 1.40 **“Tendered Capacity”** shall mean the Total aggregate capacity in MW/KW indicated to the prospective bidders through this bidding process as per terms and conditions specified therein;
- 1.41 **“Tendering Authority / Tender Inviting Authority”** shall mean the Joint Director, Tripura Renewable Energy Development Agency, A constituent organization of Department of Power, Govt. of Tripura with its Head office at Vigyan Bhawan, 2<sup>nd</sup> Floor, Pandit Nehru Complex, Gorkhabasti, Agartala, West Tripura District, Pin-799006.
- 1.42 **“TREDA”** shall mean The Director General or his representative of “Tripura Renewable Energy Development Agency, A constituent organization of Department of Power, Govt. of Tripura” with its Head Office at Vigyan Bhawan, 2<sup>nd</sup> Floor, Pandit Nehru Complex, Gorkhabasti, Agartala, West Tripura District and shall also include its successors in interest and assignees.
- 2 The agreement shall be rate contract basis valid for 12 (twelve) months. All the allocated work shall be completed on turkey basis within 12 (twelve) months from the date of issue of Letter of Award (LoA) on turn-key basis. However “TREDA” may in case of urgency ask the bidder to complete the work earlier, with the mutual consent of the contractor/ bidder.
- 3 That on the request of the contractor/ bidder and also in the interest of the organization, “TREDA” is authorized to extend the validity of the agreement, subject to that the request of the contractor/ bidder (with proof of evidence of such delay) is received before the expiry of the agreement period, or any extended period granted to the contractor/ bidder. Maximum period of

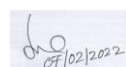


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extension shall be 6(six) months on the same terms and conditions as contained in this agreement.

- 4 The relevant clauses, terms & conditions of Agreement shall remain valid upto the date of completion as per Letter of Award (LoA) or the extended period granted by TREDA.
- 5 **COMPLETION TIME:** Time of completion for design, manufacture, supply, erection, testing and commissioning of grid connected Solar Photovoltaic Power Plant including synchronization with grid at sites on turn-key basis shall be 12 (twelve) months from the date of issue of LoA.
- 6 **SPECIFICATIONS:** General specifications of the grid interactive Solar PV power plants are given at PART - 4 of this DNIe-T. If there is any left out specifications of the Power Plants, shall be as per the latest MNRE Guidelines for Grid connected Solar PV applications.
- 7 **TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP:**
  - 7.1 The design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/ Indian Standards (BIS) as detailed in the PART 7 of the bid document. Where appropriate Indian Standards and Codes are not available, other suitable standards and codes as approved by the MNRE shall be used.
  - 7.2 The specifications of the components should meet the technical specifications mentioned in PART 4 of the bid document.
  - 7.3 Any supplies which have not been specifically mentioned in this Contract but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the successful Bidder without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV plant.
- 8 **SUPPLY OF MATERIALS:**
  - 8.1 The successful bidder should be responsible for packing, forwarding and dispatching, insurance and safe delivery of materials and installation & commissioning including proper civil works, storage & handling as required at specific sites at their quoted price. Temporary storage of materials during transit or at site shall be the responsibility of the successful bidder at his risk and cost.
  - 8.2 Delivery of the complete system at site shall commence from 90<sup>th</sup> day and the work should be completed within 12 (twelve) months from the date of issue of the Letter of Award (LoA). The date of issue of LoA would be considered as zero date.
  - 8.3 Maker of the components such as SPV Module, PCU / Inverter, Battery etc. will be as per valid test report / BIS Certificate submitted by the successful bidder duly approved by TREDA. Successful bidder is to supply the approved components only.
  - 8.4 Any delay in delivery except forced majeure shall be viewed seriously and may be linked with LD as found deem fit by TREDA.
  - 8.5 The materials of the SPV Power Plants are to be supplied, installed & commissioned at different locations within the state of Tripura at the cost & risk of the successful bidder. TREDA/Users will not provide any transit store during supply / execution of work.
  - 8.6 The maintenance of the system may also be taken up by the contractor/ bidder after expiry of 25 years of warranty/guarantee and operation & maintenance contract period on mutually agreed terms & conditions.



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**9 PLANT PERFORMANCE EVALUATION:**

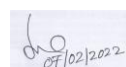
- 9.1 The successful bidder shall be require meeting minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance. The PR will be measured at Inverter output level during peak radiation conditions.
- 9.2 Minimum CUF of 15% should be maintained for a period of years (after considering a degradation of power output of PV Module, it should not be less than 90% at the end of 10 years and 80% at the end of 25 years).

**10 PROJECT INSPECTION:**

- 10.1 Project(s) shall be got inspected by the Project Manager, TREDA as per the checklist requirement for successful commissioning of the Plant.
- 10.2 TREDA reserves the right to do sample inspection checks of the SPV Plants commissioned by the Bidder.
- 10.3 TREDA may also depute a technical person(s) from its list of empanelled experts for inspection, Third party verification, monitoring of system installed to oversee, the implementation as per required standards and also to visit the manufactures facilities to check the quality of products as well as to visit the system integrators to assess their technical capabilities as and when required. All the expenses for third party expert inspection in this regard shall be borne be the successful Bidder only.

**11 WORK EXECUTION:**

- 11.1 PROJECT MANAGER: The TREDA shall appoint & Notify the successful bidder to whom LoA is issued in writing of the name of the Project Manager. The Project Manager shall represent & act for the TREDA at all times during the execution of the contract.
- 11.2 CONTRACTOR'S REPRESENTATIVE / CONSTRUCTION MANAGER: Within 20 (twenty) days of the issue of LoA, the successful bidder shall appoint the bidder's representative and shall request the TREDA in writing to approve the person so appointed. The bidder's representative shall represent and act for the bidder at all time during the contract period. All Notices, instructions & all other communication made by TREDA or the PROJECT MANAGER shall be given to the bidder's representative. The bidder shall not revoke the appointment of bidder's representative without the prior written consent of TREDA.
- 11.3 From the commencement of installation of the Solar Plant at site until operational acceptance, the bidder's representative shall supervise all work done at site and shall be present at site throughout normal working hours except when on leave, sick or absent for reasons connected with the proper performance of the contractor.
- 11.4 In absence of Contractor's representative, as mentioned above, a suitable person shall be appointed to act as his/her deputy.
- 11.5 TREDA may by Notice to the bidder object to any representative / person employed by the bidder in execution of the contract, who in the reasonable opinion of TREDA may behave in appropriately, may be incompetent or negligent or may commit serious breach of site regulations provided under the Contract. The TREDA shall provide



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evidence of the same whereupon the bidder shall remove such person from the site and promptly appoint a replacement.

**12 WORK PROGRAMME:**

- 12.1 CONTRACTOR'S ORGANIZATION: The successful bidder shall provide TREDA a chart showing the proposed organization to be established for carrying out the work within 21 (twenty one) days from the date of issue of LoA. The chart shall include the identities of the key personnel to be employed mentioning their roles & responsibilities.
- 12.2 PROGRAMME OF PERFORMANCE: Within 28 (twenty eight) days after the date of issue of LoA, the bidder shall prepare & submit to TREDA for approval, a detailed programme of performance of the contract, made in form of **PERT Network** and showing the sequence in which it proposes to design, manufacture, transport, assemble, install and commission the Solar Power Plants to enable him to execute the contract in accordance with the programme and to achieve completion & acceptance of the Power Plant by TREDA in accordance with the contract. The PERT Network submitted showing the time schedule in accordance with the period specified in the contract shall be approved by TREDA.
- 12.3 PROGRESS REPORT: The TREDA will monitor progress of all activities specified in the PERT Network and the bidder shall supply a progress report to TREDA in every week or as decided by Project Manager. The progress report shall be in a form acceptable to TREDA and shall also indicate completion achieved compared with planned completion for each activity and where any activity is behind the programme, giving comments & likely consequence and stating corrective actions being taken.
- 12.4 WORK PROCEDURE: The contract shall be executed in accordance with the contract documents. The bidder shall be required to attend site progress review meeting organised by TREDA or authorised representative. The deliberations in the meetings shall inter-alia include progress of work, daily / weekly programme (Including details of manpower, tools & plants deployed by the bidder vis-a-vis agreed schedule, inputs to be provided by TREDA, delays, if any and recovery programme, specific hindrances to work and instruction by TREDA). The Minutes of meeting shall be recorded for reference.

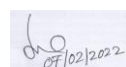
**13 COMPLETION TIME GUARANTEE:** If the bidder fails to attain completion of work or any part thereof within the time for completion or any extension thereof, the successful bidder on whom LoA is made, the bidder shall pay to TREDA Liquidated Damages (LD) in the amount computed at the rates specified below. However, payment of LD, shall not in any way relieve the bidder on whom award is made from any of its obligations to complete the work or from any other obligations and liabilities under the contract.

**14 LIQUIDATED DAMAGES (LD) FOR DELAY IN PROJECT IMPLEMENTATION:**

- 14.1 TREDA will issue the Letter of Award (LoA) for the Project(s) indicating the provisions of the DNie-T. The successful Bidder shall complete identification of the roof(s), submission of Project Report, design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of each project within 12 (twelve) months from the date of issue of Letter of Award.
- 14.2 If the bidder fails to commission the sanctioned project within specified time, LD on per day basis calculated for the performance security on 12 (twelve) months period would be levied. TREDA may

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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increase the project duration at its own discretion as per relevant clauses of DNIE-T. After completion time, the project will get cancelled and total PBG amount shall be forfeited by TREDA.

- 14.3 For example, If a capacity of 0.5 MW is delayed out of the total capacity to be commissioned by 30 days then the Liquidated Damages will be levied as given below:

Liquidated Damages = [Performance Security or Performance Bank Guarantee/365 days] \* Delayed Days \* Capacity non-Commissioned (MW) = (14,68,215/365) \* 30 \* 0.5 = INR 60,338/-.

**15 FORCE MAJEURE:**

- 15.1 Notwithstanding the provisions of clauses contained in this DNIE-T; TREDA shall not be liable to forfeit (a) PBG for delay and (b) termination of contract; if the contractors unable to fulfill his obligation under this contract due to force majeure conditions.
- 15.2 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 restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions, Grid Problems/ shut downs and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by TREDA and its decision shall be final and binding on the contractor and all other concerned.
- 15.3 In the event that the contractor is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, TREDA has the right to terminate the contract in which case, the PBG shall be refunded to him.
- 15.4 If a force majeure situation arises, the contractor shall notify TREDA in writing promptly, not later than 14 days from the date such situation arises. The contractor shall notify TREDA not later than 3 days of cessation of force majeure conditions. After examining the cases, TREDA shall decide and grant suitable additional time for the completion of the work, if required.

**16 SUPERVISION / EXECUTION OF WORKS:** The works should be done as per direction of Project Manager, Tripura Renewable Energy Development Agency. TREDA shall have at all reasonable time access to the works being carried out by the contractor/ bidder under the contract. All the work shall be carried out by the contractor/bidder to the satisfaction of TREDA.

**17** The contractor/ bidder shall not, without the consent in writing of TREDA, transfer, assign or sublet the work under the contract or any substantial part thereof to any other party.

**18 INSPECTION AND TESTING OF MATERIALS:**

- 18.1 All materials / equipments manufactured by the bidder against LoA shall be subject to inspection, check and / or test by TREDA at all stages and place, before, during and after the manufacture. All these tests shall be carried out as per technical specification and bidder shall submit relevant test reports.
- 18.2 The materials will be despatched / installed by the successful bidder after pre-despatch inspection by the Director General, TREDA or his representatives at the factory /works of the successful bidder as per DNIE-T specifications and acceptance of the same.

- 18.3 The successful bidder shall provide without any extra charge, all materials, tools, testing equipments, labour and assistance of every kind which the inspecting officer may consider necessary for any test or examination which he may require to be made on the successful bidder's premises or at site.
- 18.4 TREDa can also get the components of the systems tested from any MNRE approved / IEC Accredited Test centre / laboratory and the expenses shall be borne by the successful bidder.
- 18.5 All the expenses for the inspection of gadgets (At the bidder's premises / manufacturing unit / site) by the TREDa's representatives like to & fro air fare, boarding and lodging charges etc. will have to be borne by the successful bidder.
- 18.6 The successful bidder shall issue request letter for inspection (PDI) to TREDa for testing of any component of the plant which is ready for testing, the inspection call should be issued at least 10 (ten) days in advance from the actual date of testing at the bidder's premises / manufacturing unit / site.
- 18.7 Director General, TREDa reserves the right to wave out inspection of gadgets at the bidder's premises / manufacturing unit due to unavoidable circumstances, in such cases, the materials will be inspected at Godown of successful bidder at Agartala or at site, Lot wise Inspection Charge will be deducted from the bills of successful bidder, the amount of Inspection Charges will be decided by TREDa.
- 18.8 The successful bidder should not despatch any component of the power plant to site without getting despatch clearance of the same from TREDa.
- 18.9 If upon deliver whether inspected and approved earlier or otherwise, the materials / equipment is not in conformity with the specification, the same shall be rejected by TREDa and notification to this effect will be issued to the bidder normally within 7 (seven) days from the date of delivery of materials at site / work.
- 18.10 The bidder shall arrange removal of the rejected items within 15 (fifteen) days from the date of notification and take necessary action for repairs / modification etc. or for replacement at the cost & risk of the bidder.

**19 PACKING FORWARDING:**

- 19.1 Contractor/ bidders, wherever applicable, shall after proper painting, pack and crate all the equipments in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till time of installation. Contractor/bidder shall be sole responsible for all damage due to improper packing.
- 19.2 The contractor/ bidder shall inform the TREDa of the date of each shipment from his works, and the expected date of arrival at the site for the information of the TREDa Project Manager at least 7 (Seven) days in advance.

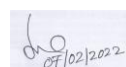
**20 RESPONSIBILITY OF TRANSPORTATION AND STORES:** Successful bidder should be solely responsible for stores in transit & installation. Any legal interference of Police / Sales tax / Income tax / Transport / Any other Govt. Agencies will be faced by successful bidder. The transportation delay / non availability of train / truck etc. will never be considered by the tendering authority as reason of delay to supply and naturally no extension of delivery period will be granted on this account.

**21 INSURANCE:**

- 21.1 The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The bidder shall also take appropriate insurance during O&M period.

- 21.2 The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.
- 21.3 In case of any loss or damage or pilferage or theft or fire accident or combination of the said incidents etc. under the coverage of insurance, the Contractor shall lodge the claim as per rules of insurance. Any FIR required to be lodged to local Police Station shall be the responsibility of the successful bidder.
- 21.4 The bidder shall arrange to supply/rectify/recover the materials even if the claim is unsettled for timely completion of the Project. The final financial settlement with the insurance company shall be rested upon the Contractor.
- 21.5 Insurance as applicable during operation of Project for covering all risks against any mishap to its workmen. The TREDAs/User will not be responsible for any such loss or mishap. All other insurances like, insurance against theft and acts of GOD, as required for O&M of the plant and to indemnify the TREDAs/User equipment/ material and resources shall be borne by the contractor. Fire insurance is to be arranged by the Contractor up to the twenty five (25) years of O&M of the Contract.
- 22 TERMINATION FOR INSOLVENCY:** TREDAs may at any time terminate the contract by giving written notice to the contractor/bidder without compensation to the contractor/ bidder, if it becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the TREDAs.
- 23 TERMINATION FOR CONVENIENCE:** The TREDAs, may by written notice sent to the contractor/ bidder, terminate the contract, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the purchaser's convenience in the interest of TREDAs.
- 24 APPLICABLE LAW:** The contractor/ bidder shall be interpreted in accordance with the laws of the purchaser's country i.e. India. The station of TREDAs Headquarter at Agartala shall have exclusive jurisdiction in all matters arising under this contract.
- 25 LEGAL CASE:** All disputes are to be settled within the jurisdiction of Tripura High Court, Agartala.
- 26 INSPECTION AND REPORTING:**
- 26.1 The TREDAs or any other agency designated by TREDAs may inspect the ongoing installations or installed plants. In case the installed systems are not as per standards, non-functional on account of poor quality of installation or non-compliance of Warranty/guarantee and AMC obligations, the TREDAs reserves the right to blacklist the successful bidder. Blacklisting inter-alia include the followings:
- 26.1.1 The successful bidder will not be eligible to participate in tenders for Government supported projects.

26.1.2 In case, the concerned Director(s) of the successful bidder joins another existing or start/joins a new firm/company, the company will automatically be blacklisted.

**27 PRE-BID MEETING:**

- 27.1 The prospective bidders will be invited to attend the **online Pre-bid meeting** on the date as specified in the **BID INFORMATION SHEET**.
- 27.2 The purpose of the Pre-bid Meeting will be to clarify any issue regarding the tender including the particular issues raised in writing as per **FORMAT 10** and submitted by the interested bidders through **e-mail: tredaagartala@gmail.com** on or before the date & time stipulated in **BID INFORMATION SHEET**.
- 27.3 Link will only be provided to the prospective bidders via e-mail on receipt of Queries as per **FORMAT 10**.
- 27.4 One link for each bidder will be provided by TREDa and only **1 (one) representative of bidder will participate in the meeting**.
- 27.5 Reply of queries after discussion in the Pre-bid meeting will be sent to the respective bidder through e-mail or through e-procurement portal on or before the date & time stipulated in BID INFORMATION SHEET.
- 27.6 TREDa will not sent the reply of the queries to individual bidders if any Amendment / Corrigendum of the tender is made in response to queries & up-loaded in e-procurement portal after pre-bid meeting.
- 27.7 In case, Pre-bid meeting is suspended due to unavoidable circumstances, TREDa will respond to the queries / clarifications of prospective bidder through e-mail.
- 27.8 TREDa is not under any obligation to entertain/respond to suggestions made or to incorporate modifications sought for.

**28 SETTLEMENT OF DISPUTE**

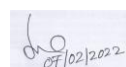
- 28.1 To the best of their ability, the parties hereto shall endeavor to resolve amicably between themselves all disputes arising in connection with this work order. If the same remain unresolved within thirty (30) days of the matter being raised by either party, either party may refer the dispute for adjudication by arbitration. The arbitration shall be undertaken by the sole arbitrator jointly appointed by the parties. In case the parties fail to arrive at consensus to appoint the sole arbitrator, either party may approach the Court for appointing an arbitrator under Section 11 of the Arbitration and Conciliation Act, 1996 and the award of the said sole arbitrator, shall be final and binding upon the parties. The arbitration proceeding shall be conducted in accordance with this provisions of the Indian Arbitration & Conciliation Act, 1996 (as amended up to date) and the venue of such arbitration shall be the city of New Delhi only. The Arbitration shall be conducted in English language only. The Tripura High Court, Agartala shall have the exclusive jurisdiction over the subject matter of Arbitration/dispute. The cost of the Arbitration shall be equally shared by the parties as per directions of the Sole Arbitrator.

**29 NOTICE:**

- 29.1 Any notice given by one party to the other pursuant to the contract shall be sent in writing, soft copy should be forwarded through e-mail & hard copy through Speed Post / Courier to the address specified for that purpose.
- 29.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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**30 OTHERS:**

- 30.1 I-V curve of the each module technical details such as  $V_{oc}$ ,  $I_{sc}$ , FF, cell efficiency and  $P_{max}$  etc. shall be supplied along-with each consignment and copy & soft should be handed over to TREDA.
- 30.2 The Contractor/ bidder in consultation with concerned Project Manager of TREDA will conduct training programme for users, focusing on main features, operation and maintenance of the systems.
- 30.3 It shall be the sole responsibility of the contractor/ bidder to get verified the quality & quantity of the supplied material at the site of delivery.

**31 PAYMENT & OTHER FINANCIAL TERMS:**

- 31.1 No payment will be made by TREDA towards design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants including warranty, operation & maintenance for 25 years of Grid Interactive Rooftop Solar Power Plants in various Government Buildings/Offices in the State of Tripura.
- 31.2 PAYMENTS FOR ENERGY SUPPLY / SALE OF POWER:
  - 31.2.1 Successful Bidder will sign a Power Purchase Agreement (PPA) with User Authority for sale of Solar Power as per the rate discovered against this tender for 25 years.
  - 31.2.2 A Tripartite Agreement between TREDA, User Authority & Successful Bidder are also to be signed for successful operation of the plant for 25 years.
- 31.3 SERVICE CHARGE:
  - 31.3.1 The successful bidder, during 25 years of running & operation of the Plant, has to pay 1% of the Energy Charges claimed to the User, as Service Charges to TREDA.
  - 31.3.2 The copy of Bill for Monthly Energy Charges claimed to the User shall have to be submitted to TREDA and 1% of the Energy Charges shall be paid accordingly.
- 31.4 In case of any ambiguity in interpretation of any of the provisions of the tender, the decision of "TREDA" shall be final.

**32 LANGUAGE**

- 32.1 All documents, drawings, instructions, design data, calculations, operation, maintenance and safety manuals, reports, labels and any other data shall be in English Language. The contract agreement and all correspondence between the TREDA and the bidder shall be in English language. O&M manual and warranty card should be in English & Hindi languages.

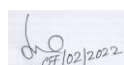
**33 OPERATION OF THE SYSTEM DURING WEEKENDS AND GENERAL HOLIDAYS AND CALCULATION OF CUF:**

- 33.1 During grid failure, the SPV system stops generating. Any instances of grid failure will need to be intimated to TREDA on monthly basis. Then the period will be excluded in calculation of CUF.

**34 FAMILIARIZATION OF SITES OF INSTALLATION BY THE BIDDER:**

The intending Bidder shall be deemed to have familiarized with site conditions in Tripura while submitting the Bid. Non-familiarity with the site conditions will not be considered a reason either for extra claims or for not carrying out the works in strict conformity with the technical specifications or for any delay in performance.

- 35** Any other conditions which are not mentioned in this document but if needed during execution of work shall be as per latest MNRE guidelines.

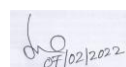




## **PART - 4: SCOPE OF WORK & TECHNICAL SPECIFICATIONS**

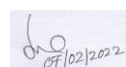
1. **SCOPE OF WORK:** The scope of work for the successful bidder includes:
  - 1.1. The Scope of work for the bidder include prefeasibility of Identified buildings/ PPA agreement for 25 years, Obtaining No Objection Certificate (NOC) from Distribution Company (DISCOM) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the grid connected rooftop solar PV project including operation and maintenance (O&M) of the project for a period of 25 (TWENTY FIVE) years under RESCO Model after commissioning of the projects as per TREDAs acceptance.
  - 1.2. Power procurement under the contract to be awarded by this bidding process is subject to approval of TREDAs.
  - 1.3. Performance testing of the complete system.
  - 1.4. The scope of work includes 25 (Twenty five) years running, Operation & Maintenance (O&M) of the Systems as detailed at PART 5 of the DNIE-T.
  - 1.5. All components and works shall adhere to relevant Indian Standards, State and Central policies and regulations and all statutory provisions under the Indian Law.
  - 1.6. The successful bidder shall be entirely responsible for the execution of scope of work in accordance to this tender document including but not limited to its specifications, schedule and annexure. The successful bidder shall further provide guarantee and be responsible for the quality and workmanship of all materials and completed works, survey, correct designs and drawings, correct delivery of materials, erection, testing, commissioning, running, Operation & Maintenance.
  - 1.7. Any other works which is not mentioned but necessary for successful commissioning, Guarantee / Warranty and Annual Maintenance Contract for 25 (TWENTY FIVE) years would be in the scope of bidder. All approvals required for successful commissioning of the systems shall be in the scope of successful bidder.
  - 1.8. The successful bidder shall repair at its own cost any damages caused to premises of installation during implementation of the work.
  - 1.9. The Contractor shall be responsible for undertaking all applications and obtaining all approvals, permissions etc. in order to successfully complete the Scope of Work.
  - 1.10. The successful bidder shall maintain an active local office cum service centre in each district where work is carried out under this tender to rectify faults within the stipulated timeframe described in the tender document.
  - 1.11. Systems installed under this scheme shall meet technical specifications and construction standards as specified by BIS and MNRE from time to time / Standards mentioned at PART 7 of the DNIE-T. Non-compliance will be taken seriously to the extent of blacklisting of successful bidder apart from taking action under any other law in force.
  - 1.12. **SUBMISSION OF PROJECT PROPOSAL FOR APPROVAL:** The successful bidder shall submit site wise Project Proposal for approval for TREDAs. The Project Proposal shall comprise of the following documents:
    - 1.12.1. Copy of Power Purchase Agreement (On stamp paper of appropriate value) between the bidder and the owner of the Project and Building/Roof top.

- 1.12.2. All Agreement shall generally have reference to the TREDA's DNIe-T No. and Letter of Award and provisions as per terms and conditions, technical specification and performance parameter in line with the TREDA's DNIe-T Document against which Letter of Award has been issued. In addition, it shall indicate the fixed tariff payable by the roof top Owner to the developer, payment terms, completion period along with other conditions of contract like insurance, warranty, force majeure, arbitration, jurisdiction, governing law, site access for the developer, and, site access for TREDA officials for the entire plant life, obligation of the roof top owner regarding providing of data to TREDA as per the DNIe-T Document etc.
- 1.12.3. No Objection Certificate from the State DISCOM / TSECL for grid connectivity or Chief Electrical Inspector approval (In case CEIG approval is suffice for grid connectivity). Undertaking of successful bidder on stamp Paper for indemnification of TREDA shall be furnished in case approval of Chief Electrical Inspector approval is only furnished for grid connectivity
- 1.12.4. Summary Project Report (2-3 pages only) in Format 12.
- 1.13. **POST COMMISSIONING ACTIVITIES:** On completion of work, the successful bidder shall submit site wise commissioning report (Minimum 2 copies), the commissioning report shall comprise of
  - 1.13.1. Project Completion Report (PCR) in FORMAT 13 (PART A & PART B).
  - 1.13.2. Joint Commissioning Report (JCR) as per FORMAT 14.
  - 1.13.3. Solar PV Plant Warranty Certificates for 25 years
  - 1.13.4. Copy of Inspection Report
  - 1.13.5. Copy of Performance Test Report
  - 1.13.6. Solar PV Module & Solar Inverter Serial Number
  - 1.13.7. Solar PV Module & Solar Inverter Test sheet
  - 1.13.8. Solar PV Module & Solar PCU/Inverter warranty certificate
  - 1.13.9. Solar PV Plant insurance cover certificate.
  - 1.13.10. Final BOM, As built drawing.
  - 1.13.11. Metering Installation Report
- 1.14. **DRAWINGS & MANUALS:**
  - 1.14.1. Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
  - 1.14.2. Approved ISI and reputed makes for equipment be used.
  - 1.14.3. For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to TREDA before progressing with the installation work.
- 1.15. **PLANNING & DESIGNING:**
  - 1.15.1. The bidder should carry out Shadow Analysis at the site and accordingly design strings and arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to TREDA for approval.



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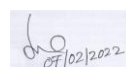
- 1.15.2. TRED A reserves the right to modify the landscaping design, layout and specification of sub-systems and components at any stage as per local site conditions/requirements.
- 1.15.3. The bidder shall submit preliminary drawing for approval and based on any modification or recommendation, if any. The bidder submits three sets and soft copy in pen-drive of final drawing for formal approval to proceed with construction work.
- 1.16. **DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT:** The successful bidder shall furnish the following site wise drawings after award of contract and obtain approval from TRED A:
  - 1.16.1. General arrangement and dimensioned layout.
  - 1.16.2. Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
  - 1.16.3. Structural drawing along with foundation details for the structure.
  - 1.16.4. Itemized bill of material for complete SV plant covering all the components and associated accessories.
  - 1.16.5. Layout of solar Power Array.
  - 1.16.6. Shadow analysis of the roof.
- 1.17. **SOLAR PV SYSTEM ON THE ROOFTOP FOR MEETING THE ANNUAL ENERGY REQUIREMENT:** The Solar PV system on the rooftop of the selected buildings will be installed for meeting upto 90% of the annual energy requirements depending upon the area of rooftop available and the remaining energy requirement of the office buildings will be met by drawing power from grid at commercial tariff of DISCOM.
- 1.18. **THE FOLLOWING STATUTORY CLEARANCES SHALL BE OBTAINED BY THE/BIDDER(S) WHEREVER APPLICABLE:**
  - 1.18.1. Building and Architectural Drawings approvals from relevant authorities/Primary Beneficiary Organisation.
  - 1.18.2. Electrical Safety approval for system more than 10 KW (Chief Electrical Inspector)
  - 1.18.3. All equipment, accessories, materials, civil construction & erection works should comply with statutory requirements, IS and required and highlighted IEC standards
  - 1.18.4. All statutory requirements for working at the Site like labour registration, workman compensation policy, ESIC etc. to be complied with by the vendor before deployment of resources at the Site.
- 1.19. **TEST CERTIFICATES / BIS CERTIFICATE:**
  - 1.19.1. The successful bidder are required to submit Original / Attested photocopies of the latest Type Test Report(s) from one of the MNRE approved/NABL/IEC Accredited Test Laboratories / BIS Certificate for different components of the SPV Power Plant like Solar Photovoltaic Modules, Power Conditioning Unit / Inverter etc. in compliance with all type tests wherever prescribed in the relevant latest edition of MNRE/BIS (as applicable) as mentioned at PART – 7 of this DNle-T and tested components must be used for entire project without any change.
  - 1.19.2. PART 6: TECHNICAL INFORMATION along with Type Test Report(s) / BIS Certificates and Declaration in the letter head of concerned component manufacturers for post-installation maintenance and performance warrantee/guarantee of the components are to be submitted by the successful bidder within 30 (thirty) days from the



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issue of the Letter of Award (LoA).

- 1.19.3. Type Test Report / BIS Certificates should not be more than 5 (five) years old as on the date of publication of the tender.
- 1.19.4. **DECLARATION** in the letter head of the bidder to submit the “PART 6: TECHNICAL INFORMATION along with Type Test Report(s) in compliance with for all type tests wherever prescribed in the relevant latest edition of MNRE/BIS (as applicable) as mentioned at PART – 7 of this DNIe-T and Declaration in the letter head of concerned component manufacturers for post-installation maintenance & performance warrantee/guarantee of the components within 30 (thirty) days from the issue of the Letter of Award (LoA)” should be uploaded along with the technical bid.
- 1.19.5. Any bid received without **DECLARATION** as mentioned above will be summarily rejected for non-responsive to the tender condition.
- 1.20. **INSURANCE DURING INSTALLATION OF PV SYSTEMS:**
  - 1.20.1. During installation period i.e. before commissioning of the PV Plant including IE Works, all insurance – related expenses shall be borne by the successful bidder. The goods supplied by the successful bidder shall be fully insured against the loss or damage incidental to manufacture or acquisition, transportation, storage, deliver, theft, natural or other disaster / calamity etc.
  - 1.20.2. In case of any loss or damage or pilferage or theft or fire accident or natural calamity or combination of the said incidents under the coverage of insurance, the successful bidder shall lodge the claim as per rules of insurance. Any FIR required to be lodged at the local Police Station shall be responsibility of the successful bidder.
  - 1.20.3. The successful bidder shall arrange to supply / rectify / recover the materials even if the claim is unsettled for timely completion of the project. The final financial settlement with the insurance company shall be rested upon the successful bidder.
- 1.21. **INSURANCE DURING OPERATION OF PV SYSTEM:**
  - 1.21.1. Upon commissioning of the PV Plant, the successful bidder shall undertake insurance on the PV Plant against theft and vandalism and natural calamities for a minimum period of 25 (twenty five) years and include the same within the quoted cost.
  - 1.21.2. At least 2 (two) months before the end of the term of Insurance undertaken by the successful bidder, the successful bidder shall ensure to provide all the necessary documents and guidance to the satisfaction of the User in order to enable the User, in case he wants to renew or to take up the insurance of the PV Systems at the end of the term of 25 (twenty five) years insurance of successful bidder.
- 1.22. **SAFETY MEASURES:** The successful bidder shall take entire responsibility for electrical safety of the installation (s) including connectivity with the grid and follow all the safety rules and regulations applicable as per Electricity Act, 2003 and CEA Guidelines, as well as applicable rules and regulations of Tripura State etc.
- 1.23. **COMPLIANCE WITH LABOUR REGULATIONS:** During execution of the Contract, the successful bidder shall abide at all times by all existing labour enactments and rules made there under, regulations, notifications and bye laws of the State Government or Central Government or local authority and any other labour law (including



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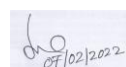
rules), regulations, byelaws that may be passed or notification that may be issued under any labour law in future either by the State Government or the Central Government or the local authority.

1.24. **STATUTORY RESPONSIBILITY:**

- 1.24.1. The entire responsibility and risk relating towards the workforce working at the site, and compliance of different statutory regulations like Workman Compensation Act, 1923, Employment of Children Act XXVI of 1938 and any enactment or modification of the same Act, Payment of Gratuity Act, 1972, Employees P.F. and Miscellaneous Provision Act, 1952, Maternity Benefit Act, 1948, Contract Labour (Regulation & Abolition) Act, 1970, Minimum Wages Act, 1948, Payment of Wages Act, 1936, Equal Remunerisation Act, 1979, Payment of Bonus Act, 1965, Industries Dispute Act, 1947, Industries Employment (Standing Orders) Act, 1946, Trade Union Act, 1926, Child Labour (Prohibition & Regulation) Act, 1986, Inter-state Migrant Workmen's (Regulation of Employment & Conditions of Service) Act, 1979, The Building and other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act, 1996, Employees State Insurance Corporation (ESIC), Factory Act 1948, Shop and Establishment Act 1948, and other Statutory regulatory bodies shall solely lie with the Contractor/ Bidder(s).
- 1.24.2. The Contractor/ Bidder(s) shall also be solely responsible for payment of wages, provident fund, bonus, retrenchment compensation leave, etc. applicable as per various statutory regulations to their entire workforce.
- 1.24.3. All equipment, accessories, materials, civil construction & erection works should comply with statutory requirements, IS and IEC standards.
- 1.24.4. Statutory requirements for working at the site like labour registration, workman compensation policy, ESIC etc. to be complied with by the vendor before deployment of resources at the Site.
- 1.24.5. The Contractor /Bidder shall obtain required license/registrations, statutory compliances from the State Government or Central Government or local authority.

1.25. **GENERAL INSTRUCTIONS:**

- 1.25.1. Water and power supply for the construction shall be the responsibility of the Contractor/Bidder
- 1.25.2. Security, safety, watch, and ward of all materials at sites shall be the responsibility of the Contractor/Bidder
- 1.25.3. Liaison with the concerned distribution licensees, Tripura Renewable Energy Development Agency, Roof Owner (concerned Primary Beneficiary), the Chief Electrical Inspector and any other statutory authorities as applicable for all the Project approvals
- 1.25.4. Expenses for any other works, supply of material, and providing services required for the successful commissioning and operation of the plant, but not specifically mentioned in this document.
- 1.25.5. Safety management to be strictly complied with by the Contractor/Bidder throughout implementation activity.
- 1.25.6. First-aid medical facilities at the Site during construction to be provided by the Contractor/ Bidder(s)
- 1.25.7. All local labour, employment, and other issues shall be handled



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- independently by the Contractor/ Bidder(s)
- 1.25.8. The installation should not be protruding outside the building and there should not be overhang type structure on any terrace.
  - 1.25.9. Location and area for inverter and other interconnection equipment should be located in suitable and secure place and this should be approved by the TREDA and the respective Primary Beneficiary. Installation diagram and wiring from array to proposed location of inverter and interconnection should be clearly presented by the Selected/Empanelled Bidder before work starts on the site. These should be approved by owner of the respective building.
  - 1.25.10. Any installations on the terrace should be planned and executed in such a way that water proofing will not be disturbed and harmed. In case any area water proofing is affected it will be Bidder's responsibility to correct it and put it right.

## 2. TECHNICAL SPECIFICATIONS:

- 2.1. The proposed projects shall be commissioned as per the technical specifications given below as per MNRE guidelines. Any shortcomings will lead to cancelation of LoA as decided by TREDA and the RESCO agreement will be terminated. Competent Authority's decision will be final and binding on the bidder.
- 2.2. A Grid connected Solar Rooftop Photovoltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables, Junction boxes, Distribution boxes and switches. PV Array is mounted on a suitable structure. Grid tied SPV system is without battery and should be designed with necessary features. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. Solar PV rooftop system shall consist of following major equipment/components.
  - 2.2.1. Solar PV modules consisting of required number of Crystalline PV cells.
  - 2.2.2. Grid interactive Power Conditioning Unit with Remote Monitoring System
  - 2.2.3. Mounting structures
  - 2.2.4. Junction Boxes.
  - 2.2.5. Earthing and lightning protections.
  - 2.2.6. IR/UV protected PVC Cables, pipes and accessories

### 2.3. SOLAR PHOTOVOLTAIC MODULES:

- 2.3.1. Solar PV modules should be of the crystalline silicon type, manufactured in India. Detailed specifications of the solar PV modules are given below:

Type	Crystalline silicon
Origin	Made in India
Efficiency	≥ 15%
Fill factor	≥ 70%
Module frame	Non-corrosive and electrically compatible with the mounting structure material

Module frame material	Copper free aluminum
Termination box	Thermo-plastic, IP 65, UV resistant
Blocking diodes	Schottky type
Module minimum rated power	$\geq 300$ Wp (72 cell).
Identification tag for each solar module	Shall be provided inside the module and must be able to withstand environmental conditions and last the lifetime of the solar module.
Identification tag data inside the module.	a) Name of the Manufacturer or distinctive Logo b) Model or Type No. c) Serial No. d) Year of make: e) <b>TREDA</b>
RFID	Each SPV module should have a <b>RFID</b> tag containing following information inside the module laminate: a) Name of the manufacturer of PV Module b) Name of the Manufacturer of Solar cells c) Month and year of the manufacture (separately for solar cells and module) d) Country of origin (separately for solar cells and module) e) I-V curve for the module f) Peak Wattage, $I_m$ , $V_m$ and FF for the module g) Unique Serial No and Model No of the module h) Date and year of obtaining IEC PV module qualification certificate i) Name of the test lab issuing IEC certificate j) Other relevant information on traceability of solar cells and module as per ISO 9000 series.
Power output rating	To be given for standard test conditions (STC). I- V curve of the each module shall be submitted.
Compliance with IEC/equivalent BIS Standards	As per PART – 7 (Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Power Plants) of this DNIE-T.
Performance warranty	Panel output (Wp) capacity to be $\geq 90\%$ at the end of 10 years and $\geq 80\%$ of at the end of 25 years.

- 2.3.2. The total solar PV array capacity should not be less than allocated capacity (KWp) and should comprise of solar crystalline modules of minimum 300 Wp and above wattage. Module capacity less than 300 Wp shall not be accepted.
- 2.3.3. The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated capacity of the power plant in his bid.
- 2.3.4. The rated output power of any supplied module shall have tolerance of  $\pm 3\%$ , but the total solar PV array capacity of a power plant should not be less than the capacity of the power plant as indicated in the LoA.
- 2.3.5. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective

- arithmetic means for all modules and/or for all module strings, as the case may be.
- 2.3.6. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
- 2.3.7. I-V curves at STC should be submitted by bidder.
- 2.3.8. Warranty/Guarantee:
- 2.3.8.1. Material Warranty/Guarantee:
- 2.3.8.1.1. Material Warranty/Guarantee is defined as: The manufacturer should warrant the Solar Module (s) to be free from the following defects and / or failures for a period not less than twenty five (25) years from the date of commissioning of the Plant.
- 2.3.8.1.1.1. Defects and / or failures due to manufacturing
- 2.3.8.1.1.2. Defects and / or failures due to quality of materials.
- 2.3.8.1.1.3. Non conformity to specifications due to faulty manufacturing and / or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the owner's sole option.
- 2.3.8.2. Performance Warranty: The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 (twenty five) year period and not more than 10% after 10 (ten) years period of the full rated original output.
- 2.4. ARRAY STRUCTURE (MODULE MOUNTING STRUCTURE):**
- 2.4.1. Hot dip galvanized MS mounting structures may be used for mounting the modules / panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements. Minimum thickness of galvanization should be 85 microns.
- 2.4.2. The mounting structure & foundation shall be so designed to withstand the wind speed of the wind zone of the site of installation (e.g. 198 KM/Hr for Agartala). It may be ensured that the design has been certified by a recognized lab/ Institution in this regard and shall submit wind loading calculation sheet to TREDATA. Suitable fastening arrangement such as grouting and clamping should be provided to secure the installation against the specific wind speed.
- 2.4.3. The mounting structure steel should be as per latest IS 2062: 1992 and galvanization of the mounting structure should be in compliance with latest IS4759.
- 2.4.4. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, fasteners, nuts and bolts. Necessary protection towards rusting need to be provided either by coating or anodization.
- 2.4.5. The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. Anti Theft Nut Bolts of SS (with washers) should be used for mounting modules for better theft proofing.



- 2.4.6. Regarding civil structures the bidder need to take care of the load bearing capacity of the roof and need arrange suitable structures based on the quality of roof. For sheds, C.C. work will not be required, in such cases, the structure shall be grouted with fasteners with chemical sealing to withstand the required wind velocity.
  - 2.4.7. The total load of the structure (when installed with PV modules) on terrace should be less than 60 Kg/Square meter.
  - 2.4.8. The array structure shall be grounded properly using maintenance free earthing kit suitable for mounting over building terrace.
  - 2.4.9. Provision for safe and secure access to roof top and ground mounted shall be scope of vendor (i.e., walkways, ladders, and platforms on elevated/above ground structures, etc.)
- 2.5. JUNCTION BOXES (JBs):**
- 2.5.1. 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.
  - 2.5.2. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry, Single / double compression cable glands, Provision of Earthings. It should be placed at 5 feet height or above for ease of accessibility.
  - 2.5.3. Each Junction Box shall have High quality Suitable capacity Metal Oxide Arrestors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.
  - 2.5.4. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
  - 2.5.5. All fuses shall have DIN rail mountable fuse holders and shall be housed in thermoplastic IP 65 enclosures with transparent covers.
- 2.6. DC DISTRIBUTION BOARD:**
- 2.6.1. DC Distribution panel to receive the DC output from the array field.
  - 2.6.2. DC DPBs shall have sheet from enclosure of dust & vermin proof conform to IP 65 protection.
  - 2.6.3. The bus bars are made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.
  - 2.6.4. All components should be of ISI Marked.
  - 2.6.5. "PIA: TREDA" should be embossed/laminated at the front side of DCDB.
  - 2.6.6. DCDB not required, if PCU/ inverter having inbuilt DC fuses and SPD protection.
- 2.7. AC DISTRIBUTION PANEL BOARD:**
- 2.7.1. AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
  - 2.7.2. All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.

- 2.7.3. The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- 2.7.4. All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz.
- 2.7.5. The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- 2.7.6. All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- 2.7.7. Should conform to Indian Electricity Act and rules (till last amendment).
- 2.7.8. All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

<b>Variation in supply voltage</b>	<b>+ / - 10 %</b>
<b>Variation in supply frequency</b>	<b>+ / - 5 Hz</b>

- 2.7.9. "PIA: TRENDA" should be embossed/laminated at the front side of ACDB.

**2.8. PCU/ARRAY SIZE RATIO:**

- 2.8.1. The combined wattage of all inverters should not be less than rated capacity of power plant under STC provided maximum 10% DC overloading is allowed in a given string subject to technical specifications of the inverter.
- 2.8.2. Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

**2.9. POWER CONDITIONING UNITS(PCU)/ SOLAR GRID INVERTER:**

- 2.9.1. As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)". In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter should also be DG set interactive, if necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

2.9.1.1	Switching devices	IGBT/MOSFET
2.9.1.2	Control	Microprocessor /DSP
2.9.1.3	Nominal AC output voltage and Frequency	240 volt, 1 phase or 415V, 3 Phase, 50 Hz at the option of the consumer
2.9.1.4	Output frequency	50 Hz
2.9.1.5	Grid Frequency Synchronization range	+/- 5 Hz
2.9.1.6	Ambient temperature considered	-20 deg. C to 50 deg. C
2.9.1.7	Humidity	95 % Non-condensing
2.9.1.8	Protection of	IP-54(Minimum) for indoor

	Enclosure	IP-65(Minimum) for outdoor
2.9.1.9	Grid Frequency Tolerance range	+/- 5 Hz
2.9.1.10	Grid Voltage tolerance	+ / - 10%
2.9.1.11	No-load losses	Less than 1% of rated power
2.9.1.12	Inverter efficiency (minimum)	>93% (In case of 10 kW or above with in-built galvanic isolation) >97% (In case of 10 kW or above without inbuilt galvanic isolation)
2.9.1.13	Inverter efficiency (minimum)	> 90% (In case of less than 10 kW)
2.9.1.14	THD	As per IEEE 519 as amended from time to time
2.9.1.15	PF	> 0.9
2.9.2	Protection degree	IP 65 for outdoor mounting, IP 54 for indoor mounting
2.9.2.1	Communication interface	RS 485 / RS 232 / RJ45/USB/
2.9.2.2	Cooling	Convection
2.9.2.3	Display type	LCD for data display. LCD /LED for status display
2.9.2.4	Protections	a) DC Reverse Polarity b) AC Short Circuit c) AC Output over current d) Output over voltage e) Insulation resistance f) Surge g) Islanding Over temperature
2.9.2.5	Embossing / Lamination	"PIA: TREDA" at the front side.

- 2.9.2. Three phase PCU/ inverter shall be used with each power plant system (10kW and/or above) but in case of less than 10kW single phase inverter can be used.
- 2.9.3. PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- 2.9.4. The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power; inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- 2.9.5. Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- 2.9.6. Anti-islanding (Protection against Islanding of grid): The PCU shall have anti islanding protection in conformity to IEEE 1547/UL 1741/ IEC 62116 or equivalent BIS standard.
- 2.9.7. Successful Bidders shall be responsible for galvanic isolation of solar roof top power plant (>100kW) with electrical grid or LT panel.
- 2.9.8. In PCU/Inverter, there shall be a direct current isolation provided at the output by means of a suitable isolating transformer. If Isolation Transformer is not incorporated with PCU/Inverter, there shall be a separate Isolation Transformer of suitable rating provided at the output side of PCU/PCU units for capacity more than 100 kW.

- 2.9.9. The PCU/ inverter generated harmonics, flicker, DC injection limits, Voltage Range, Frequency Range and Anti-Islanding measures at the point of connection to the utility services should follow the latest CEA (Technical Standards for Connectivity Distribution Generation Resources) Guidelines.
- 2.9.10. The power conditioning units / inverters should comply with applicable IEC/equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068-2 (1,2,14,30)/ Equivalent BIS Std.
- 2.9.11. The MPPT units environmental testing should qualify IEC 60068-2 (1, 2, 14, 30)/ Equivalent BIS STD. The junction boxes/ enclosures should be IP 65 (for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- 2.9.12. The PCU/ inverters should be tested from the MNRE approved test centers/ NABL/ BIS/ IEC accredited testing- calibration laboratories in compliance with PART – 7 (Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Power Plants) of this DNIe-T.
- 2.10. **INTEGRATION OF PV POWER WITH GRID:**
  - 2.10.1. The output power from SPV would be fed to the inverters which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid. Once the DG set comes into service, PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG power connection need to be provided. In case of synchronization of PV with the DG set, it is to be ensured that solar power does not get exported to grid or DG. Any provisions related to electricity safety should be complied with.
  - 2.10.2. The AC output of the solar grid inverter shall be connected to the building's electrical system after the DISCOM service connection meter and main switch on the load side. The solar grid inverter output shall be connected to a dedicated module in the HT/LT Panel of the Consumer / Main Distribution Board (MDB) of the building. It shall *not* be connected to a nearby load.
  - 2.10.3. Utilities may have voltage levels other than above, DISCOMS may be consulted before finalization of the voltage level and specification be made accordingly.
  - 2.10.4. Technical Standards and limits applicable for the activities related to meters and grid interconnection:

Sl. No.	PARAMETER	REFERENCE	REQUIREMENT
2.10.4.1	<b>Service conditions</b>	Relevant regulation/order by Tripura Electricity Regulatory Commission	Compliance
2.10.4.2	<b>Overall Grid Standards</b>	Central Electricity Authority (Grid Standard) regulations 2010	Compliance
2.10.4.3	<b>Equipment</b>	BIS / IEEE / IEC	Compliance

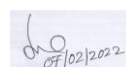
2.10.4.4	<b>Meters</b>	Central Electricity Authority (Installation and Operation of Meters) Regulation 2013 & relevant regulations by Tripura Electricity Regulatory Commission	Compliance
2.10.4.5	<b>Safety and Supply</b>	Central Electricity Authority (Measures of Safety and Electricity Supply) Regulation 2010	Compliance
2.10.4.6	<b>Harmonic Current</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519
2.10.4.7	<b>Synchronization</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection.
2.10.4.8	<b>Voltage</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the photovoltaic system must isolate itself from the grid.
2.10.4.9	<b>Flicker</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	Operation of Photovoltaic system should not cause voltage flicker in excess of the limits stated in IEC 61000 standards or other equivalent Indian standards, if any.
2.10.4.10	<b>Frequency</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013	When the Distribution system frequency deviates outside the specified conditions (52.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds
2.10.4.11	<b>DC injection</b>	IEEE 519 and CEA	Photovoltaic system

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		(Technical Standards for Connectivity of the Distributed Generation Resources). Regulations 2013	should not inject DC power more than 0.5% of full rated output at the interconnection point under any operating conditions
2.10.4.12	<b>Power Factor</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources). Regulations 2013	While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate
2.10.4.13	<b>Islanding and Disconnection</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources). Regulations 2013	The photovoltaic system in the event of fault, voltage or frequency variations must island / disconnect itself within IEC standard on stipulated period
2.10.4.14	<b>Overload and Overheat</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources). Regulations 2013	The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored
2.10.4.15	<b>Paralleling Device</b>	IEEE 519 and CEA (Technical Standards for Connectivity of the Distributed Generation Resources). Regulations 2013	Paralleling device of photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point.
2.10.4.16	<b>Cables</b>	Relevant CEA regulations 2013 and subsequent amendments, if any, (Technical standards for connectivity of the distributed generation resource).	For interconnecting modules, connecting modules and junction boxes and junction boxes to inverter, DC copper cable of proper sizes shall be used. To connect inverter with AC panel AC copper cable of proper size shall be used.

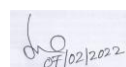
- 2.10.5. All switches and the circuit breakers, connectors should conform to IEC 60947 part I, II and III/IS60947 part I, II and III.
- 2.10.6. The change over switches, cabling work should be undertaken by the successful bidder as part of the project.
- 2.11. **CONNECTIVITY:**
  - 2.11.1. The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the Distribution Code/Supply Code of the State and amended from time to time.
  - 2.11.2. There is no maximum permissible capacity for rooftop for a single metering point.
  - 2.11.3. Utilities may have voltage levels other than above; TSECL may be consulted before finalization of the voltage level and specification is made accordingly.

- 2.11.4. Evacuation of Solar power to LT/ HT panel of Consumer at Ground floor level or as per requirement of DISCOM. It shall not be connected to a nearby load.
- 2.12. **DATA ACQUISITION SYSTEM / PLANT MONITORING:**
- 2.12.1. Data Acquisition System shall be provided for each of the solar PV plant.
- 2.12.2. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.
- 2.12.3. The system should have feature of open Application Programming Interface for inbuilt or external data loggers is mandatory for all plants above 25 KW.
- 2.12.4. Weather Monitoring for Solar Plant capacity 50kW and above:
- 2.12.4.1. Solar Irradiance: An integrating Pyranometer / Solar cell-based irradiation sensor (along with calibration certificate) provided, with the sensor mounted in the plane of the array. Readout integrated with data logging system.
- 2.12.4.2. Temperature: Temperature probes for recording the Solar panel temperature and/or ambient temperature to be provided complete with readouts integrated with the data logging system.
- 2.12.5. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
- 2.12.5.1. AC Voltage.
- 2.12.5.2. AC Output current.
- 2.12.5.3. Output Power
- 2.12.5.4. Power factor.
- 2.12.5.5. DC Input Voltage.
- 2.12.5.6. DC Input Current.
- 2.12.5.7. Time Active.
- 2.12.5.8. Time disabled.
- 2.12.5.9. Time Idle
- 2.12.5.10. Power produced
- 2.12.5.11. Protective function limits (Viz. -AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage).
- 2.12.6. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- 2.12.7. PV array energy production: Digital Energy Meters to log the actual value of AC/ DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT should be of 0.5 accuracy class.
- 2.12.8. Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- 2.12.9. String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.



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- 2.12.10. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
  - 2.12.11. The data shall be recorded in a common work sheet chronologically date wise. The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.
  - 2.12.12. All instantaneous data shall be shown on the computer screen.
  - 2.12.13. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
  - 2.12.14. Provision for instantaneous Internet monitoring and download of historical data shall be also incorporated.
  - 2.12.15. Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and temperature monitoring system.
  - 2.12.16. Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.
  - 2.12.17. Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.
  - 2.12.18. Remote Monitoring and data acquisition through Remote Monitoring System software at TREDAs location with latest software/hardware configuration and service connectivity for online / real time data monitoring / control complete to be supplied and operation and maintenance / control to be ensured by the bidder.
  - 2.12.19. The bidders shall be obligated to push real-time plant monitoring data on a specified intervals (say 15 minute) through open protocol at receiver location (cloud server) in XML/JSON format, preferably. Suitable provision in this regard will be intimated to the bidders.
  - 2.12.20. The bidder shall be obligated to measure the harmonic current injection, Direct Current injection and flicker with calibrated meters before the commissioning of the project once in a year in the presence of the TREDAs & DISCOM official at a mutually convenient time.
- 2.13. **TRANSFORMER "IF REQUIRED" & METERING:**
- 2.13.1. Dry/oil type relevant KVA, 11kV/415V, 50 Hz Step up along with all protections, switchgears, Vacuum circuit breakers, cables etc. along with required civil work.
  - 2.13.2. The electronic energy meter (0.5 S class) shall be installed for the measurement of energy.
  - 2.13.3. The Power Producer shall at its own cost install and maintain 4G modem with GSM SIM facility as specified by the DISCOM for integration of Meters for real time data / monitoring.
  - 2.13.4. The bidder must take approval/NOC from DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to TREDAs before commissioning of SPV plant.
  - 2.13.5. Reverse power relay shall be provided by bidder (if necessary), as per the DISCOM/TREDAs requirement.
- 2.14. **PROTECTIONS:** The system should be provided with all necessary protections like earthing, lightning, and grid islanding as follows:
- 2.14.1. **LIGHTNING PROTECTION:**
    - 2.14.1.1. The SPV power plants shall be provided with lightning and overvoltage protection. The main aim in this protection shall be



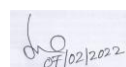
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to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 standard and CEA (Measures relating to Safety and Electric Supply) Regulations as amended from time to time. The protection against induced high-voltages shall be provided by the use of metal oxide arrestors (MOVs) and suitable and separate earthing such that induced transients find an alternate route to earth.

- 2.14.1.2. The earthing conductor made up of dip galvanized steel, should be installed with GI strip insulator or 16 sq.mm or above copper conductor only.
- 2.14.2. SURGE PROTECTION: Internal surge protection shall consist of three MOV type surge-arrestors connected from + ve and - ve terminals to earth (via Y arrangement).
- 2.14.3. EARTHING PROTECTION:
  - 2.14.3.1. The PV module structure components shall be electrically interconnected and shall be grounded.
  - 2.14.3.2. Earthing shall be done in accordance with IS 3043-1986, provided that earthing conductors shall have a minimum size of 6.0 mm<sup>2</sup> copper, 10 sq. mm Aluminum or 70 sq. mm hot dip galvanized steel. Unprotected aluminum or copper-clad aluminum conductors shall not be used for final underground connections to earth electrodes.
  - 2.14.3.3. A minimum of two separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure with a total earth resistance not exceeding 5 Ohm.
  - 2.14.3.4. The earth electrodes shall have a precast concrete enclosure with a removable lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.
  - 2.14.3.5. In case LA earthing conductors made up of dip galvanized steel, the conductor should having GI Strip Insulator.
  - 2.14.3.6. Total Nos. of Earth pits for Solar PV plant:
    - 2.14.3.6.1. For Solar PV plant upto 50 KW: 03 Nos. Earth pits: AC-01, DC-02 LA-01.
    - 2.14.3.6.2. For Solar PV plant above 50 KW: 05 Nos. Earth Pits: AC-02, DC-02, LA-01 (double run of earthing conductors for AC & DC).
- 2.14.4. GRID ISLANDING:
  - 2.14.4.1. 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

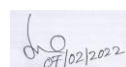
- islanding protection) disconnection due to under and over voltage conditions shall also be provided.
- 2.14.4.2. A manual disconnect 4-pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.
- 2.15. **CABLES:** Cables of appropriate size to be used in the system shall have the following characteristics:
- 2.15.1. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
  - 2.15.2. Temp. Range: -10oC to +80oC
  - 2.15.3. Voltage rating 660/1000V
  - 2.15.4. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
  - 2.15.5. Flexible
  - 2.15.6. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).
  - 2.15.7. For the DC cabling, XLPE or, XLPO insulated and sheathed, UV-stabilized single core multi-stranded flexible copper cables shall be used; Multi-core cables shall not be used.
  - 2.15.8. Multi Strand, Annealed high conductivity Cable (As per MNRE Guideline issued) conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/ XLPE insulation for UV protection Armored cable for underground laying.
  - 2.15.9. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use. Outer sheath of cables shall be electron beam crosslinked XLPO type and black in color.
  - 2.15.10. The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.
  - 2.15.11. Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
  - 2.15.12. All cables and conduit pipes shall be clamped to the rooftop, walls and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm; the minimum DC cable size shall be 4.0 mm<sup>2</sup> copper; the minimum AC cable size shall be 4.0 mm<sup>2</sup> copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires. Aluminum cables of required size can be used from ACDB to LT panel only.
  - 2.15.13. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified. In addition, cable drum no. / Batch no. to be embossed/ printed at every one meter.
  - 2.15.14. Cable Jacket should also be electron beam cross-linked XLPO, flame retardant, UV resistant and black in color.
  - 2.15.15. All cables and connectors for use for installation of solar field must be of solar grade which can withstand harsh environment conditions including High temperatures, UV radiation, rain,



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humidity, dirt, salt, burial and attack by moss and microbes for 25 years and voltages as per latest IEC standards. DC cables used from solar modules to array junction box shall be solar grade copper (Cu) with XLPO insulation and rated for 1.1kV as per relevant standards only.

- 2.15.16. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant shall be provided by the bidder. Any change in cabling sizes if desired by the bidder shall be approved after citing appropriate reasons. All cable schedules/ layout drawings shall be approved prior to installation.
- 2.15.17. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection. Armored cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.
- 2.15.18. The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%.
- 2.15.19. The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%.
- 2.15.20. Cables shall confirm the standards specified at PART 7 of the DNIe-T.
- 2.16. **TOOLS & TACKLES AND SPARES:**
- 2.16.1. After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder is to be submitted for approval of specifications and maker from TRED A.
- 2.16.2. A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes, fuses, MOVs / arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained in the plant itself for the entire period of warranty and Operation & Maintenance which upon its use shall be replenished.
- 2.17. **DANGER BOARDS AND SIGNAGES:** Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. At least three signages shall be provided one each at control room and solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with TRED A.
- 2.18. **FIRE EXTINGUISHERS:** The firefighting system for the proposed power plant for fire protection shall be consisting of:
- 2.18.1. Portable fire extinguishers for fire caused by electrical short circuits.
- 2.18.2. Sand buckets.
- 2.18.3. The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards.



- 2.18.4. The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.
- 2.19. **METERING / BIDIRECTIONAL (IMPORT KWh AND EXPORT KWh) SERVICE CONNECTION METER:**
  - 2.19.1. The existing service connection meter needs to be replaced with a bidirectional (import kWh and export kWh) service connection meter for the purpose of net-metering for eligible categories. Installation of the net meter will be carried out by DISCOM.
  - 2.19.2. Beneficiary will submit application to DISCOM to enable the connectivity of Solar rooftops with Grid and to avail net metering benefits.
  - 2.19.3. The successful bidder shall supply the bidirectional (import KWh and export KWh) meter as per standards given at PART 7 of this DNIe-T and get it installed by the DISCOM.
- 2.20. **DISPLAY BOARD:** Bidder should supply & install a sign board (not less than of size 4 ft. X 3 ft.) made of Aluminium sheet and MS Angle at a suitable location at the site of installation of system as per direction of the Officer-in-charge, TREDA. The sign board should contain the information as follows:
  - GRID CONNECTED SOLAR ROOFTOP POWER PLANT**
  - 2.20.1 Plant Capacity :
  - 2.20.2 Plant components :
  - 2.20.3 Beneficiary :
  - 2.20.4 Implementing Agency :
  - 2.20.5 Project Developer :
  - 2.20.6 Date of commissioning :
  - 2.20.7 Warranty, O&M valid upto :
  - 2.20.8 Contact person for maintenance with Mobile number :

**NOTE:**

- a) All the IEC standards to be mandatorily adhered as specified in this DNIe-T.
- b) Any left out specifications would be guided by latest MNRE guideline for Grid Connected Solar PV Applications.

SIGNATURE OF BIDDER WITH SEAL & DATE

## **PART 5: DETAILS OF WARRANTY AND OPERATION & MAINTENANCE (O&M) OBLIGATIONS**

### **5.1 WARRANTY:**

- 5.1.1 The Bidder shall warrant that the goods supplied under this Agreement are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials as per standards specified at PART 7 of this DNIE-T. The Power Producer shall provide warranty covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of TWENTY FIVE (25) Operational Years.
- 5.1.2 The PV modules will be warranted for a minimum period of 25 years from the date of commissioning. (Output wattage should not be less than 90% at the end of 10 years and 80% at the end of 25 years).
- 5.1.3 The mechanical structures, electrical components including evacuation infrastructure and overall workmanship of the Solar PV Rooftop power plant system must be warranted/maintain for a minimum of 25 years from the date of commissioning / commercial operation of the system.
- 5.1.4 The Comprehensive Maintenance (within warranty period) shall be executed by the firm themselves or through the authorized dealer/ service centre of the firm in the concerned district.
- 5.1.5 The service personnel of the Successful Bidder will make routine quarterly maintenance visits. The maintenance shall include thorough testing & replacement of any damaged parts. Apart from this any complaint registered/ service calls received / faults notified in the report generated by the IVRS should be attended to and the system should be repaired/ restored/ replaced within 7 (seven) days.
- 5.1.6 Normal and preventive maintenance of the SPV Rooftop Power Plant systems will also be the duties of the deputed personnel.
- 5.1.7 During operation and maintenance period of the SPV Rooftop Power Plant systems, if there is any loss or damage of any component due to miss management/miss handling or due to any other reasons pertaining to the deputed personnel, what-so-ever, the successful bidder shall be responsible for immediate replacement/rectification. The damaged component may be repaired or replaced by new component.
- 5.1.8 The successful bidder shall train, at its own cost, 2 (two) personals selected by User / TREDA for regular operation of the systems.
- 5.1.9 During the Warranty / Guarantee period, TREDA / District Project Officers of TREDA, / User reserves the right to cross check the performance of the systems with the minimum performance levels specified at PART 4 of this DNIE-T / MNRE latest Guidelines for grid connected SPV Power Plants.
- 5.1.10 Warrantee/guarantee Card is to be supplied with each system. The format of Warranty / Guarantee card should get approved from TREDA.

### **5.2 OPERATION AND MAINTENANCE:**

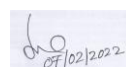
- 5.2.1 The operation & maintenance of the plant would include wear, tear, overhauling, machine breakdown, insurance, replacement of defective modules, invertors, PCU's, spares, consumables & other parts for a period of **25 (TWENTY FIVE)** years. This shall also include operation and maintenance of the evacuation infrastructure, as well.
- 5.2.2 Undertake day to day checks and maintenance activities, on round the clock basis, required to be carried out, as a recommended practice by

the manufacturer of the equipment, on all the components of the power plant to minimize breakdowns and to ensure smooth and trouble free operation of the plant and to get maximum output from the panels. The successful bidder shall be responsible to carry out routine and preventive maintenance and replacement of each and every component / equipment of the power plant and he shall provide all labour, material, consumables etc. for routine and preventive maintenance at his own cost.

- 5.2.3 Carry out maintenance activities as a result of sudden failure/breakdown of any particular component or equipment. It shall be responsible to carry out breakdown maintenance of each and every component of the power plant and shall provide the required manpower, materials, consumables, components or equipment etc. for breakdown maintenance at his own cost irrespective of the reasons of the breakdown/failure.
- 5.2.4 Undertake major overhaul of any component or equipment of the plant necessary on account of excessive wear & tear. Such maintenance of plant and all civil structures shall normally be planned to be carried out on an annual basis. For this purpose a joint inspection by the Contractor/Bidder, concerned Department and TREDA shall be carried out of all the major components of the power plant, about two months in advance of the annual maintenance period, in order to ascertain as to which components of the power plant require maintenance.
- 5.2.5 Prepare and maintain records towards maintenance of the plant, electricity generation, electricity injected into the distribution system etc.
- 5.2.6 Undertake inspection of meter towards faultiness regular intervals, report to the concerned Department & TREDA and replace the meter with a meter of similar specification complying with the requirements of Central Electricity Authority/Tripura Electricity Regulatory Commission/concerned Distribution Licensee (TSECL) at its own cost.
- 5.2.7 The Contractor/ Bidder(s) should not misuse the area and/or assign responsibility for the safety of machinery within the premises.
- 5.2.8 Yearly Annual Maintenance Report Format is given at Clause No. 5.8.6 below. The reports should be duly signed by Bidder's Representative / Construction Manager, User & TREDA / respective District Project Manager and are to be submitted to TREDA within 7<sup>th</sup> April of every year or 7<sup>th</sup> of preceding month of every year from commercial operation date / month of the Plant.
- 5.2.9 If any jobs covered in O&M Scope as per RFS are not carried out by the contractor/Bidders during the O&M period, the Engineer-In-Charge shall take appropriate action as deemed fit. TREDA reserves the right to make surprise checks/ inspection visits at its own or through authorized representative to verify the Operational & Maintenance activities being carried out by the Bidder. Failure to adhere to O&M guidelines will result in penal action including debarring from participation in next tender.
- 5.2.10 The bidder shall use the original parts in case of any fault in the PCU/Inverter during the AMC period of 25 years. In case the original part/parts are not available with the manufacturer of the PCU/Inverter (Based on certificate from the manufacturer), the bidder shall use the new parts of other standard brands available in the market or will use the repaired parts.

### 5.3 TERM:

- 5.3.1 The Contractor/Bidder shall be responsible for undertaking the



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operation and maintenance of the plant for a term of TWENTY FIVE (25) years from the date of entering into hand-over agreement of the plant to respective Beneficiaries.

5.3.2 The term for operation and maintenance of the plant may be extended for another five (5) years on mutually agreed terms and conditions and charges as quoted by the Contractor/ Bidder.

**5.4 ELECTRICITY GENERATION:** The Contractor/Bidder shall be solely responsible for the performance of the plant(s) and shall make all necessary efforts to maximize the electricity generation of the plant.

**5.5 METERING AND ASSOCIATED FACILITIES:** The metering of electricity shall be carried out as per the regulations stipulated by concerned DISCOM and / or Tripura Electricity Regulatory Commission / Central Electricity Authority. The Contractor/ successful Bidder shall have to accordingly arrange for the specified meter and metering facilities. It shall also be responsible for the requisite testing and inspection of meters, if required at authorised testing facility. It shall also be responsible for required interactions with the distribution licensee and shall state progress to the concerned department.

**5.6 FAILURE TO RECTIFY THE PROBLEM:**

5.6.1 If the Contractor/ Bidder(s) fails to rectify the plant downtime within 7 (seven) days from the date of identification of such defect, unless the extension in time is mutually discuss and agreed between the bidder and the respective Primary Beneficiary.

5.6.2 If the Contractor/Bidder(s) fails to rectify the problem, the respective Primary Beneficiary shall/may rectify the problem at the expense of the Contractor/ Bidder(s), in such case on genuine complaint TREDA will take appropriate action including forfeiture of PBG and blacklisting/debarring of the firm.

**5.7 LOCAL OFFICE / AGENT FOR INSTALLATION, COMMISSION & AFTER SALES SERVICE DURING WARRANTY / OPERATION & MAINTENANCE (O&M) PERIOD:**

5.7.1 Successful bidder should establish a local office at Agartala, Tripura and also must have authorized technically equipped agents / dealers preferably at least one in each operational district of the state with full support of infrastructure & sufficient spare parts as required and skilled technical persons for installation, commissioning & for providing after sales services during the warranty/guarantee and O & M period.

5.7.2 The successful bidder shall submit to TREDA the details of Authorized Agent, the name of skilled technical persons with T & P, complete addresses, contact number etc. along with the list of technicians with address and telephonic numbers to the office of the undersigned before commencement of supply of materials.

**5.8 OPERATION AND MAINTENANCE GUIDELINES:** For the optimal operation of a PV Plant, preventive maintenance must be carried out on a regular basis. All the components should be kept clean. It should be ensured that all the components are fastened well at their due place. Maintenance guidelines for various components viz. Solar PV Modules, Power Conditioning Unit, cabling works etc. are given below:

**5.8.1 SOLAR PV MODULES:**

5.8.1.1 Although the cleaning frequency for the modules will vary from site to site depending on soling, it is recommended that -- The SPV modules are cleaned at least once in every month.

- 5.8.1.2 Any bird droppings or spots should be cleaned immediately.
- 5.8.1.3 Use water and a soft sponge or cloth for cleaning.
- 5.8.1.4 Do not use detergent or any abrasive material for module cleaning.
- 5.8.1.5 Iso-propyl alcohol may be used to remove oil or grease stains.
- 5.8.1.6 Do not spray water on the module if the module glass is cracked or the back side is perforated.
- 5.8.1.7 Wipe water from the module as soon as possible.
- 5.8.1.8 Early morning is particularly good time for module cleaning.
- 5.8.1.9 Check if there is any shade problem due to vegetation or new building. If there are, arrange for removing vegetation or shift panel to shadow free place.
- 5.8.1.10 Ensure that the module terminal connections are not exposed while cleaning, this poses a risk of electric shock.
- 5.8.1.11 Never use panels for any unintended use, e. g. drying clothes, chips etc.
- 5.8.2 **CABLES AND CONNECTION BOXES:**
  - 5.8.2.1 Check the connections for corrosion and tightness.
  - 5.8.2.2 Check the connection box to make sure that the wires are tight, and the water seals are not damaged.
  - 5.8.2.3 There should be no vermin inside the box.
  - 5.8.2.4 Check the cable insulating sheath for crack, break or burn. If found damaged, replace the wire.
  - 5.8.2.5 If the wire is outside the building, use wire with weather-resistant insulation.
  - 5.8.2.6 Make sure that the wire is clamped properly and that it should not rub against any sharp edges or corners.
  - 5.8.2.7 If some wire needs to be changed, make sure it is of proper rating and type.
- 5.8.3 **POWER CONDITIONING UNIT (CHARGE CONTROLLER AND INVERTER):**
  - 5.8.3.1 The PCU / Inverter area should be clean, dry and ventilated.
  - 5.8.3.2 Remove any excess dust in heat sink and ventilation with only dry cloth or brush.
  - 5.8.3.3 Check that vermin have not infested the inverter. Typical signs of this include spider webs on ventilation grills or wasps' nests in heat sinks.
  - 5.8.3.4 Check functionality e.g., automatic disconnect upon loss of grid power supply, at least once a month, if the PV Plant is in operation with grid.
  - 5.8.3.5 Verify the state of DC/AC surge arrestors, cable connections and circuit breakers.
- 5.8.4 **SHUTTING DOWN THE SYSTEM:**
  - 5.8.4.1 Disconnect system from all power sources in accordance with instructions for all other components used in the system.
  - 5.8.4.2 Completely cover system modules with an opaque material to prevent electricity from being generated while disconnecting conductors.
  - 5.8.4.3 To the extent possible, system shutdown shall not be done during day time or peak generation period.
- 5.8.5 **INSPECTION AND MAINTENANCE SCHEDULE:**

Component	Activity	Description	Interval	By
PV Module	Cleaning	Clean any bird Droppings / dark spots on module	Immediately	User/Technician



**e-tender for grid connected SPV Power Plant in RESCO Model**

	Cleaning	Clean PV modules with plain water or mild dish washing detergent. Do not use brushes, any types of solvents, abrasives, or harsh detergents	Fortnightly or as per the site conditions	User/Technician
	Inspection (for plants >100kWp)	Use infrared camera to inspect for hot spots; bypass diode failure	Annual	Technician
PV Array	Inspection	<ul style="list-style-type: none"> <li>• Check the PV Modules and rack for any damage.</li> <li>• Note down location and serial number of damaged modules.</li> </ul>	Annual	User/Technician
	Inspection	Determine if any new objects, such as vegetation growth, are causing shading of the array and remove them if possible.	Annual	User/Technician
	Vermin Removal	Remove bird nests or Vermin from array and rack area.	Annual	User/Technician
Junction Boxes	Inspection	<ul style="list-style-type: none"> <li>• Inspect electrical boxes for corrosion or intrusion of water or insects.</li> <li>• Seal boxes if required.</li> <li>• Check position of switches and breakers.</li> <li>• Check operation of all protection devices.</li> </ul>	Annual	Electrician
Wiring	Inspection	Inspect cabling for signs of cracks, defects, loose connections, overheating, arcing, short or open circuits, and ground faults.	Annual	Electrician
Inverter	Inspection	Observe Instantaneous Operational indicators	Monthly	Electrician
	Service	<ul style="list-style-type: none"> <li>• Clean or replace any Air filters.</li> <li>• Spot-check monitoring instruments (pyranometer etc.) with standard instruments to ensure that they are operational and within specifications.</li> </ul>	As needed	Electrician
	Inspection	<ul style="list-style-type: none"> <li>• Observe instantaneous operational indicators on the faceplate of the inverter to ensure that the amount of power being generated is typical of the conditions.</li> <li>• Inspect Inverter housing or shelter for physical maintenance, if required.</li> </ul>	Monthly	Electrician
Instruments	Validation	Spot – check monitoring Instruments (pyranometer etc.) with standard instruments to ensure that they are operational and within	Annual	PV Specialist

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**e-tender for grid connected SPV Power Plant in RESCO Model**

		specifications.		
Plant	Monitoring	Daily Operation and Performance Monitoring	Daily	Site in charge
Transformer (if installed)	Inspection	Inspect transformer oil level, temperature gauges, breather, silica gel, meter, connections etc.	Annual	Electrician
	Inspection	Inspect gears, gear boxes, bearings as required.	Annual	Technician
	Service	Lubricate tracker mounting bearings, gearbox as required.	Bi-annual	Technician
Tracker (if present)	Inspection	Inspect gears, gearboxes, bearings as required.	Annual	Technician
	Service	Lubricate tracker mounting bearings, gearbox as required.	Bi-annual	Technician
Spare Parts	Management	Manage inventory of spare parts.	As needed	Site in charge
Log Book	Documentation	Document all O&M activities in a workbook available to all service personnel	Continuous	Site in charge

**5.8.6 ANNUAL MAINTENANCE REPORT:**

Date of commissioning / commercial operation of the Plant:

Year of Operation & Maintenance: 1<sup>st</sup> year / 2<sup>nd</sup> year / -----

Name of Contractor:

LoA reference No.:

Project Capacity:

Particulars of the site:

<b>Component</b>	<b>Activity</b>	<b>Description</b>	<b>Date</b>	<b>Name &amp; signature of user</b>	<b>Remarks#</b>
PV Module	Cleaning	Clean any bird Droppings / dark spots on module			
	Cleaning	Clean PV modules with plain water or mild dish washing detergent.			
	Inspection (for plants >100kWp)	Use infrared camera to inspect 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, are causing shading of the array. Remove, if any.			
	Vermin Removal	Remove bird nests or Vermin from array and rack area.			
Junction Boxes	Inspection	<ul style="list-style-type: none"> <li>• Inspect electrical boxes for corrosion or intrusion of water or insects.</li> <li>• Check position of switches and breakers.</li> <li>• Check operation of all protection devices.</li> </ul>			

**SIGNATURE OF BIDDER WITH SEAL & DATE**

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**e-tender for grid connected SPV Power Plant in RESCO Model**

Wiring	Inspection	Inspect cabling for signs of cracks, defects, loose connections, overheating, arcing, short or open circuits, and ground faults.			
Inverter	Inspection	<ul style="list-style-type: none"> <li>• Observe instantaneous operational indicators on the faceplate.</li> <li>• Inspect Inverter housing or shelter for any physical maintenance.</li> <li>• Check for connection tightness.</li> </ul>			
	Service	Clean or replace any Air filters.			
Instruments	Validation	Verify monitoring instruments (pyranometer etc.) with standard instruments to verify their operation within tolerance limits.			
Plant	Monitoring	Daily Operation and Performance Monitoring			
Transformer (if any)	Inspection	Inspect transformer oil level, temperature gauges, breather, silica gel, meter, connections etc.			
Tracker (if any)	Inspection	Inspect gears, gearboxes, bearings as required.			
	Service	Lubricate tracker mounting bearings, gearbox as required.			
Spare Parts	Management	Manage inventory of spare parts.			
Log Book	Documentation	Maintain log record			

[# Provide details of any replacement of systems/components, damages, plant/inverter shutdown (planned/forced), breakdown, etc under remarks.]

Total generation for the Year in KWh:

Cumulative generation since commissioning in KWh:

CUF for the Year in %:

Performance Ratio for the Year:

Name, Designation & Signature of Project Manager of the contractor with date & seal

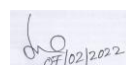
Signature of the Project Officer, TREDA with date & Seal

**PART 6: TECHNICAL INFORMATION**  
**(To be submitted in letterhead of successful bidder)**

<b>TECHNICAL INFORMATION</b>		
<b>Sl. No.</b>	<b>Description</b>	<b>Information to be furnished by successful bidder</b>
<b>6.1</b>	<b>Solar PV Module</b>	
6.1.1	Type of Module: Crystalline/ multi crystalline	
6.1.2	Manufacturer	
6.1.3	Max power at STC Pmax (W)	
6.1.4	Voltage at Max power Vmp(V)	
6.1.5	Current at Max power Imp(A)	
6.1.6	Open circuit voltage Voc (V)	
6.1.7	Short circuit current Isc (A)	
6.1.8	Module efficiency	
6.1.9	Fill factor	
<b>6.2</b>	<b>Solar Power Conditioning Unit / Inverter</b>	
6.2.1	Manufacturer	
6.2.2	Type: String type/central	
6.2.3	Operating voltage (DC)	
6.2.4	Operating voltage AC (pure sine wave)	
6.2.5	Details of Indicators provided	

**[NOTE: CAPACITY WISE TECHNICAL DETAILS ALONG WITH TYPE TEST CERTIFICATES AS PER DNIe-T SHALL BE SUBMITTED]**

(Authorised signatory of successful bidder)  
with seal & date



**PART – 7: QUALITY CERTIFICATION, STANDARDS AND TESTING FOR GRID - CONNECTED ROOFTOP SOLAR PV POWER PLANTS:**

7.1 Quality certification and standards for grid-connected rooftop solar PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected rooftop solar PV system/ plant must conform to the relevant standards and certifications given below:

7.1.1	Solar Photovoltaic (PV) Modules / Panels	<b>7.1.1.1 IEC / IS standards:</b>	
		IEC 61215-1 Ed -1 / IS 14286	Terrestrial photovoltaic (PV) modules - Design Qualification and Type Approval for Crystalline Silicon Terrestrial PV Modules
		IEC 61730-1 Ed.2	Photovoltaic (PV) module safety qualification - Part 1: Requirements for construction
		IEC 61730-2 Ed.2	Photovoltaic (PV) module safety qualification - Part 2: Requirements for testing
		IEC 61701:2011	Salt Mist Corrosion Testing of PV Modules
		IEC 61853- Part 1/ IS 16170: Part 1	Performance testing and energy ratings: Irradiance and temperature performance measurements and power rating of PV Modules
		IEC 62716	Ammonia (NH <sub>3</sub> ) Corrosion Testing of PV Modules
		IEC 62759-1	PV Module: Transportation testing, Part 1: Transportation and shipping of module package units.
		IEC TS 62804 – 1	Photovoltaic (PV) Modules – Test methods for the detection of Potential-induced Degradation (PID), Part 1: Crystalline Silicon.
		<b>7.1.1.2:</b> As per the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017, PV Modules used in the grid connected solar power projects shall be registered with BIS and bear the Standard Mark as notified by the Bureau of Indian Standards.	
		<b>7.1.1.3:</b> Further, PV Modules should have been included in the ALMM list as per MNRE Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019.	
7.1.2	Power Conditioning Unit / Solar PV Inverters	<b>7.1.2.1: IEC / IS Standards:</b>	
		IEC 61683 (As applicable)	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency (10%,25%,50%,75% & 90-100% Loading conditions)

	IEC 62109-1 Ed.1	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
	IEC 62109-2 Ed.1	Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters
	BS EN 50530 (as applicable)	Overall efficiency of grid-connected photovoltaic inverters: This European Standard provides a procedure for the measurement of the accuracy of the maximum power point tracking (MPPT) of inverters, which are used in grid connected photovoltaic systems.  In that case the inverter energizes a low voltage grid of stable AC voltage and constant frequency. Both the static and dynamic MPPT efficiency is considered.
	IEC 62116/ UL 1741/ IEEE	Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures
	IEC 60255-27	Measuring relays and protections equipment – Part 27: Product safety requirements
	IEC 60068-2 (1, 2, 14, 27, 30 & 64)	a) Environmental Testing of PV System – Power Conditioners and Inverters IEC 60068-2-1: Environmental testing - Part 2-1: Tests - Test A: Cold b) IEC 60068-2-2: Environmental testing - Part 2-2: Tests - Test B: Dry heat c) IEC 60068-2-14: Environmental testing - Part 2-14: Tests - Test N: Change of temperature d) IEC 60068-2-27: Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock e) IEC 60068-2-30: Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle) f) IEC 60068-2-64: Environmental testing - Part 2-64: Tests - Test Fagd: Vibration, broadband random and guidance
	IEC 61000 – 2,3,5 (as applicable)	Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing of PV Inverters
	IEC 60529	Ingress Protections (IP 65/IP 54)
	<b>7.1.2.2:</b> CEA Technical Standards for Connectivity to the Grid Regulations 2007 with 2013 Amendment	

		<b>7.1.2.3:</b> As per the Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017, Inverters used in the grid connected solar power projects shall be registered with BIS and bear the Standard Mark as notified by the Bureau of Indian Standards.	
7.1.3	LT Switchgear	IEC 61439-1	Low-voltage switchgear and control gear assemblies - Part 1: General rules
		IEC 61439-2	Low-voltage switchgear and control gear assemblies - Part 2: Power switchgear and control gear assemblies
		IEC 60947 (Part 1, 2 & 3), EN 50521	a) Low-voltage switchgear and control gear - Part 1: General rules b) Low-Voltage Switchgear and Control gear: Circuit Breakers c) Low voltage switchgear and control gear: Part 3 Switches, disconnectors, switch-disconnectors and fuse combination units
		IEC 60947-4-1	Low-voltage switchgear and control gear - Part 4-1: Contactors and motor-starters - Electromechanical contactors and motor starters
		IEC 60947-5-1	Low-voltage switchgear and control gear - Part 5-1: Control circuit devices and switching elements - Electromechanical control circuit devices
		IEC 62052-11	Electricity metering equipment (a.c.) - General requirements, tests and test conditions - Part 11: Metering equipment
		IS 694	Polyvinyl chloride insulated unsheathed-and sheathed cables/cords with rigid and flexible conductor for rated voltages - up to and including 450/750V
		IEC 61869	Instrument Transformers
		IS 3043	Code of practice for earthing
		IEC 60255	Measuring relays and protection equipment - Part 1: Common requirements
7.1.4	HT Switchgear	IS/IEC 62271-1	High Voltage Switchgear and Control gear - Part 1: Common Specifications
		IS/IEC 62271-100	High Voltage Switchgear and Control gear - Part 100: AC Circuit Breakers
		IS/IEC 62271-102	High Voltage Switchgear and Control gear - Part 102: AC Disconnectors and Earthing Switches
		IS/IEC 62271-200	High Voltage Switchgear and Control gear - Part 200: AC Metal Enclosed Switchgear and Control gear for Rated

			Voltages Above 1 kV and Up to and Including 52 kV
		IEC 61869	Instrument Transformers
		IS 3231	Electrical relays for power systems protection
		IEC 60255	Measuring relays and protection equipment
		IEC 61850	Communication networks and systems for power utility automation
		IEC 61131-3	Programmable controllers - Part 3: Programming languages
		IS 9385	High voltage fuses
		IS 9431	Indoor post insulators of organic material for systems with nominal voltages greater than 1000 V up to and including 300 kV
		IEC 60099-4	Surge arresters - Part 4: Metal-oxide surge arresters without gaps for A.C. systems
		IS 3070-3	Lightning Arresters for Alternating Current Systems - Part 3: Metal Oxide Lightning Arresters Without Gaps
		IEC 62052-11	Electricity metering equipment (A.C.) - General requirements, tests and test conditions - Part 11: Metering equipment
		IEC 62053	Electricity metering equipment (A.C.) - Particular requirements
		IS 14697	AC Static Transformer Operated Watthour and Var-hour Meters, Class .2S and 0.5S
7.1.5	String Combiner Box	IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP65 protection for outdoor use, and IP 54 protection for indoor use
		IEC 62262	Enclosure Impact Protection
		IEC 60269	Fuse
		IEC 61643-11	Surge Protection Device
		IEC 62852 or EN 50521	Solar cable connector
		IEC 60695-2-11	Fire hazard testing
7.1.6	Fuses	IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC)
		IEC 60269-6	Low voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of Solar PV Energy Systems
7.1.7	Surge Arrestors	IEC 62305-4	Lightning Protection Standard
		IEC 61643-11:2011	Low voltage surge protective devices - Part 11: Surge protective devices connected to low voltage power systems - Requirements and test



			methods
		IEC 60364-5-53 / IS 15086-5 (SPD)	Electrical installations of buildings- Part 5-53: Selection and erection of electrical equipment- Isolation, switching and control
7.1.8	Cables	IEC 60227/IS 694, IEC 60502/IS1554 (Part 1 & 2)	General test and measuring method for PVC (Polyvinyl Chloride) insulated cables for working voltage upto and include 1100V, and UV resistant for outdoor installation
		BS EN 50618	Electric cables for photovoltaic systems [BT(DE/NOT)258], mainly for DC cables.
		IS 7098	Crosslinked polyethylene insulated PVC sheathed cables, a) Part 1: For working voltage up to and including 1100 V b) Part 2: for Working Voltages from 3.3 kV up to and Including 33 kV
7.1.9	Earthing / Lightning	IS:3043-1987	Code of practice for earthing
		IEC 62561 Series (Chemical Earthing)	a) IEC 62561-1: Lightning protection system components (LPSC)- Part 1: Requirements for connection components b) IEC 62561-2: Lightning protection system components (LPSC)- Part 2: Requirements for conductors and earth electrodes c) IEC 62561-7: Lightning protection system components (LPSC)- Part 7: Requirements for earthing enhancing compounds
7.1.10	Energy meter	IS 16444 or as specified by the DISCOM	AC Static direct connected watt-hour Smart Meter Class 1 and 2 - Specification with Import & Export / Net energy measurements
7.1.11	Solar PV Roof Mounting Structure	IS 2062/IS4759	Materials for the structure mounting.
7.1.12	Switches/Circuit Breakers /Connectors	IEC 60947 part I,II, III / EN 50521	General Requirements Connectors - safety A.C./D.C.
<p>NOTE:</p> <p>a) Equivalent standards may be used for different system components of the plants. In case of clarification following person/agencies may be contacted.</p> <ul style="list-style-type: none"> <li>• Ministry of New and Renewable Energy (Govt. of India)</li> <li>• National Institute of Solar Energy</li> <li>• The Energy &amp; Resources Institute</li> <li>• TUV Rhineland</li> <li>• UL</li> </ul>			

**FORMAT - 1**

**[To be submitted in the letterhead of the bidder]**  
**GENERAL PARTICULARS OF BIDDER**

<b>1.</b>	Details Bidder	
a)	Name of Bidder	
b)	Postal Address	
c)	Mobile No.	
d)	e-mail address	
e)	Geo-coordinates of the office	
<b>2.</b>	Legal status of <b>bidder</b> (Please specify)	a) Body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment there to b) Body incorporated in India under Limited Liabilities Partnership (LLP) Act, 2002 including any amendments thereto c) Firm Registered Partnership Firm registered under Partnership Act. 1932 in India d) Government of India / State Government Undertaking.
<b>3.</b>	Technical Status of bid	a) Manufacturer b) System Integrator
<b>4.</b>	In case of Manufacturer, (Please specify the component)	a) SPV Module b) Power Conditioning Unit (PCU) of SPV Power Plants
<b>5.</b>	Name, designation of the authorized representative of the Bidder to whom all references shall be made	
<b>6.</b>	Mobile No. of authorized representative	
<b>7.</b>	Name and address of the Indian / Foreign Collaboration if any	
<b>8.</b>	Have anything/extra other than price of items (as mentioned in price Schedule) been written in the price schedule.	
<b>9.</b>	Have the Bidder ever been debarred by any Govt. Deptt. / Undertaking for undertaking any work? (Upload undertaking)	
<b>10.</b>	Details of offer (please mention number of pages and number of Drawings uploaded)	
<b>11.</b>	Reference of any other information attached by the bidder (please Mention no. of pages & no. of drawings)	

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

Page **74** of **91**

**SIGNATURE OF BIDDER WITH SEAL & DATE**

**FORMAT 2**

**[To be submitted in the letterhead of the bidder]**

**SCHEDULE OF EXPERIENCE / CREDENTIAL**

Sl. No.	Type of System (Grid connected SPV Power Plants)	Details of system installed	Year of awarding the contract	Year of completion of work	Name of Deptt. / Nodal Agency/beneficiary for which work was carried out	Size of the work in KW	Cost of work (IN lakhs)	Copy of the Work Order and corresponding Commissioning certificate#
A	B	C	D	E	F	G	H	I

**NOTE:**

1. Please attach Work Order(s) / Letter of Award and corresponding Commissioning Certificate(s) in support from the concerned State Nodal Agency /Govt. Departments / Government Organization, in case of private owner the Work Order(s) / Letter of Award and corresponding Commissioning Certificate(s) should be certified with officer of State Nodal Agency/Govt. Department / Government organization.
2. Projects commissioned during 2016-17, 2017-18, 2018-19, 2019-20, 2020 -21 and till date of floating of tender will be considered.
3. Copy of the Work Order(s) / Letter of Award and corresponding Commissioning Certificate(s) should be marked with Annexure numbers before uploading.

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

**FORMAT 3**

**[SHOULD BE SUBMITTED IN THE LETTERHEAD OF THE BIDDER AND SHOULD BE CERTIFIED BY THE PRACTICING CA OF THE BIDDER]**

Name of Tender	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis
DNIe-T	No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022
Name of bidder	

**PART A**

**ANNUAL TURNOVER DATA FOR LAST 3 YEARS**

Year	Net Worth (In INR)	Annual Turnover (In INR)
<b>Annual Average</b>		

**PART B**

**INFORMATION ON PROFITABILITY**

**Profit before Tax data for last 3 years**

Year	Amount (In INR)

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

**Certified by CA**

**FORMAT 4**

**PERFORMANCE SECURITY BOND FORMAT**  
**(MODEL BANK GUARANTEE FORMAT FOR PERFORMANCE SECURITY)**

**To**

**The Director General,**

Tripura Renewable Energy Development Agency,  
Deptt. Of Power, Govt. of Tripura,  
Gorkhabasti, Agartala, West Tripura District, Tripura,  
Pin:799006. E-mail: [tredaagartala@gmail.com](mailto:tredaagartala@gmail.com).

WHEREAS ..... (Name and address of the agency) (Hereinafter called as "The Contractor") has undertaken, in pursuance of Contract / Letter of Award (LoA) No. ...., dated ..... for "Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis" (Hereinafter called "The Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall have to furnish a Bank Guarantee by a Nationalized Bank having Branches at Agartala, Tripura for the sum specified therein as security for compliance with its obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor such Bank Guarantee.

NOW THEREFORE, we hereby affirm that we are guarantor and responsible to you, on behalf of the Contractor, up to a total of ..... (amount of guarantee in words and figures), and we undertake to pay you, upon your first written demand declaring the Contractor to be default under the Contract and without cavil or argument, any sum or sums within the limits of (Amount of guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the Contractor before presenting us with the demand.

We further agree that no change or addition to or other modifications of the terms of the Contract to be performed there under or of any of the Contract document which may be made between you and the Contractor shall in any way release us from any liability under this guarantee and we hereby waive notice of any such changes, addition or modification.

This guarantee shall be valid until the ..... day of 20.....

**Name of Bank:**

**(Signature of the authorized officer of the Bank)**

**Branch:**

**Name, Designation & Code No.:**

**Address:**

**Date: .....**

**Seal:**

**Phone Number:**

**SIGNATURE OF BIDDER WITH SEAL & DATE**

**FORMAT 5**

**POWER OF ATTORNEY**

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

**Power of Attorney to be provided by the Bidding Company in favour of its representative as evidence of authorized signatory's authority.**

Know all men by these presents, We .....

(Name and address of the registered office of the Bidding Company as applicable) do hereby constitute, appoint and authorize Mr./Ms. .... (name & residential address) who is presently employed with us and holding the position of..... as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for "Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis" in response to DNIE-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022 issued by Tripura Renewable Energy Development Agency, constituent organization of Deptt. Of Power, Gorkhabasti, Agartala, West Tripura District, Tripura, Pin:799006 including signing and submission of the Bid and all other documents related to the Bid, including but not limited to undertakings, letters, certificates, acceptances, clarifications, guarantees or any other document which the TREDA may require us to submit. The aforesaid Attorney is further authorized for making representations to the TREDA, Agartala and providing information / responses to TREDA, Agartala representing us in all matters before TREDA, Agartala and generally dealing with TREDA, Agartala in all matters in connection with this Bid till the completion of the bidding process as per the terms of the above mentioned DNIE-T.

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

All the terms used herein but not defined shall have the meaning ascribed to such terms under the DNIE-T.

Signed by the within named ..... (Insert the name of the executant company) through the hand of Mr. ....duly authorized by the Board(vide Board resolution No\_\_\_\_\_) to issue such Power of Attorney Dated this ..... day of .....

Accepted  
Signature of Attorney  
(Name, designation and address of the Attorney)  
Attested

**SIGNATURE OF BIDDER WITH SEAL & DATE**

.....  
(Signature of the executant)  
(Name, designation and address of the executant)

Signature and stamp of Notary of the place of execution Common seal of ..... has been affixed in my/our presence Pursuant to Board of Director's Resolution dated.....(Board of Director's Resolution is also enclosed)

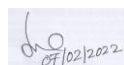
**WITNESS**

i) .....  
(Signature)  
Name.....  
Designation .....

ii) .....  
(Signature)  
Name.....  
Designation .....

**Notes:**

The mode of execution of the power of attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and the same should be under common seal of the executant affixed in accordance with the applicable procedure. Further, the person whose signatures are to be provided on the power of attorney shall be duly authorized by the executant(s) in this regard.



**FORMAT 6**

**AUTHORIZATION LETTER OF BIDDER**

**(To be submitted in the letterhead of the bidder)**

Name of Tender	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis
DNIe-T	No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022

**To**

**The Joint Director,**

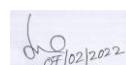
Tripura Renewable Energy Development Agency,  
Deptt. Of Power, Govt. of Tripura,  
Gorkhabasti, Agartala, West Tripura District, Tripura,  
Pin:799006. E-mail: [tredaagartala@gmail.com](mailto:tredaagartala@gmail.com).

<Bidder's Employee Name> \_\_\_\_\_,  
<Designation> \_\_\_\_\_ is hereby authorized to sign relevant documents on behalf of the company/ firm in dealing with Bid of reference < Tripura Renewable Energy Development Agency, constituent organization of Deptt. Of Power, Gorkhabasti, Agartala, West Tripura District, Tripura, Pin-799006 vide DNIe-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022. He is also authorized to attend meetings & submit pre- qualification, technical & commercial information as may be required by you in the course of processing the above said Bid. For the purpose of validation, his/ her verified signatures are as under.

Thanking you,

Verified Signature:

Name of the Bidder: -  
Authorised Signatory: -  
Seal of the Organization: -  
Date:  
Place:



Handwritten signature and date stamp: 07/02/2022



**FORMAT 7**

**(SHOULD BE ATTESTED BY NOTARY PUBLIC)**

**AFFIDAVIT – NO BLACK LISTING**

In response to the DNIE-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022 for “Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis” as an owner/ partner/ Director of \_\_\_\_\_, I/ We hereby declare that presently our Company/ firm \_\_\_\_\_ is having unblemished record and is not declared ineligible for corrupt & fraudulent practices either indefinitely or for a particular period of time by any State/ Central Government/ PSU.

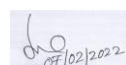
We further declare that presently our Company/ firm \_\_\_\_\_ is not blacklisted and not declared ineligible for reasons other than corrupt & fraudulent practices by any State/ Central Government/ PSU on the date of Bid Submission. If this declaration is found to be incorrect then without prejudice to any other action that may be taken, my/ our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

A small rectangular stamp containing a handwritten signature and the date "07/02/2022".

## **FORMAT 8**

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

### **DECLARATION BY THE BIDDER**

**(Regarding e-Tender Notice vide DNIE-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022)**

I/We \_\_\_\_\_ (hereinafter referred to as the bidder) being desirous of tendering for the work under the above mentioned tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document, DO HEREBY DECLARE THAT-

- 1) The Bidder is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document.
- 2) The Bidder is capable of executing and completing the work as required in the tender.
- 3) The Bidder accepts all risks and responsibilities directly or indirectly connected with the performance of the tender.
- 4) The Bidder has no collusion with other contractor, any employee of TREDA / Department of Power, Govt. of Tripura or its autonomous bodies or with any other person or firm in the preparation of the bid.
- 5) The Bidder has not been influenced by any statement or promises of TREDA / Department of Power, Govt. of Tripura or its autonomous bodies or any of its employees but only by the tender document.
- 6) The Bidder is financially solvent and sound to execute the work.
- 7) The Bidder is sufficiently experienced and competent to perform the contract to the satisfaction of TREDA.
- 8) The information and the statements submitted with the tender are true.
- 9) The Bidder is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Central Government that may affect the work, its performance or personnel employed therein.
- 10) The Bidder has not been debarred or Black Listed from similar type of work by TREDA and or Central / State Government Departments /Undertaking during last three years.
- 11) This offer shall remain valid for acceptance for 180 (one hundred eighty) days from the date of opening of the tender.
- 12) The Bidder gives the assurance to execute the work as per technical specifications, terms and conditions of the DNIE-T.
- 13) The Bidder assured to execute the work in accordance to the time schedule as per PERT Network duly approved by TREDA.
- 14) The terms and conditions of DNIE-T will be binding upon bidder in the event of acceptance of their tender.
- 15) The Bidder has electronically paid the Tender Fee and BID SECURITY / EMD as required in the tender document.
- 16) The Bidder accepts that the Bid Security / Earnest Money Deposit / Performance Bank Guarantee be partially / absolutely forfeited by TREDA as per the terms & conditions laid down in this DNIE-T.

Date: \_\_\_\_/\_\_\_\_/2022

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

**FORMAT 9**

**COVERING LETTER**

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

To  
The Joint Director,  
Tripura Renewable Energy Development Agency,  
VigyanBhawan, P.N. Complex, Gorkhabasti,  
Agartala, West Tripura District,  
Pin; 799006.

**SUB: Offer in response to DNIE-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022 for Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.**

Sir,

We are submitting our offer in full compliance of the terms & conditions of the above cited DNIE-T. A blank copy of tender duly signed on each page is also uploaded as a proof of our acceptance of all specifications as well as all the terms & conditions.

We confirm that, we have the capability for design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model within the time period specified in the DNIE-T with necessary infrastructures for providing warranty obligations, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.

We have electronically deposited the Tender Fee of Rs. 10,000/- (Rupees ten thousand) only and Bid Security / EMD of Rs. 9,78,810/- (Rupees nine lakh seventy eight thousand eight hundred ten) only through e-procurement portal.

We confirm that our offered rate would be valid for at least 180 (one hundred eighty) days from the date of opening of tender.

The e-tender is uploaded in two separate files named Part-A for technical bid & Part-B for Price Bid.

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

**FORMAT 10**

[To be submitted in the letterhead of the bidder including full postal address, telephone, faxes and e-mail address]

**FORMAT FOR QUERIES OF BIDDER ON TENDER FOR PRE-BID MEETING**

Name of Tender	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis			
DNIe-T	No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022			
Tender ID				
Bid Opening Date	02/03/2022			
Name of bidder				
Name of contact person from Bidder with address, e-mail and Contact Number				
Sl. No.	Section No.	Description as per DNIe-T	Queries / Clarifications of the bidder	Remarks
	Page No.			
	Clause No.			
	Para No.			
1	Section No.			
	Page No.			
	Clause No.			
	Sub-clause No.			
2	Section No.			
	Page No.			
	Clause No.			
	Sub-clause No.			
3	Section No.			
	Page No.			
	Clause No.			
	Sub-clause No.			

[**NOTE:** Clarifications if required may be forwarded in above format to [tredaagartala@gmail.com](mailto:tredaagartala@gmail.com) within the timeline stipulated in BID INFORMATION SHEET, any queries after deadline will not be entertained]

(Signature of the authorized signatory)

Name:

Designation:

Company Seal:

**FORMAT 11**  
**[LETTER OF INTENT (LoI)]**

**TRIPURA RENEWABLE ENERGY DEVELOPMENT AGENCY**

(Power Department, Government of Tripura)  
Vigyan Bhawan, Pandit Nehru Complex, Gorkhabasti, Agartala, Tripura  
Tele-fax: 0381-2325900, 2326139, email-tredaagartala@gmail.com

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No. F. 6(246)/TREDA/NCES/2019/\_\_\_\_\_

Date \_\_\_/\_\_\_/202\_

To  
M/S \_\_\_\_\_  
\_\_\_\_\_

**SUB:** Letter of Intent (LoI) against your bid submitted to this office for Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis.

**REF :** 1. Tender ID No. \_\_\_\_  
2. DNIE-T No.F. 6(246)/TREDA/NCES/19/3865, dated 07/02/2022  
3. Online bid reference of e-procurement portal:

Sir / Madam,

This is to inform you that, the bid submitted as stated above is under consideration by the appropriate authority subject to your fulfilment of the terms & conditions of the tender and all codal procedures.

You are therefore requested to deposit the **“Performance Bank Guarantee”** for an amount of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_) vide Clause No. \_\_\_\_\_ at Page \_\_\_\_\_ on or before \_\_\_/\_\_\_/2022 by 5:30 PM for completion of Pre-Award codal procedures.

Failure to comply with the same shall result to your Bid being cancelled and the EMD deposited with respect to the stated tender will be forfeited. Further your submission of “Performance Bank Guarantee” does not entail you with right to get the order, unless all the other Tender conditions are satisfied with due verification.

Yours sincerely

Authorized Signatory  
Tripura Renewable Energy Development Agency

**FORMAT 12****PROJECT REPORT FORMAT****(Format for Summary Project Report for Grid Connected Rooftop SPV Power Plants)**

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

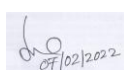
Sl. No.	Component	Specifications	Quantity	Make
A	Solar PV module			
A.1	Aggregate Solar PV Capacity (kWp)			
B	Grid Tie inverter(Type and Capacity)			
B.1	Aggregate Inverter capacity (KVA)			
C	Module mounting structure (Certified by a Structural Engineer (Mandatory for $\geq 10\text{kW}$ ))			
D	Array Junction Box			
E	AC Distribution Board			
F	Cable (All type)			
G	Earthing Kit (maintenance free)			
H	Meters			
I	Online monitoring system			
J	Any other component			
K	Transformer			

7. Unit cost of solar power generation
8. Cost benefit analysis, payback period
9. Expected output/annum
10. Respective drawings for layout, electrical wiring connections, Earthing, components etc.
11. Connectivity details with grid and metering arrangement (with sketch diagram)
12. Copy of electricity bill of the beneficiary and consumer number
13. Any other information
14. Documentary proof regarding beneficiary type as per Clause 2.2 under SECTION-2 of the DNIE-T.

Name, Designation & Signature of Project Manager of the contractor with date & seal

Signature of the Project Officer, TREDA with date & Seal

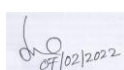
SIGNATURE OF THE BIDDER WITH SEAL & DATE

 OFF/02/2022

**FORMAT 13****A. Project Completion Report for Grid-Connected Rooftop:**

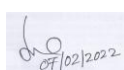
<b>Financial year</b>			
<b>LoA No.</b>			
<b>Approval No. of TREDA:</b>			
<b>Proposal Title</b>			
<b>Name of Developer</b>			
<b>Name of Office / Institution</b>			
<b>City / Town</b>		<b>Sub-division</b>	
<b>District</b>		<b>Latitude</b>	
<b>State</b>	<b>Tripura</b>	<b>Longitude</b>	
<b>Name of the contact person</b>		<b>Designation of contact person</b>	
<b>e-mail ID</b>		<b>Land / Mobile No.</b>	
<b>Title of the Project</b>		<b>SPV Capacity (KWp)</b>	
<b>Electricity Distribution Company Name</b>		<b>Electrical Sub - division (ESD) of Electricity Distribution Company</b>	
<b>Electricity consumer account no. as per electricity bill</b>		<b>Sanction Load</b>	
<b>Technology Description &amp; System Design /Specification</b>			
<b>(Compliance to BIS/ IEC Standards is mandatory - Attach Copies)</b>			
<b>1. SOLAR PV MODULE</b>			
<b>Power of each PV Module (Wp):</b>		<b>Make of each PV Module:</b>	
<b>Cumulative Capacity of Modules(KWp):</b>		<b>Solar cell technology:</b>	
<b>Module efficiency (in Percentage):</b>		<b>Azimuth</b>	
<b>Indigenous or imported:</b>		<b>RFID passed inside or outside:</b>	
<b>2. INVERTERS</b>			
<b>Type of inverter</b>		<b>Power of each PCU / inverters (KVA)</b>	
<b>Nos. of PCU/Inverters</b>		<b>Make of PCU/Inverters</b>	
<b>Capacity/Power of PCU/inverters</b>		<b>Type of Charge Controller / MPPT</b>	

SIGNATURE OF THE BIDDER WITH SEAL &amp; DATE



(KVA)			
Inverter efficiency (Full load) (in percentage)			
Grid connectivity level phase	Single Phase / Three Phase	Grid connectivity level Voltage	230 V/ 415 V
<b>3. MOUNTING STRUCTURES</b>			
Type		Surface Finish	
Material		Wind Speed Tolerance	
<b>4. CABLES</b>			
DC Cable Make & Size		Length	
AC Cable Make & Size (Inverter to ACDB)		Length	
AC Cable Make & Size (ACDB to Electric Panel)		Length	
Conductor	Multi strand high conductivity Copper	Insulation/sheath	PVC /XLPE Insulated
<b>5. JUNCTION BOX &amp; DISTRIBUTION BOARDS</b>			
Type	Weather proof, dust & vermin proof	Make	
Nos.			
<b>6. EARTHING &amp; LIGHTNING PROTECTION</b>			
<b>A. EQUIPMENT EARTHING</b>			
AC (Nos.)		Earth Resistance	
DC (Nos.)		Earth Resistance	
<b>B. LIGHTNING ARRESTORS (LA)</b>			
Type			
LA (Nos.)		Earth Resistance	
<b>7. ONLINE MONITORING MECHANISM</b>			
Web Portal			
USER ID		Password	
<b>8. WEATHER MONITORING</b>			
Solar Irradiance (Pyranometer - Class Kind or better)		Temperature	Ambient & Module
Wind speed sensor			
<b>9. FIRE FIGHTING DEVICE / SYSTEM</b>			
Make		Nos.	

SIGNATURE OF THE BIDDER WITH SEAL &amp; DATE





**10. DANGER BOARD**

**Annexure:** System test Reports & Earth test reports.

Name, Designation & Signature of Project Manager of the contractor with date & seal

Signature of the Project Officer, TREDA with date & Seal

**B. Commissioning Test Report ..... KW**

**Inverter Testing (DC) Side: Nos. of Inverter: ..... Nos.**

Inverter Sl. No.	Capacity	String 1: Voc	String 2: Voc	Remark

**Inverter Testing (AC) Side - Single / Three Phase**

Inverter Sl. No.	Capacity	R - Y / P - N	Y - B	B - R	R - N	Y - N	B - N	Remark

**ACDB & Meter Panel Testing - Single / Three Phase**

	R - Y / P - N	Y - B	B - R	R - N	Y - N	B - N	Remark
ACDB I/C (V)							
ACDB O/G (V)							
Meter Panel I/C							
Meter Panel O/G							

**Earthing Pit Details: Nos. of Earth Pit: ..... Nos.**

	Earthing AC	Earthing DC	Earthing LA	Remark
Earth Test Value (Ohm)				

Name, Designation & Signature of Project Manager of the contractor with date & seal

Signature of the Project Officer, TREDA with date & Seal

**FORMAT 14**

**JOINT COMMISSIONING REPORT (JCR)**

1.	Name of Work	:	Installation & commissioning of grid connected Solar Photovoltaic Power Plant in RESCO Model
2.	Capacity of the Power Plant	:	
3.	Location of the installation	:	
4.	Latitude & Longitude of location	:	Latitude: _____ Longitude: _____
5.	Letter of Award No.	:	
6.	Approval No. of TREDA	:	
7.	Name of contractor / supplier including contact number	:	

Certified that \_\_\_\_\_ KWp Grid Connected SPV Power Plant of has been installed on \_\_\_\_\_ in compliance with DNIE-T / BIS / MNRE specifications.

The system has been checked for its performance on \_\_\_\_\_ with installation of bi-directional meter and it is working satisfactorily.

Name, Designation & Signature of the Project Manager of the contractor with date & seal

Name, Designation & Signature of the authorized representative of user organization with date & seal

Signature of the Project Officer, TREDA with date & Seal

# PART B (PRICE BID)

**[NOTE: BOQ FORMAT FOR REFERENCE ONLY, PRICE TO BE FILLED IN SEPARATE BOQ FILE]**

A	B	D	E	L	M	BC
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>Validate</span> <span>Print</span> <span>Help</span> <span style="margin-left: 20px;">Item Wise BoQ</span> </div>						
1						
4 <b>Tender Inviting Authority:</b> < Joint Director, Tripura Renewable Energy Development Agency, Department of Power, Govt. of Tripura >						
5 <b>Name of Work:</b> <Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis>						
6 <b>DNle-T:</b> <No.F. 6(246)/TREDA/NCES/2019/3865, dated 07/02/2022>						
8 <b>Name of the Bidder/ Bidding Firm /</b>						
<b>PRICE SCHEDULE</b> (DOMESTIC TENDERS - RATES ARE TO GIVEN IN RUPEES (INR) ONLY) (This BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for this tender. Bidders are allowed to enter the Bidder Name and Values only )						
9						
10						
NUMBER	TEXT #	NUMBE	TEXT	TEXT #	NUMBER #	TEXT #
Sl. No.	Item Description	Capacit y	Units	Quoted Currency in INR / Other Currency	FIXED TARIFF In Figures To be entered by the Bidder in Rs. P	TOTAL AMOUNT In Words
11						
12	1	2	4	5	12	7
	1	Design, manufacture, supply, erection, testing and commissioning of Grid Connected Rooftop Solar Power Plants in RESCO Model including warranty, operation & maintenance for 25 years in various Government Buildings/Offices in the State of Tripura on turn-key basis	1000.00	Kwp	INR	INR Zero Only
13 <b>Quoted Rate in Words</b>			<b>INR Zero Only</b>			
16						
17						
18						
19						
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>BoQ1</span> <span>+</span> </div>						

SIGNATURE OF THE BIDDER WITH SEAL & DATE