



# ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

## **(E-Procurement Tender Notice)**

### **Tender Schedule**

**For**

**Design, Supply, Installation, Testing and commissioning of 200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode**

**Tender Notice No: - TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020, Dated. \_09.11.2020**

**CLOSING DATE: 26.11.2020 AT 5.00 PM**



**TELANGANA STATE RENEWABLE ENERGY DEVELOPMENT CORPORATION LTD  
(TSREDCO)**

**Corporate Office: D. No. 6-2-910, Visvesvaraya Bhavan,  
The Institution of Engineers Building, Khairatabad, Hyderabad - 500 004.  
Telangana State, India**

**PHONE: 040-23201502, 23201503, FAX : 040-23201504**

**E-mail : [info@tsredco.telangana.gov.in](mailto:info@tsredco.telangana.gov.in), [se@tsredco.telangana.gov.in](mailto:se@tsredco.telangana.gov.in)**

**Web site: [tsredco.telangana.gov.in](http://tsredco.telangana.gov.in)**



# **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

## **Contents**

<b>Description</b>	<b>Page No.</b>
Website advertisement	3
Section I - Invitation For Bids (IFB)	4-10
Section II - Instructions to the bidder (ITB) & General Conditions	11-33
Section III - Tender Schedule	34-38
Section IV - Bid Evaluation and Selection of Projects	39-42
Section V - Technical Specifications	43-67
Section VI - Other Provisions	68-70
Section VII - Financial Bid	71-72
Section VIII - Sample Forms and Formats For Bid Submission	72-94
Section IX - Draft PPA	97-146
Section X - Draft Escrow Agreement	147-165



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### **Website advertisement**



#### **TELANGANA STATE RENEWABLE ENERGY DEVELOPMENT CORPORATION LTD - (TSREDCO)**

Corporate Office: D. No. 6-2-910, Visvesvaraya Bhavan, The Institution of Engineers Building, Khairatabad, Hyderabad, 500 004. Telangana State  
PHONE: 040-23201502, 23201503, FAX : 040-23201504

Online tenders are hereby invited from interested and eligible bidders for **“Design, Supply, Installation, Testing and commissioning of 200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode”**. Interested bidders can download the bids online from 10.11.2020 and submit the same, from 21.11.2020 to 26.11.2020 till 05:00PM through [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in). For further details please visit our website: <https://tsredco.telangana.gov.in>

**Date:09.11.2020**

VC & MD,  
TS REDCO



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

---



**SECTION - I**

**INVITATION FOR BIDS (IFB)**



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### Tender Notice SECTION - I: INVITATION FOR BIDS (IFB)

1. **Name of Work:** Design, Supply, Installation, Testing and commissioning of 200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode under Net-metering Scheme.

**Bid Document No:** TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020,  
**Dt.09.11.2020**

2. **Background:** Government of Telangana through G.O.MS.No.25, Dated. 03.09.2015 nominated Telangana State Renewable Energy Development Corporation Limited as Nodal Agency for implementation of New & Renewable Energy Programs in the state of Telangana.

The Govt. of Telangana has announced Telangana Solar Power Policy 2015 with provisions for promotion of Grid connected Solar Rooftop systems with net metering/gross metering option to the consumers. The following are the provisions for promotion of grid connected solar rooftop TS. Solar Power Policy 2015,

- The Government will promote solar rooftop systems on public buildings, domestic, commercial and industrial establishments.
- The consumers are free to choose either net or gross meter option for sale of power to DISCOM and the applicable tariff for either of the cases shall be equal to average Cost to Service of the DISCOM which will be determined by TSERC every year.
- Permission will be given to the group of persons / society to set up solar power projects and will be treated as collective generation for supply of power to the households of each society / group member.
- Time bound clearance of proposals through online mode.

The DISCOMs have issued the implementation guidelines based on the promotion policy announced by the GoTS.

On behalf of consumers under this scheme therein, TSREDCO is inviting e-bids from interested bidders for Design, Supply, Installation, Testing and Commissioning Rooftop/ Ground Mounted / High Raised Structure Solar Photo Voltaic Power Plants under Net-metering Scheme on "Build Own Operate" (B-O-O) basis at **Telangana**



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

Forest Academy, Dulapally, Hyderabad in Telangana State under RESCO Mode. The Power Purchaser and SREDCO shall enter into a Power purchase Agreement (PPA) separately with the successful or empanelled Bidder/Bidders selected based on this tender **through TSREDCO** for purchase of Solar Power for a period of 25 years based on the terms, conditions and provisions of the tender bid.

Any amendment(s)/ corrigendum/clarification(s) with respect to this Tender shall be uploaded on the e-Procurement website only. The bidders should keep themselves updated by regularly visiting the Telangana E-Procurement website and TSREDCO website for any amendment/ corrigendum/ clarification in regard to this Tender.

### **3. OVERVIEW OF THE TENDER BID:-**

The successful Bidder/Bidders shall set up a power plant at **Telangana Forest Academy, Dulapally, Hyderabad** in Telangana State. Solar PV Project on Build Own Operate (BOO) basis in accordance with the provisions of this tender bid document and standard Power Purchase Agreement (PPA). PPA formats shall be provided at the time of LOI/Work Agreement.

Power Purchaser/TSREDCO shall enter into PPA or LOC with successful bidders for a period of 25years, from the date as per the provisions of PPA. The tariff payable to the Power Producer is fixed for 25 years. This shall be inclusive of all statutory taxes, duties, levies, cess applicable as on the last date of bid submission.

4. Bidders shall submit their bid by offering a single tariff for the Project applied for, which shall be applicable for all the 25 years in the respective of category.
5. If the Project is transferred or sold to a third party during its tenure (after initial lock-in period of 1 year after COD), TSREDCO will retain full rights to operationalize the PPA with the third party, which will be under full obligation to honour all the obligations and terms & conditions of the PPA.

### **6. SELECTION TECHNOLOGY & ELIGIBLE PROJECTS UNDER THIS TENDER BID**

The Projects provide for deployment of Solar PV Technology. However, the selection of projects would be technology agnostic within the technology mentioned above. Crystalline Silicon, with or without Trackers can be installed. Only commercially established and operational technologies can be used, to minimize the technology risk and to achieve the timely commissioning of the Projects.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

7. TSREDCO shall conduct negotiations, if required or as per provisions of tender bid document.
8. TSREDCO reserves the right to cancel/withdraw this invitation for bids without assigning any reason and shall bear no liability whatsoever consequent upon such a decision.

### **DISCLAMIER:**

1. Telangana State Renewable Energy Development Corporation Limited (TSREDCO) reserves the right to modify, amend or supplement this document including all formats and Annexures.

2. While this document has been prepared in good faith, neither TSREDCO nor their employees or advisors make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this tender document, even if any loss or damage is caused by any act or omission on their part.

### **Definitions:**

In the "Bid / Tender / Contract Document" as herein defined where the context so admits, the following words and expression will have the following meaning:

1. "Affiliate" shall mean a company that either directly or indirectly
  - a. controls or
  - b. is controlled by or
  - c. is under common control witha Bidding Company (in the case of a single company) and "control" means ownership by one company
2. "MNRE" shall mean Ministry of New & Renewable Energy
3. "B.I.S" shall mean specifications of Bureau of Indian Standards (BIS);
4. "Bid / Tender" shall mean the Techno Commercial and the Price/Financial Bid submitted by the Bidder along with all documents/credentials/attachments, formats, etc., in response to this Bid Document, in accordance with the terms and conditions hereof.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

5. "Bidder / Tenderer" shall mean Bidding Company submitting the Bid. Any reference to the Bidder includes Bidding Company including its successors, executors and permitted assigns jointly and severally, as the context may require";
6. "B-O-O" shall mean Build Own Operate;
7. "EMD" shall mean the unconditional and irrevocable online payment/ banker cheque/ demand draft to be submitted along with the Bid by the Bidder under ITB Clause of this Bid;
8. "Bidding Company" shall refer to such single/consortium company that has submitted the Bid in accordance with the provisions of this Bid;
9. "Bid Deadline" shall mean the last date and time for submission of Bid in response to this Bid as specified in Bid Information Sheet and as specified in ITB of this Bid document including all amendments thereto;
10. "Bid Document" shall mean all Definitions, Sections, Layouts, Drawings, Photographs, Formats & Annexure etc. as provided in this bid including all the terms and conditions hereof.
11. "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
12. "Competent Authority" shall mean Vice Chairman & Managing Director (VC&MD) of TSREDCO himself and/or a person or group of persons nominated by VC&MD for the mentioned purpose herein;
13. "Company" shall mean a body incorporated in India under the Companies Act, 2013;
14. "Contract" means the agreement entered into between the Employer and the Contractor/successful bidder, as recorded in the Contract Form signed by the parties, including all the attachments and appendices thereto and all documents incorporated by reference therein;
15. "Contract Price / Contract Value" shall mean the sum accepted or the sum calculated in accordance with the prices accepted in Bid.
16. "Completion of Work" means that the Project/Works have been completed operationally and structurally has been attained as per Technical Specifications.
17. "Contract Document" shall mean collectively the Bid Document, Design, Drawings, and Specifications, Annexures, agreed variations, if any, and such other documents consisting the bid and acceptance thereof;
18. "CMC" means Comprehensive Maintenance Contract (CMC)
19. "Day" means calendar day;





## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

20. "Employer" or "TSREDCO" shall mean Telangana State Renewable Energy Development Corporation Limited, Hyderabad.
21. "Eligibility Criteria" shall mean the Eligibility Criteria as set forth in Section III: Technical & Special Conditions of Contract of this BID;
22. "Effective Date" means the date from which the time the supply of power is commenced to the Power Purchaser;
23. "GCC" means the General Conditions of Contract contained in this section;
24. "Goods" means permanent plant, equipment, machinery, apparatus, articles and things of all kinds to be provided and incorporated in the Works by the Contractor under the Contract but does not include Contractor's Equipment;
25. "Guarantee Test(s)" means the test(s) specified in the Technical Specification to be carried out to ascertain whether the Project/Works is able to attain the functional requirements specified in the Technical Specifications.
26. "IEC" shall mean specifications of International Electro-Technical Commission;
27. "IFB" Shall mean Information for Bidder
28. "ITB" shall mean Instructions to Bidder
29. "NIT" Shall means Notice Inviting Tender
30. "Parent Company" shall mean a company that holds paid-up equity capital directly or indirectly in the Bidding Company, as the case may be;
31. "Price/Financial Bid" shall mean separate Envelope, containing the Bidder's Quoted Price as per the format prescribed in Section-III (Technical & Special Conditions of Contract) of this BID.
32. "Qualified Bidder" shall mean the Bidder(s) who, after evaluation of their Techno Commercial Bid as per Eligibility Criteria set forth in Section III: Technical & Special Conditions of Contract of this BID stand qualified for opening and evaluation of their Price/Financial Bid;
33. "RC" shall mean Rate Contract
34. "SNA" shall mean State Nodal Agency
35. "Statutory Auditor" shall mean the auditor of a Company appointed under the provisions of the Companies Act, 2013 or under the provisions of any other applicable governing law;
36. "Services" means those entire services ancillary to the supply of the products, to be provided by the Contractor under the Contract; e.g. transportation (including Loading, unloading and transfer to Site) and provision of marine or other similar insurance, inspection, expediting, carrying out guarantee tests, operations, maintenance etc.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

37. SPD shall mean “Solar Power Developer”
38. “Successful Bidder(s) / Contractor(s)” shall mean the Bidder(s) selected by Employer pursuant to this Bid i.e. on whom award is made.
39. “Standards” shall mean the standards mentioned in the technical specification of the goods and equipment utilized for the Work or such other standard which ensure equal or higher quality and such standards shall be latest issued by the MNRE.
40. “Time for Completion” means the time within which Completion of the Project/Works is to be attained as per the respective PO/ LOI/LOI or the relevant provisions of the contract;
41. “TSREDCO” means Telangana State Renewable Energy Corporation Limited
42. “Work” means the “Goods” to be supplied, as well as all the “Services” to be carried out under the Contract;

### **INTERPRETATIONS:**

1. Words comprising the singular shall include the plural & vice versa
2. An applicable law shall be construed as reference to such applicable law including its amendments or re-enactments from time to time.
3. A time of day shall save as otherwise provided in any agreement or document be construed as a reference to Indian Standard Time.
4. Different parts of this contract are to be taken as mutually explanatory and supplementary to each other and if there is any differentiation between or among the parts of this contract, they shall be interpreted in a harmonious manner so as to give effect to each part.
5. The table of contents and any headings or sub headings in the contract has been inserted for case of reference only & shall not affect the interpretation of this agreement.



***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020



**SECTION - II**

**INSTRUCTIONS TO THE  
BIDDER (ITB) AND  
GENERAL CONDITIONS**



**SECTION - II**

**Instructions to the Bidder (ITB) and General Conditions**

**2.0) INTRODUCTION:**

- ❖ The project will be given to L1 bidder in preferential order.
- ❖ Higher experience will be taken into consideration, if same price / tariff quoted by more than one bidder.
- ❖ Reverse Auction of the short-listed bidder.

**2.1 BID INFORMATION SHEET**

The brief details of the tender bid are as under:

Bid Document No.	TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020/ Dt. 09.11.2020
Bid Document fee (Non refundable)	Rs.29,500/- incl. 18% GST (By way of DD from any Scheduled Bank in favour of TS REDCO, payable at Hyderabad)
EMD / Bid Security Deposit	Bid Bond (EMD) for Rs.2,00,000/- (Two lakhs) by way of Demand Draft / BG in favor of TSREDCO. Firms claiming Exemptions for EMD shall submit letter from NSIC/ MSME for this work specifically.
Performance security value	At the time of allocation of project, the bidder shall submit Performance Guarantee of Rs.3,00,000/- for 200kWp system to take up the project under RESCO MODE. This Performance Guarantee amount shall be submitted in the form of DD for Rs. 3,00,000/- in favour of "TSREDCO, Hyderabad" OR Bank guarantee of Rs. 6,00,000/- from any nationalized/scheduled bank. The bank guarantee should be valid for a period of one year with claim period of additional 6months. No interest shall be paid by TSREDCO on the amount of security money deposit.
Minimum Eligibility Criteria	1. Valid Registered Suppliers/vendors or Suppliers/vendors applied for registration before last date of tender with TSREDCO.



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

	2. The requisite experience of minimum 200KWp capacity at single site under Net metering in field of Grid Connected Solar PV systems in any one (1) FY for the last 3 Years (i.e. FY 2017-18, 2018-19 and 2019-20)
Minimum Eligibility Financial Criteria	The bidder shall submit the Solvency certificates from banks etc.) of not less than Rs.2.00 crores
Bid Documents available from	10.11.2020
Pre Bid Conference	20.11.2020 at 2:00 PM at Office of the TSREDCO, # 6-2-910, Visvesvaraya Bhavan, The Institution of Engineers Building, Khairatabad, Hyderabad, 500 004. Telangana State, India
Bid Document uploading Date	20.11.2020 from 5.00 PM onwards
Bid Document Downloading End Date	26.11.2020 till 05.00 PM
Last date for uploading of online documents	26.11.2020 till 05.00 PM
Last date for submission of Hard copies of documents uploaded online	27.11.2020 till 05.00 PM at Office of the TSREDCO, D. No. 6-2-910, Visvesvaraya Bhavan, The Institution of Engineers Building, Khairatabad, Hyderabad, 500 004. Telangana State, India
Pre-qualification & Technical Bid opening date/time	28.11.2020 at 11:00 AM.
Price Bid opening date/time	03.12.2020 at 03:00 PM
Validity of Tender	<b>Valid for 90 Days from the date of finalization</b>
Contact person	General Manager / Project Director (Solar), TSREDCO, Hyderabad
Tender to be addressed to	<b>Vice Chairman &amp; Managing Director Telangana State Renewable Energy Development Corporation Ltd (TSREDCO), D. No. 6-2-910, Visvesvaraya Bhavan, 2<sup>nd</sup> floor, The Institution of Engineers Building, Khairatabad, Hyderabad - 500 004. Telangana State, India Ph: 040 - 23201502, 23201503. / Fax: 040 - 23201504 Email: se@tsredco.telangana.gov.in</b>



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### **Important Note:**

Bidder shall submit bid proposal along with Bid Document fee and EMD, complete in all respect as per the Bid Information Sheet. Technical bids will be opened in presence of authorized representatives of bidders who wish to be present.

TSREDCO have right to reject the bidding process at any stage or right to cancel the tender without mentioning any reason. In the event of any date indicated above is a declared Holiday, the next working day shall become operative for the respective purpose mentioned herein.

Bid documents which include Eligibility criteria, "Technical Specifications", various conditions of contract, formats, etc. can be downloaded from Telangana e-procurement website <https://tender.telangana.gov.in/>

Any amendment(s)/corrigendum/clarifications with respect to this Bid will be uploaded on <https://tender.telangana.gov.in/> website and TSREDCO website [tsredco.telangana.gov.in](https://tsredco.telangana.gov.in) only. The Bidder should regularly follow up for any Amendment/Corrigendum/Clarification on the above website. No separate notifications will be issued for such notices/ amendments/ clarification etc. in the print media or individually.

1. Bids not accompanying the Bidding Document Cost and EMD, or those accompanied by these instruments of inadequate value, shall not be entertained and in such cases, the bids shall not be opened.

The Bidding Document Cost has to be necessarily submitted in the form of online payment mode of e tender portal or Demand Draft (DD)/Banker's Cheque in favour of "Telangana State Renewable Energy Development Corporation Ltd (TSREDCO)", issued by any scheduled/nationalized bank and payable at Hyderabad.

The EMD should be in the form of online payment mode of e tender portal or Banker's Cheque/DD in favour of "Telangana State Renewable Energy Development Corporation Ltd (TSREDCO)," payable at Hyderabad. The validity of the EMD shall be as per the Bid information sheet.

The details of the instruments of Bidding Document Cost and the EMD (Online/DD/Cheque as applicable) have to be entered online in relevant fields/columns of the module while submitting the e-bid. It must be ensured by the bidder that the original instruments towards Bidding Document Cost and EMD are received by TSREDCO before opening time of the Technical bids for verification of the details of the same as given online by the bidder. Failure to comply with this would render the bid liable for rejection and the bid will not



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

be opened online. TSREDCO will not be responsible for any delay, loss or non-receipt of Bidding Document Cost or EMD sent by post/courier.

Any relaxation/exemption sought by bidders shall only be considered in accordance with relevant clauses Section-II (ITB) regarding submission/payment of EMD and Bidding Document Cost and shall be subject to fulfillment of conditions defined in the said clauses. Since all the conditions explained in the said clauses for seeking exemption from submission of Bidding Document Cost and EMD are self-explanatory, bidders should ascertain about their fulfillment of all conditions and submit their bid accordingly. If at any stage, it is found that false information is furnished or non-compliance of any of the conditions defined at the said clauses, the bid/offer shall be considered as non-responsive and would not be considered for further evaluation. Bidder seeking exemption from submission of the Bidding Document Cost and the EMD has to mandatorily submit/upload the scanned copy of their valid original registration certificate(s) as asked for in the relevant, clause along with other relevant documents as part of their online bid.

2. TSREDCO reserves the right to cancel / withdraw the tender without assigning any reason whatsoever and in such a case, no bidder / intending bidder shall have any claim arising out of such action.

3. The subject procurement will be done through e-tendering. The Bid document is available on Telangana e-tender website <https://tender.telangana.gov.in/> or on TSREDCO website's Home Page <https://tsredco.telangana.gov.in>. The Tender submission, Tender closing and opening will be done electronically and online.

### **2.2 PROJECT LOCATION:**

The location is at Telangana State Forest Academy, Dulapally Hyderabad in Telangana State. The interested Bidders are required to participate in the tender bid for installation of Solar Photovoltaic Power Projects on Build-Own-Operate (B-O-O) basis under the RESCO mode.

### **2.3 PROJECT SCOPE & TECHNOLOGY SELECTION**

Following conditions shall be applicable to the Bidders for submission of bids against this bid.

(i) A Bidder including its Parent, Affiliate or Ultimate Parent or any Group Company shall either submit a single bid.



(ii) The evaluation of bids shall be carried out as described in Section-IV of bid. The methodology for Allocation of Projects is elaborated in Section-V of bid.

#### **2.4 CONNECTIVITY WITH THE EXISTING 230V/440V/11 KV LINE**

2.4.1 Refer Section-V of the bid.

#### **2.5 POWER GENERATION BY SOLAR POWER DEVELOPER**

##### **2.5.1 CRITERIA FOR GENERATION**

The SPD will declare the annual CUF of the Project at the time of submission of response to tender bid, which shall be allowed to be modified at the time of signing of PPA. Thereafter, the CUF for the Projects shall remain unchanged for the entire term of the PPA. The declared annual CUF shall in no case be less than 15%. SPD shall maintain generation so as to achieve annual CUF of minimum 15% value till the end of the PPA duration of 25 years. The lower limit will, however, be relaxable by TSREDCO to the extent of non-availability of grid for evacuation which is beyond the control of the SPD. The annual CUF will be calculated every year from 1st April of the year to 31st March next year.

##### **2.5.2 SHORTFALL IN GENERATION**

If for any Contract Year, it is found that the SPD has not been able to generate minimum energy corresponding to the value of annual CUF within the permissible lower limit of CUF declared by the SPD, on account of reasons solely attribute to the SPD, such shortfall in performance shall make the SPD liable to pay the compensation of tariff to beneficiary Dept. of Rs/unit discovered through this tender as payable by beneficiary Dept. This will, however, be relaxable by beneficiary Dept. to the extent of non-availability of grid for evacuation which is beyond the control of the developer or due to non-availability of Load. The SPD is, however, free to deploy storage solution complying with the standard and codes as mentioned in tender bid document. This compensation shall be applied to the amount of shortfall in generation during the Contract Year. In case the eventuality of Back down due to non-availability of Load or non-availability of grid, SPD shall be eligible for minimum generation compensation, in the manner detailed below.

**Off take constraints due to Back down and Un-availability of Load:**





## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

<b>Duration of Breakdown</b>	<b>Provision of Generation Compensation</b>
Hours of <b>Breakdown</b> during a monthly billing cycle	Minimum Generation Compensation = 50% of [(Average Generation per hour during the month) x (number of <b>Breakdown</b> hours during the month)] x PPA Tariff x Breakdown Capacity. Where, Average Generation per hour during the month (kWh) = Total Generation in the month (kWh) / Total hours of generation in the month.
<b>Duration of Load Unavailability</b>	<b>Provision of Generation Compensation</b>
Hours of Load Unavailability during a monthly Bill cycle	<b>Minimum Generation Compensation = 50% of (Estimated generation based on radiation of the month measured - Actual generation)x PPA Tariff</b> <ul style="list-style-type: none"><li>• Any outage hours of plant will not considered for this calculation</li></ul> Beneficiary shall pay for such generation loss at the PPA tariff so as to offset this loss. In case if there is no generation in a contract year, generation in the previous contract year shall be considered for the purpose of calculation.

The Generation Compensation is to be paid as part of the energy bill for the successive month after receipt of JMR.

However, this compensation shall not be applicable in events of Force Majeure identified under the PPA with beneficiary Dept., affecting supply of solar power by the SPD.

2.5.3 The SPD would be free to install DC solar field and storage system as per his design of required output and considering connected Load, including his requirement of auxiliary consumption, conforming to codes and standards provided in this document.

### **3. EARNEST MONEY DEPOSIT (EMD)**

3.1 Earnest Money Deposit (EMD) of INR as mentioned in Bid Information sheet per Project in the form of Bank Guarantee according to Format in favour of Telangana State Renewable Energy Development Corporation Ltd, (TSREDCO) and valid for **09 months** from the last date of bid submission, shall be submitted by the Bidder along with their bid, failing which the bid shall be summarily rejected. The Bank Guarantees towards EMD have to be issued in the name of the Bidding Company/ Lead Member of Bidding Consortium.

3.2 The Bidder shall furnish the DD/Bank Guarantees towards EMD from any of the any nationalized Banks.



**Please note that:**

I. Vendors registered with NSIC/MSME under single point registration scheme certificate may be given exemption from EMD for all tenders of TSREDCO subject to following conditions:

- a. An exclusive NSIC/MSME certificate for this tender mentioning the tender document name and number along with date
- b. NSIC /MSME Certificate must be valid for 3 months from the date of Bid-Opening, However tender fee is not exempted

**The EMD may be forfeited if:**

- a. If the bidder withdraws its bid during the period of bid validity as specified in the bid.
- b. If the bidder does not accept computational/arithmetical error correction made by TSREDCO and as explained in “Financial Evaluation” section of the Bid document.
- c. If the bidder does not accept assumptions, estimations etc. used for evaluation of bids as specified by TSREDCO in tender documents and revision of his bid accordingly, in case other assumptions are used. If the bidder does not accept the sharing as specified in the bid.
- d. In the case of successful bidder, if the bidder fails within the specified time limit:
  - To sign the contract agreement within 15 days of placement of Lol/Award letter.
  - To furnish the required performance guarantee, in accordance with the tender document.

**4 PERFORMANCE BANK GUARANTEE (PBG)**

4.1 Bidders selected by TSREDCO based on this tender, the bidder shall submit Performance Guarantee of Rs.3,00,000/- for 200kWp system to take up the project under RESCO MODE within 15 days from date of issuance of Letter of Award (Lol) or before signing of PPA, whichever is earlier. This Performance Guarantee amount shall be submitted in the form of DD for Rs. 3,00,000/- in favour of “TSREDCO, Hyderabad” OR Bank guarantee of Rs. 6,00,000/- from any nationalized/scheduled bank. The bank guarantee should be valid for a period of one year with claim period of additional 6months. No interest shall be paid by TSREDCO on the amount of security money deposit. On receipt and after successful verification of the total Performance Bank Guarantee in the acceptable form, the DD/BG submitted towards EMD shall be returned by TSREDCO to the successful Bidder.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. **TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020**

In case of delays in submission of PBGs, the signing of PPA shall be extended until the submission of the PBG by the SPD. In such cases, the Effective Date of the PPA shall remain unchanged. Further, the validity of the Bank Guarantee(s) against EMD submitted by the Bidder shall have to be maintained by the SPD, until the submission of PBG. In the event of non-submission of PBG by the date of expiry of the EMD, the EMD submitted for the Project shall be encashed by the TSREDCO, and the Project shall stand terminated.

4.2 All Performance Bank Guarantees (PBGs) shall be submitted on the name of TSREDCO.

4.3 The SPD shall furnish the PBG from any nationalized Banks at Schedule of draft PPA to Beneficiary Dept. through TSREDCO.

4.4 The format of the Bank Guarantees prescribed in the Formats (EMD) and (PBG) shall be strictly adhered to and any major deviation from the above Formats shall result in rejection of the EMD/ PBG and consequently, the bid. In case of deviations in the formats of the Bank Guarantees, the corresponding PPA shall not be signed.

4.5 The successful Bidder for the Projects selected based on this tender bid are required to **sign PPA with Beneficiary Dept. and TSREDCO** within 30 days after the issue of Lol. In case, TSREDCO offers to execute the PPA Between beneficiary Dept. and the Selected Bidder and if the Selected Bidder does not submit the requisite documents as per Clause, Section-II, Instructions to Bidders (ITB) of tender document or does not meet eligibility criteria upon submission of documents or does not execute the PPA within the stipulated time period, then the Bank Guarantee equivalent to the amount of the EMD shall be encashed by TSREDCO from the Bank Guarantee available with TSREDCO (i.e. EMD or PBG) as liquidated damages not amounting to penalty, the selected Project shall stand cancelled and the selected Bidder expressly waives off its rights and objections, if any, in that respect.

4.6 The Bank Guarantees have to be executed on non-judicial stamp paper of appropriate value as per Stamp Act relevant to the place of execution.

4.7 All expenditure towards execution of Bank Guarantees such as stamp duty etc. shall be borne by the Bidders.



4.8 In order to facilitate the Bidders to submit the Bank Guarantee as per the prescribed format and in line with the requirements, checklist at Annexure has been attached. Bidders are advised to take note of the above checklist while submitting the Bank Guarantees.

4.9 After the bidding process is over, TSREDCO shall release the Bank Guarantees towards EMD of the unsuccessful Bidders within 15 days after the completion of the bidding process. The PBG of SPDs shall be returned to them, immediately after successful commissioning of their projects as per Terms of PPA, after taking into account any liquidated damages due to delays in commissioning as per Clause, Section-II, Instructions to Bidders (ITB) of tender bid.

**5 TSREDCO ADMINISTRATIVE CHARGES:**

5.1 Successful / allotted Bidder shall have to pay administrative charges @ Rs.0.20 per unit generated per month plus 18% GST to TSREDCO. The payment has to be made by the SPD in the form of DD/ Pay Order/ NEFT/ RTGS within 3 days from date of receipt of bill from Beneficiary. Any delay in depositing the said amount to TSREDCO as mentioned above within the stipulated time shall attract interest @18% per annum, levied on per day basis, on the total Administrative charges, till (and including) the date of payment of Administrative charges.

**6 POWER PURCHASE AGREEMENT (PPA)**

6.1 Beneficiary shall enter into Power Purchase Agreement (PPA) for this project with Bidder selected based on this bid through TSREDCO. A copy of Draft Power Purchase Agreement to be executed between the Beneficiary, TSREDCO and the selected SPD, is part of this Tender Document. The PPA shall be signed within 30 (Thirty) days from the date of issue of Lol (for e.g. If the LOI is dated 20.08.2020, then the last date of signing of PPA shall be 19.09.2020). The PPA shall be valid for a period of 25 years as per provisions of PPA.

6.2 The Performance Bank Guarantee as per Clause above shall be submitted by the SPD prior to signing of PPA of the project. Before signing of PPA with the selected Bidder for the project, TSREDCO will verify the documents furnished by the Bidder at the time of submission of response to bid including the shareholding of the Project Company along



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

with a copy of complete documentary evidence supported with the original documents. Bidders will be required to furnish the documentary evidence for meeting the bid Qualification Requirement and financial requirements mentioned at Section-III of the bid. If at this stage it is found that the documents furnished by the Bidder are false/misleading or misrepresented in any way then the provisions contained in this bid will be applicable.

6.3 Successful bidders will have to submit the required documents to TSREDCO within 21 days from the issue of Lol. In case of delay in submission of documents beyond the 21 days as mentioned above, TSREDCO shall not be liable for delay in verification of documents and subsequent delay in signing of PPA. Irrespective of the date of signing of PPA, the Effective Date of the PPA shall be the date as on 30th day from the date of issuance of LOI for the projects. In extraordinary cases of unavoidable delays on the part of Beneficiary Dept. in signing the PPAs, the Effective Date of the PPA shall then be the date of signing of PPA.

6.4 The SPDs will be free to reconfigure and repower the project from time to time during the PPA duration. However, beneficiary Dept. will be obliged to buy power only within the Capacity Utilization Factor (CUF) range laid down in Power Purchase Agreement (PPA) as per bid and PPA.

6.5 Any extension of the PPA period beyond 25 years shall be through mutual agreement between the SPDs and Beneficiary Dept. through TSREDCO.

6.6 The TSREDCO and the selected Bidder is required to open and maintain separately an Escrow account with an Escrow Agent in terms of the Escrow Agreement (Draft Escrow Agreement is part of the Tender Document).

The Parties (other than the Escrow Agent) will ensure that deposits shall be made in the Escrow Account in the mode and manner as per the Power Purchase Agreement proposed to be entered by the TSREDCO and the selected Bidder with the Power Purchaser.

Funds lying to the credit of the Escrow Account shall be released/transferred from the Escrow Account on the basis of written instructions by the TSREDCO to the selected Bidder (Power Producer) and to the TSREDCO as and when due as per the Power Purchase



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

Agreement proposed to be entered by the TSREDCO and the selected Bidder with the Power Purchaser.

6.7 In case of termination of agreement (premature or after completion of 25 years), the SPD will remove the assets from beneficiary premises /land within 90 days, failing which, the infrastructure will be the property of Beneficiary Dept.

6.8 The Levellized 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 for RESCO), goods and services including spares required if any during O&M period. The Bidder has to take all permits like CEIG and other approvals and licenses, Insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.

- The Levellized tariff is on lump sum turnkey basis and the bidder is responsible for the total Scope of work described above.
- The Levellized tariff shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work for payment of Incentive amount 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.
- The Levellized 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 TSREDCO.
- The Operation & Maintenance of Solar Photovoltaic 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 years.



- The Levellized tariff shall be in accordance with all terms, conditions, specifications and other conditions of the Contract as accepted by the TSREDCO and incorporated in the agreement.

## **7 FINANCIAL CLOSURE OR PROJECT FINANCING ARRANGEMENTS**

(i) The Project shall achieve Financial Closure within 03 (Three) months from the Effective Date of the Power Purchase Agreement (PPA) (for e.g. if Effective Date of the PPA is 07.08.2020, then scheduled Financial Closure date shall be 07.11.2020).

(ii) At this stage, the SPD shall report 100% tie-up of Financing Arrangements for the Projects. In this regard the SPD shall submit a certificate from all financing agencies regarding the 100% tie-up of total cost indicated for the Project. Additionally, the SPD shall furnish official Permission from beneficiary Dept. to demonstrate/right to use that required roof/land/ plot for project development under possession of the SPD. In this regard the SPD shall be required to furnish the official permission documentary evidences to establish the possession of the required roof/land/lease/sub lease for project development (for 25 years) in the name of the SPD.

(a) Official permission letter to SPD from beneficiary Dept. for allotment/right to use of land as per beneficiary Dept. Terms & Conditions and possession of the roof/Land as mentioned in the LOI.

(b) All agreements and approvals, clearances from beneficiary Dept. related to the project along with all necessary supporting documents.

(iii) In case of delay in achieving above condition as may be applicable, beneficiary Dept. / TSREDCO shall encash Performance Bank Guarantees and shall remove the bidder from the list of the selected bidders, unless the delay is on account of delay in permission granted for roof/land/plot for project development from beneficiary Dept., or due to Force Majeure as per PPA. An extension maximum of One Month from scheduled Financial Closure date can however be considered, on the sole request of SPD, on advance payment of extension charges of INR 200/- per day +18% GST. This extension will not have an impact on the Scheduled Commissioning Date of the Projects. Subsequent to the completion of deadline for achieving financial closure, TSREDCO shall issue notices to the SPDs who are not meeting the requirements of Financial Closure as per the bid deadlines. The notice shall provide a period of 7 business days to the respective SPDs to either furnish the necessary documents or make the above mentioned payment of INR 200/



day+18% GST. In case of non-submission of either the requisite documents or the necessary amount upon expiry of the above-mentioned notice period of 7 days, beneficiary Dept. shall encash the PBG of the corresponding SPD and terminates the PPA for the corresponding Project. The amount of INR 200/ day+18% GST shall be paid by the SPD in advance prior to the commencement of the said delay period and shall be calculated based on the period of delay as estimated by the SPD. In case of the SPD meeting the requirements of Financial Closure before the last date of such proposed delay period, the remaining amount deposited by the SPD shall be returned by TSREDCO. Interest on account of delay in deposition of the above-mentioned charges or on any subsequent extension sought, shall be levied @ one year SBI MCLR rate/annum +18% GST on pro-rata basis. Any extension charges paid so, shall be returned to the SPD without any interest on achievement of successful commissioning within the Scheduled Commissioning Date, on pro-rata basis, based on the project capacity commissioned as on Scheduled Commissioned Date.

(iv) The SPD will have to submit the required documents to TSREDCO at least 14 days prior to the scheduled Financial Closure date. In case of delay in submission of documents mentioned above, TSREDCO shall not be liable for delay in verification of documents and subsequent delay in Financial Closure.

## **8 COMMISSIONING:**

The Commissioning of the Project shall be carried out by the SPD in line with the procedure elaborated in draft PPA document.

**8.1. PART COMMISSIONING:** There shall be no Part Commissioning allowed for the Project. Relaxation subjected to site conditions and with prior approval of beneficiary.

## **8.2 PENALTY FOR DELAY IN PROJECT IMPLEMENTATION**

If the bidder fails to commission the allocated capacity within 60 to 180days from date of issue of allocation letter, Penalty on per day basis calculated for the Performance Security on a 60 to 180days period would be levied. After above project duration period allocated capacity will get cancelled and the PBG amount pro-rata to non-commissioned capacity would be forfeited.

Example: If a project of 500 kW is delayed by 36 days then the LD will be levied as given below.

Eg. PENALTY = ((Performance Security)/180 days)\*delayed days = (15,00,000 /180)\*36





### **8.3 EARLY COMMISSIONING**

The SPD shall be permitted for full commissioning of the Project even prior to the Scheduled Commissioning Date. In case the entire capacity is commissioned prior to the Scheduled Commissioning Date, Beneficiary Dept. may purchase the generation at PPA Tariff. However, early commissioning of the Project and subsequent energy procurement from the same shall be subject to the approval of the Beneficiary Dept.

### **9. COMMERCIAL OPERATION DATE (COD)**

Commercial Operation Date (COD) shall be the date on which the commissioning certificate is issued upon successful commissioning of the full capacity of the Project. The 25-year tenure of PPA shall be as per the provisions of PPA.

**(a) Commissioning of the Project:** This will be on a date, when the project meets the criteria defined for project commissioning. TSREDCO may authorize any individual or committee or organization to declare the project commissioned on site.

### **10. STRUCTURING OF THE BID SELECTION PROCESS**

10.1 Single stage, Double Envelope bidding followed by Reverse Auction has been envisaged under this bid. Bidders have to submit both Techno-Commercial Bid and Financial Bid (Tariff) together in response to this bid online. The preparation of bid proposal has to be in the manner described in Clause, Section-II, Instructions to Bidders (ITB) of bid.

### **11. INSTRUCTIONS TO BIDDERS FOR STRUCTURING OF BID PROPOSALS IN RESPONSE TO BID**

The bidder including its Parent, Affiliate or Ultimate Parent or any Group Company shall submit single response to bid.

Detailed Instructions to be followed by the bidders for online submission of response to tender are stated at Annexures

Submission of bid proposals by Bidders in response to tender shall be in the manner described below:

- i. Covering Letter



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. **TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020**

ii. In case of a Bidding Consortium, a Power of Attorney in favour of the Lead Member issued by the other Members of the Consortium shall be provided in original.

In the event any Member of the Bidding Consortium (other than Lead Member) is a foreign entity, it may submit Board Resolutions in place of Power of Attorney for the purpose of fulfilling the requirements under this clause. Provided that such Board Resolutions shall be supported by an unqualified opinion issued by the legal counsel of such foreign entity stating that the Board Resolutions are in compliance with the applicable laws of the respective jurisdictions of the issuing Company and the authorizations granted therein are true and valid.

iii. Earnest Money Deposit (EMD) in the form

iv. Board Resolutions, as per prescribed formats certified by the Company Secretary or the Director of the relevant Bidder, as applicable to the Bidder and mentioned hereunder:

a. Board Resolution from the Bidding Company or the Lead Member of the Consortium, as the case may be, in favour of the person signing the response to tender and in the event of selection of the Projects and to sign the PPA through TSREDCO. Board Resolution from each of the Consortium Members in favour of the person signing Consortium Agreement.

b. Board Resolution from the Bidding Company committing 100% (One Hundred Percent) of the equity requirement for the Project/ Board Resolutions from each of the Consortium Members together in aggregate committing to 100% (One Hundred Percent) of equity requirement for the Project (in case of Bidding Consortium); and

c. Board Resolutions from each of the Consortium Members and Lead member contributing such additional amount over and above the percentage limit (specified for the Lead Member and other member in the Consortium Agreement) to the extent becoming necessary towards the total equity share in the Project Company, obligatory on the part of the Consortium pursuant to the terms and conditions in the Consortium Agreement.

v. In case of a Consortium, the Consortium Agreement between the Members in the Consortium along with Board resolution from each Member of the Consortium for participating in Consortium.

vi. Format for Financial Requirements along with the certificate from practicing Chartered Accountant/ Statutory Auditors showing details of computation of the financial credentials of the Bidder.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- vii. A disclosure statement regarding participation of any related companies in the bidding process.
- viii. Format for Technical Criteria (to be filled out separately) in line with Clause, Section-II, Instructions to Bidders (ITB) of tender.
- ix. Declaration by the Bidding Company/ Lead Member of Bidding Consortium for the Proposed Technology Tie Up as per Format (to be filled out separately).
- x. Details of all types of securities/instruments which are pending conversion into equity whether optionally or mandatorily.
- xi. No Deviation Certificate as per mentioned in Format
- xii. Attachments:**
- a. Memorandum of Association, Article of Association needs to be attached along with the bid. The bidder should also highlight the relevant provision which highlights the objects relating to Power/ Energy/ Renewable Energy/ Solar Power plant development.
- In case, there is no mention of the above provisions in the MoA/ AoA of the bidding company, the same has to be amended and submitted prior to signing of PPA, if the bidder is selected as Successful bidder.
  - If the selected bidder wishes to execute the project through a Special Purpose Vehicle (SPV), the MoA/ AoA of the SPV highlighting the relevant provision which highlights the objects relating to Power/ Energy/ Renewable Energy/ Solar Power plant development has to be submitted prior to signing of PPA.
- b. Certificate of Incorporation of Bidding Company/ all member companies of Bidding Consortium.
- c. A certificate of shareholding of the bidding company, its parent and Ultimate Parent (if any) duly certified by a practicing Chartered Accountant/ Company Secretary as on a date within 30 days prior to the last date of bid submission, along with documents containing information about the promoters, and their shareholding in the Company (as on a date within 30 days prior to the last date of bid submission) indicating the controlling shareholding at the stage of submission of response to tender to TSREDCO as per Clause, Section-II, Instructions to Bidders (ITB) of tender. TSREDCO reserves the right to seek additional information relating to shareholding in promoter companies, their parents/ ultimate parents and other group companies to satisfy themselves that tender conditions



have been complied with and the bidder will ensure submission of the same within the required time lines.

- d. Certified copies of annual audited accounts for the last financial year, i.e. FY 2018-19.

**12. IMPORTANT NOTES AND INSTRUCTIONS TO BIDDERS:**

12.1 Wherever information has been sought in specified formats, the Bidders shall fill in the details as per the prescribed formats and shall refrain from any deviations and referring to any other document for providing any information required in the prescribed format.

12.2 The Bidders shall be shortlisted based on the declarations made by them in relevant schedules of tender. The documents submitted online will be verified before signing of PPA in terms of Clause, Section-II, Instructions to Bidders, ITB of tender.

12.3 If the Bidder/ Member in a Bidding Consortium conceals any material information or makes a wrong statement or misrepresents facts or makes a misleading statement in its response to tender, in any manner whatsoever, TSREDCO reserves the right to reject such response to tender and/ or cancel the Letter of Award, if issued, and the Bank Guarantee provided up to that stage shall be en-cashed. Bidder shall be solely responsible for disqualification based on their declaration in the submission of response to tender bid.

12.4 After the Effective Date of PPA, consequences specified in PPA shall apply.

12.5 Response submitted by the Bidder shall become the property of the TSREDCO and TSREDCO shall have no obligation to return the same to the Bidder. However, the EMDs submitted by unsuccessful Bidders shall be returned as specified in Clause, Section-II, Instructions to Bidders (ITB) of bid.

12.6 All documents of the response to bid (including bid and subsequent Amendments/ Clarifications/ Addenda and PPA) submitted online must be digitally signed by the person authorized by the Board as per Format.

12.7 The response to bid shall be submitted as mentioned in Clause, Section-II, Instructions to Bidders (ITB) of bid. No change or supplemental information to a response



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

to bid will be accepted after the scheduled date and time of submission of response to bid. However, TSREDCO reserves the right to seek additional information from the Bidders, if found necessary, during the course of evaluation of the response to bid.

12.8 The bidder shall make sure that the correct, valid and operative Pass-Phrase to decrypt the relevant Bid-part is submitted into the 'Time Locked Electronic Key Box (EKB)' after the deadline of Bid submission, and before the commencement of the Online Tender Opening Event (TOE) of Technical bid.

12.9 All the information should be submitted in English language only. In case of foreign bidders having documents in other than English language, then the documents shall be translated in English language by certified translator and submitted.

12.10 Bidders shall mention the name of the contact person and complete address and contact details of the Bidder in the covering letter.

12.11 Response to tender that is incomplete, which do not substantially meet the requirements prescribed in this tender, will be liable for rejection by TSREDCO.

12.12 Response to bid not submitted in the specified formats will be liable for rejection by TSREDCO.

12.13 Bidders delaying in submission of additional information or clarifications sought will be liable for rejection.

12.14 Non-submission and/ or submission of incomplete data/ information required under the provisions of bid shall not be construed as waiver on the part of TSREDCO of the obligation of the Bidder to furnish the said data/ information unless the waiver is in writing.

12.15 Only the State of Telangana Courts shall have exclusive jurisdiction in all matters pertaining to this tender bid.



### **13. NON-RESPONSIVE BID**

The electronic response to bid submitted by the bidder along with the documents submitted offline to TSREDCO shall be scrutinized to establish “Responsiveness of the bid”. Each bidder’s response to bid shall be checked for compliance with the submission requirements set forth in this bid.

Any of the following conditions shall cause the Bid to be “Non-responsive”: -

- (a) Non-submission of Cost of bid and/ or Processing Fee as mentioned in the Bid Information Sheet;
- (b) Non-submission of EMD in acceptable form along with bid document.
- (c) Response to bid not received by the due date and time of bid submission;
- (d) Non-submission of correct, valid and operative Pass-Phrase to decrypt either the Technical Bid Part or Financial Bid Part offline before due date and time of submission of bid;
- (e) Non-submission of the original documents mentioned at Clause, Section- II, Instructions to Bidders (ITB) of tender bid by due date and time of bid submission;
- (f) Any indication of tariff in any part of response to the bid, other than in the financial bid;
- (g) Data filled in the Electronic Form of Financial Bid (Second Envelope), not in line with the instructions mentioned in the same electronic form;
- (h) In case it is found that the Bidding Company including Ultimate Parent Company/ Parent Company/ Affiliate/ Group Companies have submitted more than one response to this Tender bid, then all these bids submitted shall be treated as non-responsive and rejected.

### **14. METHOD OF SUBMISSION OF RESPONSE TO TENDER BY THE BIDDER**

#### **A. DOCUMENTS TO BE SUBMITTED OFFLINE (IN ORIGINAL):**

The bidder has to submit the documents in original as part of Response to Tender bid to the address mentioned in Bid Information Sheet before the due date and time of bid submission.

Bidding Envelope: Super scribed as “Bidding Envelope containing i) Covering Envelope, ii) Pass Phrase Envelope -1 & iii) Pass Phrase Envelope -2” at the top of the Envelope and “Name & Address of the Bidder” on the left hand side bottom must contain the following

- I. Covering Envelope: Super scribed as “Covering Envelope Containing Cost of Tender bid Document, Processing Fee, Bank Guarantee towards EMD, Covering Letter, and Power



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

of Attorney (if applicable), Consortium Agreement (if applicable), Board Resolution” must contain the following

- DD/ Pay order towards Cost of Tender bid Document as mentioned in Bid Information Sheet.
  - Processing Fee in the form DD/ Pay Order as mentioned in the Bid Information Sheet.
  - Bank Guarantee towards EMD as mentioned in the Bid Information Sheet (as per Format). One EMD may be submitted for the cumulative capacity quoted by the Bidder.
  - Covering Letter as per Format
  - Power of Attorney as per Format (if applicable),
  - Board Resolution as per Format
  - Consortium Agreement as per Format (if applicable)
  - GSTN along with respective registered address of the Bidder on the letterhead of the Bidder (signed by the Authorized signatory)
- II. Pass-Phrase Envelope-1: Containing Pass Phrase for Technical Bid duly signed by the authorized signatory in sealed envelope.
- III. Pass-Phrase Envelope-2: Containing Pass Phrase for Financial Bid duly signed by the authorized signatory in sealed envelope.

The bidding envelope shall contain the following sticker

<b><i>Response to Tender for Selection of Solar Power Developers for Design, Supply, Installation, Testing and commissioning of 200kWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode</i></b>	
<i>Cumulative Capacity of the projects applied for</i>	—————kWp
<i>Tender Reference No.</i>	TSREDCO/SE/SPV/Govt./FOREST ACADEMY-200kWp/RESCO/2020 date. 09 .11.2020
<i>Submitted by</i>	<i>(Enter Full name and address of the Bidder)</i>
<i>Authorized Signatory</i>	<i>(Signature of the Authorized Signatory) (Name of the Authorized Signatory) (Stamp of the Bidder)</i>



# Telangana State Renewable Energy Development Corporation Ltd

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

<i>Bid Submitted to</i>	<b>VC &amp; Managing Director</b> TELANGANA STATE RENEWABLE ENERGY DEVELOPMENT CORPORATION LTD (TSREDCO) Corporate Office: D. No. 6-2-910, Visvesvaraya Bhavan, The Institution of Engineers Building, Khairatabad, Hyderabad - 500 004. Telangana State, India PHONE: 040-23201502 / 03, FAX : 040-23201504 E-mail : <a href="mailto:info@tsredco.telangana.gov.in">info@tsredco.telangana.gov.in</a> , <a href="mailto:se@tsredco.telangana.gov.in">se@tsredco.telangana.gov.in</a>
-------------------------	---

### 14.b DOCUMENTS TO BE SUBMITTED ONLINE

Detail instructions to be followed by the bidders for online submission of response to Tender bid. The bidders shall strictly follow the instructions mentioned in the electronic form in respective technical bid and financial bid while filling the form

If the Bidder has submitted offline documents and fails to submit the online bid, then the same shall be treated as incomplete bid and Cost of Tender bid, processing fee submitted shall be en-cashed and the EMD(s) shall be returned. The bid shall not be processed further in such case.


All documents of the response to Tender bid submitted online must be digitally signed on [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) which should contain the following:

### 15. NOTICE BOARD FOR DISPLAY

The selected SPD will have to put a notice board (at least 180cm x 120cm) at its project site main entrance prominently displaying the following message before declaration of COD.

.....kW Grid Connected Solar PV Project Owned and operated by  
 ----- (insert name of the SPD/Supplier)  
 Setting up of \_\_\_\_ kW Solar PV Project at .....,  
 .....

Implemented by

  
**TELANGANA STATE RENEWABLE ENERGY DEVELOPMENT CORPORATION LTD**





## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### **16. VALIDITY OF THE RESPONSE TO TENDER BID**

The Bidder shall submit the response to Tender bid which shall remain valid up to 90 (Ninty) days from the last date of submission of response to Tender bid (“Bid Validity”). TSREDCO reserves the right to reject any response to Tender bid which does not meet the aforementioned validity requirement.

### **17 BID PREPARATION COST**

The Bidder shall be responsible for all the costs associated with the preparation of the response to Tender bid and participation in discussions and attending pre-bid meeting(s) etc. TSREDCO shall not be responsible in any way for such costs, regardless of the conduct or outcome of the bid process.

### **18 CLARIFICATIONS/ ENQUIRIES/ AMENDMENTS**

18.1 Clarifications/ Doubts, if any, on Tender bid document may be emailed and/ or through [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) portal.

18.2 If necessary, amendments, clarifications, elaborations shall be issued by TSREDCO which will be notified on TSREDCO/ [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in) web site. No separate reply/ intimation will be given for the above, elsewhere.

### **18.3 Enquiries/ Clarifications may be sought by the Bidder from**

Sl.No	Designation	Contact Numbers	Email id
1.	General Manager	040 - 23201502/03	<a href="mailto:info@tsredco.telangana.gov.in">info@tsredco.telangana.gov.in</a>
2.	Project Director	040 - 23201502/03	<a href="mailto:se@tsredco.telangana.gov.in">se@tsredco.telangana.gov.in</a>

### **19 RIGHT OF TSREDCO TO REJECT A BID:**

TSREDCO reserves the right to reject any or all of the responses to Tender bid or cancel the Tender bid or annul the bidding process for any project at any stage without assigning any reasons whatsoever and without thereby any liability. In the event of the tender being cancelled at any stage, the processing fee (excluding GST, if amount credited to TSREDCO’s account), without any interests, and EMD submitted by the Bidders shall be returned to the respective Bidders.

### **20 POST AWARD COMPLIANCES**

Timely completion of all the milestones i.e. signing of PPA, meeting Financial Closure Requirements/ Conditions Subsequent (PPA), Commissioning etc. will be the sole



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

responsibility of SPD. TSREDCO/Beneficiary Dept. shall not be liable for issuing any intimations/ reminders to SPDs for timely completion of milestones and/ or submission of compliance documents.

Any checklist shared with SPD by TSREDCO for compliance of above mentioned milestones to be considered for the purpose of facilitation only. Any additional documents required as per the conditions of Tender bid and PPA must be timely submitted by the SPD.

TSREDCO



**SECTION - III**

**TENDER SCHEDULE**

**SECTION - III**  
**TENDER SCHEDULE**

**1. PREAMBLE:**

The scope of work for the bidder include complete design, shadow analysis of roof top, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of **200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO Mode** including operation and maintenance (O&M) of the project and cleaning of modules at regular intervals for a period of



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

(25) Twenty Five years after commissioning through e-procurement platform (i.e. [www.tender.telangana.gov.in](http://www.tender.telangana.gov.in)).

The Govt. of Telangana has announced Telangana Solar Power Policy 2015 with provisions for promotion of Grid connected Solar Rooftop systems with net metering/gross metering option to the consumers. The following are the provisions for promotion of grid connected solar rooftop TS. Solar Power Policy 2015,

- The Government will promote solar rooftop systems on public buildings, domestic, commercial and industrial establishments.
- The consumers are free to choose either net or gross meter option for sale of power to DISCOM and the applicable tariff for either of the cases shall be equal to average Cost to Service of the DISCOM which will be determined by TS FOREST ACADEMY every year.
- Permission will be given to the group of persons / society to set up solar power projects and will be treated as collective generation for supply of power to the households of each society / group member.
- Time bound clearance of proposals through online mode.
- The DISCOMs have issued the implementation guidelines based on the promotion policy announced by the GoTS.

On behalf of consumers under this scheme therein, TSREDCO inviting Bids for empanelment for Supply, Installation, Commissioning, maintenance and Operation of Solar Rooftop Power plants for 25 years in Telangana State, under Net Metering Policy to take up the projects under RESCO MODE.

### **2. INCOME TAX:**

During the course of the contract period, deduction of income tax and surcharge as in force at source shall be made at the prevailing rate of income tax department issued from time to time of the gross amount of each bill.

### **3. RATES , TAXES AND DUTIES:**

All the rates in the tender shall be **inclusive of all statutory compliances** like PF, ESI, Service Tax, GST, etc. However, any changes made to the tax structure by the government shall be duly considered and appropriate changes made.

### **4. PLACE OF WORK AND VISIT TO SITE:**

Intending tenders shall visit the Site/ Campus to acquaint with local site conditions, nature and requirement of work, present conditions of premises/fittings/fixtures, etc., before start of the work.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### **5. BID DETAILS:**

The bid shall be on RESCO MODE for design, supply, installation and commissioning of grid connected solar rooftop systems and the levelised tariff quoted by the bidders for 25 years.

### **6. ELIGIBILITY CRITERIA:**

- a. Valid Registered SPV Suppliers/ Manufacturers/ System Integrators with TSREDCO.
- b. Bidder should have experience at least minimum **200KWp** capacity at single site under Net metering in field of Grid Connected Solar PV systems in any one (1) FY from the last 3 Years (i.e. FY 2017-18, 2018-19 and 2019-20). Experience certificate along with performance from beneficiary, should be before 6months from last date

#### **6.1. TECHNICAL ELIGIBILITY CRITERIA:**

- a. Under this Tender bid, it is proposed to promote only commercially established and operational technologies to minimize the technology risk and to achieve timely commissioning of the Projects. The Bidder may indicate regarding the selection of technology and its details at the time of submission of bids in the prescribed Format. However, the Successful Bidder has to confirm the selection of technology in line with the above at the time of Financial Closure. The technology proposed at the time of submission of response to Tender bid can be changed at the time of Financial Closure.
- b. Detailed technical parameters for Solar PV Projects to be met by SPDs are at Annexure. The Bidders shall strictly comply with the technical parameters detailed in the Annexure. Further, the cells and modules used in the Project shall be sourced only from the models and manufacturers included in the "Approved List of Models and Manufacturers" as published by MNRE and updated as on the date of commissioning of the Project.
- c. The Projects shall also comply with the criteria for power generation detailed in Clause in Section-II, Instructions to Bidders (ITB) of Tender bid.

#### **6.2 FINANCIAL ELIGIBILITY CRITERIA:**

- a. Bidder should have annual turnover of Rs.2.00 Cr. In any one (1) Financial Year during the last three financial years i.e. 2016-17, 2017-18 and 2018-19 (Certificate from CA is to be furnished).



**7. FORCE MAJEURE**

a. Notwithstanding the provisions of clauses contained in this BID document; the contractor shall not be liable to forfeit

(a) Security deposit for delay and

(b) Termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.

b. 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 and fright embargoes etc. Whether a "Force majeure" situation exists or not, shall be decided by TSREDCO and its decision shall be final and binding on the contractor and all other concerned.

c. 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, TSREDCO has the right to terminate the contract in which case, the security deposit shall be refunded to him.

d. If a force majeure situation arises, the contractor shall notify TSREDCO in writing promptly, not later than 14 days from the date such situation arises. The contractor shall notify TSREDCO not later than 3 days of cessation of force majeure conditions. After examining the cases, TSREDCO shall decide and grant suitable additional time for the completion of the work, if required.

**8. COMMISSIONING /COMPLETION CERTIFICATE**

a. Application for completion/commissioning certificate:

When the Successful bidder fulfills his obligation under the Contract, he shall be eligible to apply for Completion Certificate. The Engineer-in-Charge of TSREDCO and beneficiary department officials shall normally issue to the Successful bidder the Completion Certificate within 15days after receiving any application therefore from the Successful bidder after verifying from the completion documents and satisfying himself that the Work has been completed in accordance with and as set out in Contract.



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- b. **DOCUMENT SUBMISSION FOR ISSUE COMMISSIONING/COMPLETION CERTIFICATE:**  
For the purpose of above the following documents will be deemed to form the completion documents:
- c. Checklist for inspection of Roof top SPV power plants as per TSREDCO format.
- d. Project completion report from successful bidder as per MNRE format
- e. Project completion/satisfaction certificate from concern beneficiary dept. officials.

TSREDCO



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

---



**SECTION - IV**

**BID EVALUATION AND  
SELECTION OF PROJECTS**





**SECTION - IV**

**BID EVALUATION AND SELECTION OF PROJECTS**

**1 BID EVALUATION**

Bid evaluation will be carried out considering the information furnished by Bidders as per provisions specified in Section-II, Instructions to Bidders (ITB) of this Tender bid. The detailed evaluation procedure and selection of bidders are described in subsequent clauses in this Section.

**2 TECHNO-COMMERCIAL EVALUATION OF BIDDERS**

**2.a FIRST ENVELOPE (TECHNICAL BID) EVALUATION (STEP - 1)**

2.a.1 The first envelope (Technical Bid submitted online) of only those bidders will be opened by TSREDCO whose required documents as mentioned at Clause, Section-II, Instructions to Bidders (ITB) of this Tender bid are received at the office of TSREDCO on or before the due date and time of bid submission.

2.a.2 Documents (as mentioned in the previous clause) received after the bid submission deadline specified in the Bid Information Sheet shall be rejected and returned unopened, if super-scribed properly with address, to the bidder.

2.a.3 Subject to Clause, Section-II, Instructions to Bidders (ITB) of this Tender bid, TSREDCO will examine all the documents submitted by the Bidders and ascertain meeting of eligibility conditions prescribed in the Tender bid. During the examination of the bids, TSREDCO may seek clarifications/ additional documents to the documents submitted etc. from the Bidders if required to satisfy themselves for meeting the eligibility conditions by the Bidders. Bidders shall be required to respond to any clarifications/ additional documents sought by TSREDCO within 07 (seven) days from the date of such intimation from TSREDCO. All correspondence in this regard shall be made through email/ e-tender portal only. It shall be the responsibility of the Bidder to ensure that the email id of the authorized signatory of the Bidder is functional. The Bidder may provide an additional email id of the authorized signatory in the covering letter. No reminders in this case shall be sent. It shall be the sole responsibility of the Bidders to remove all the discrepancies and furnish additional documents as requested. TSREDCO shall not be responsible for rejection of any bid on account of the above.



2.a.4 The response to Tender bid submitted by the Bidder shall be scrutinized to establish Techno- Commercial eligibility as per Tender bid.

**2.b SECOND ENVELOPE (FINANCIAL BID) EVALUATION (STEP - 2)**

In this step evaluations of Techno-Commercially Qualified Bids for the projects shall be done based on the “First Round Tariff Bid” quoted separately for the projects by the bidders in the Electronic Form of Financial Bid. After this step, the shortlisted bidders shall be invited for the Reverse Auction separately for the projects.

2.b.1 Second Envelope (containing First Round Tariff) of only those bidders shall be opened for the projects whose technical bids are found to be qualified.

2.b.2 The Bidder including its Parent, Affiliate or Ultimate Parent or any Group Company will have to submit a single bid (single application) per project and quoting a single tariff per kWh per project applied for. The tariff has to be quoted up to two places of decimal only. If it is quoted with more than two digits after decimal, it shall be ignored after first two decimal places. (For e.g. if the quoted tariff is INR 4.337, then it shall be considered as INR 4.33).

2. b.3 In this step, evaluation will be carried out based on tariff quoted by Bidders.

2.b.4 On completion of Techno-Commercial bid evaluation, if it is found that only one or two Bidder(s) is/are eligible per project for the next stage, opening of the financial bid of the bidder will be at the discretion of TSREDCO. Thereafter, TSREDCO will take appropriate action as deemed fit.

2.b.5 If the first-round tariff quoted is same for two or more Bidders for a particular project, then all the Bidders with same tariff shall be considered of equal rank/ standing in the order.

2.b.6 All Bidders with same tariff shall be eligible for reverse auction round (provided their rank is equal to or less than nth Bidder as mentioned in Clause of this Section.

2.b.7 Ranking of bidders after Financial Bid Evaluation: Following illustrates an example of ranking of bidders after financial bid opening and evaluation

Bidder	Submitted Financial Bid	Ranking
B1	₹ 4.10 (Tariff in ₹/ kWh)	L1
B2	₹ 4.20 (Tariff in ₹/ kWh)	L2
B3	₹ 4.30 (Tariff in ₹/ kWh)	L3
B4	₹ 4.30 (Tariff in ₹/ kWh)	L3
B5	₹ 4.43 (Tariff in ₹/ kWh)	L4
B6	₹ 4.60 (Tariff in ₹/ kWh)	L5
B7	₹ 4.70 (Tariff in ₹/ kWh)	L6



**3.NEGOTIATIONS (STEP - 3)**

3.1 The negotiations for tender shall be conducted separately on the day as intimated by TSREDCO to the eligible bidders.

3.2 The Total eligible bidders for the Project for negotiations shall be decided as mentioned below:

i) After financial bid evaluation of the tender, the bidders shall be shortlisted in the ascending order of financial bids quoted.

3.3 At least one week prior to negotiations, an advance intimation regarding the date and time of the negotiations will be sent by e-mail to all the bidders whose technical bids have been opened and found to be qualified for the tender. However, from this advance intimation it shall not be construed by the bidders that they have been shortlisted for negotiations.

3.4 The minimum decrement value for tariff shall be INR 0.01 per kWh. The Bidder can mention its revised discounted tariff which has to be at least 01 (One) Paisa less than its current tariff.

3.4.1 Bidders can only quote any value lower than their previous quoted tariff taking into consideration the minimum decrement value mentioned in the previous clause. However, at any stage, increase in tariff will not be permissible. Bidders can improve their ranking by quoting the tariff lower than their last quoted tariff.

**4. SELECTION OF SUCCESSFUL BIDDERS:**

4.1 The bidders shall be selected in the ascending order with lowest quoted tariff (being L1) project wise. In case of a tie among two or more bidders (i.e. their last quoted tariff being the same at the end), they will be considered in the chronological order of their last bid with preference to that bidder who has quoted his last bid earlier than others.

In the above case, if the time of quote also becomes exactly same among the bidders at a tie, then the ranking among these bidders shall be done as follows:

Lowest rank will be given to the bidder who has quoted the lowest in Financial Bid and so on.



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020



**SECTION - V**

**TECHNICAL SPECIFICATIONS**



Section - V

Technical specifications

The proposed projects shall be commissioned as per the technical specifications given below. Competent Authority's decision will be final and binding on the bidder.

**DEFINITION:**

A Grid Tied Solar Rooftop Photo Voltaic (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 to supplement the grid power during day time. 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 system shall consist of following equipment/components.

Solar PV modules consisting of required number of Crystalline PV cells. Grid interactive Power Conditioning Unit with Remote Monitoring System Mounting structures, Junction Boxes, Earthing and lightning protections, IR/UV protected PVC Cables, pipes and accessories

**1. SOLAR PV MODULES**

**SPV CRYSTALLINE MODULES**

1.1. Only indigenously manufactured PV modules with RFID and the manufacturer should provide the following minimum information laminated inside the module:

- Made in India (to be subscribed in words)
- Company name / logo
- Module number (it should indicate the voltage and rated wattage of the module)
- Serial number
- Year of make

1.2 The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-2- requirements for construction & Part 2 - requirements for testing, for safety qualification or equivalent IS.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701
  - b) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 250Wp and above wattage. Module capacity less than minimum 250 watts should not be accepted.
  - c) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
  - d) PV modules must be tested and approved by one of the IEC authorized test centers.
  - e) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
  - f) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid. TSREDCO/owners shall allow only minor changes at the time of execution.
  - g) Other general requirement for the PV modules and subsystems shall be the Following:
    - i. The rated output power of any supplied module shall have tolerance of +/- 3%.
    - ii. 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.
    - iii. 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.
    - iv. IV curves at STC should be provided by bidder.
- 1.3. Modules deployed RF identification tag. The following information to be mentioned in the RFID used on each modules. (This has to be inside the laminate, but must be able to withstand harsh environmental conditions).
- a. Name of the manufacturer of the PV module
  - b. Name of the manufacturer of Solar Cells.
  - c. Month & year of the manufacture (separate for solar cells and modules)
  - d. Country of origin (separately for solar cells and module)
  - e. I-V curve for the module Wattage,  $I_m$ ,  $V_m$  and FF for the module
  - f. Unique Serial No and Model No of the module
  - g. Date and year of obtaining IEC PV module qualification certificate.
  - h. Name of the test lab issuing IEC certificate.



- i. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001

**WARRANTIES:**

**a) Material Warranty:**

i. Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than five (05) years from the date of sale to the original customer ("Customer")

ii. Defects and/or failures due to manufacturing

iii. Defects and/or failures due to quality of materials

iv. 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 Owners sole option

**b) Performance Warranty:**

The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

**2. MODULE MOUNTING STRUCTURE:**

a. The module alignment and tilt angle shall be calculated to provide the maximum annual energy output. This shall be decided based on the location of array installation.

b. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement.

c. The structures shall be fixed to the foundation in such a manner that, in future is required they can be easily relocated to a different foundation.

d. The mounting structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation, absorb and transfer the mechanical Loads to the base properly.

e. The mounting steel structure shall be as per latest BIS 2062 (amended up to date) and galvanization of mounting structure shall be in compliance of BIS 4759 (amended up to date).

f. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from SPV panels at the same time.

g. The bidder shall be designed Module Mounting Structure as per MNRE norms for normal / plain FOREST ACADEMYC roofs.



- h. The bidder shall be designed Module Mounting Structure with towards south direction and it is to be with stand 150KMPH wind speed and also maintain the alignment and tilt angle as per MNRE norms. The structure designs are to be approved by Govt. approved / empanelled structural Engineer for specific/ required locations.
- i. Nut & bolts, supporting structures including Module Mounting Structures shall have to be adequately protected from atmosphere and weather prevailing in the area.
- j. All fasteners shall be of stainless steel of grade SS 304.
- k. The Mounting structure shall be grounded properly using GI strips and maintenance free earthing kit.
- l. The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (wind speed of 150 km/ hour). It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind Loading calculation sheet to TSREDCO. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- m. IS 800-2007 shall be followed for structural design.
- n. SPV module mounting structure shall be fixed type with provision of manual correction in tilt angle which shall be made after every 3 months to get maximum output. Azimuth shall be 0 degree True south
- o. Hot dipped Galvanized Steel Structural with minimum 80 microns of galvanization must be considered for all type of structural steel proposed for the power plant
- p. Design drawings with material selected shall be submitted for prior approval of the employer.
- q. The Bidder/Bidding Consortium/Bidding Consortium shall specify installation details of the PV modules and the support structures with appropriate diagram and drawings.

**3. STRING COMBINER BOX OR ARRAY JUNCTION BOXES**

- a. The junction Boxes shall have suitable arrangement for the followings:-
- Combine groups of modules into independent charging sub-arrays that will be wired into the controller.
  - Provide arrangement for disconnection for each of the groups.
  - Provide a test point for each sub-group for quick fault location
  - To provide group array isolation





## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- b. The string combiner box/ junction box shall be dust proof, vermin proof, and waterproof and made of Polycarbonate Plastic
- c. The terminal will be connected to copper bus-bar arrangement of proper size to be provided. The junction boxes shall have suitable cable entry points fitted with cable glands of appropriate sizes for both incoming and outgoing cables
- d. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.
- e. The string combiner box/ junction box shall be with protection class IP 65 for mounting outside in Open weather condition.
- f. Each string combiner box/ junction box will have suitable Reverse Blocking Diodes of maximum DC blocking voltage of 600V / 1000V, whichever causes less power loss, with suitable arrangement for its connecting
- g. The string combiner box/ Array junction Box will also have suitable surge protection device.
- h. The current carrying ratings of the string combiner box/ junction box shall be suitable with adequate safety factor, to inter connect the Solar PV system corresponding to the project capacity, as designed by the Bidder/Bidding Consortium
- i. Necessary sensors and transducers shall be provided in the string combiner boxes to facilitate monitoring of all string parameters in the data acquisition system.
- j. String level remote monitoring facility shall be incorporated to monitor generation and faults at string level.

#### **4. INVERTERS / POWER CONDITIONING UNIT (PCU)**

- a. The PCU / Grid Tied Inverter shall carry a warranty of minimum 5years.
- b. Inverter/PCU shall be non-transformer string inverters, grid tied in nature, shall consist of MPPT controller. Inverters shall be decided based on array design/suitable rating in case of string design, associated control and protection devices etc all integrated into PCU. It shall provide necessary protections for Grid Synchronization. The Inverters should convert DC power produced by SPV modules in to AC power and must synchronize automatically its AC output to the exact AC Voltage and frequency of Grid.
- c. The DC energy produced has to be utilized to maximum and supplied to the bus for inverting to AC voltage to extract maximum energy from solar array and provides 3-ph, 400V AC/ (+10% to - 10%), 50+/- 1.5 Hz with total harmonic voltage distortion less than 3% to synchronize with local grid.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- d. The Inverters shall be of very high quality having efficiency not less than 97% and shall be capable of running in integrated mode.
- e. Degree of protection of the indoor Inverters shall be at least IP-42 and that of outdoor at least IP-65.
- f. Built in with data logging to remotely monitor plant performance through external PC shall be provided (PC shall be provided along with SPV Plant).
- g. The Inverters should be designed to be completely compatible with the SPV array voltage and Grid supply voltage.
- h. The dimension, weight, foundation details etc. of the PCU shall be clearly indicated in the detailed technical specification.
- i. The PCU shall be capable of complete automatic operation, including wake-up, synchronization & shut down independently & automatically.
- j. Both AC & DC lines shall have suitable fuses & surge arrestors and Bidder/Bidding Consortium/Bidding Consortium/ss to allow safe start up and shut down of the system. Fuses used in the DC circuit should be DC rated.
- k. Inverters/PCU shall operate in sleeping mode when there will no power connected.
- l. **Protections:**
- Over voltage both at input & output
  - Over current both at input & output
  - Over/under grid frequency
  - Heat sink over temperature
  - Short circuit protection
  - Protection against lightning
  - Surge arrestors to protect against Surge voltage induced at output due to external source
  - Anti- Islanding Protection
  - And other required protections
- It should have user friendly LED/LCD or touch display for programming and view on line parameters such as:
- Inverter per phase Voltage, current, kW, kVA and frequency,
  - Grid Voltage and frequency,
  - Inverter (Grid) on Line status,
  - PV panel voltage,
  - Solar charge current
  - Individual power stage heat sink and cabinet temperature,



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- Inverter Import export kWh summation
  - Solar kWh summation
  - Inverter on
  - Grid on
  - Inverter under voltage/over voltage
  - Inverter over Load
  - Inverter over temperature
- m. PCU shall be capable to synchronize independently & automatically with grid power line frequency to attain synchronization and export power generated by solar plant to grid.
- n. The PCU shall be capable of operating in parallel with the grid utility service and shall be capable of interrupting line fault currents and line to ground fault currents.
- o. The PCU shall be able to withstand an unbalanced Load conforming to IEC standard (+/-5% voltage) and relevant Indian electricity condition. The PCU shall include appropriate self- protective and self-diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters - beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation feature, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.
- p. The Inverter shall go to shutdown/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay.
- When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to standby/shutdown mode.
  - The PCU control shall prevent excessive cycling of shut down during insufficient solar radiance.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- q. Operation outside the limits of power quality as described in the technical data sheet should cause the power conditioner to disconnect the grid. Additional parameters requiring automatic disconnection are
- Over current
  - Earth fault
  - And reverse power
  - In each of the above cases, tripping time should be less than a few seconds.
- r. Detailed technical description of the complete unit of offered Inverter should be furnished with bid document Following Technical documents of Inverter shall be supplied for approval after placement of order
- Detailed technical description of the complete unit
  - Instructions for installation and operation
  - Electrical diagrams of all internal cabling necessary for installation, maintenance and fault finding.
  - Description of electrical and mechanical characteristics of units
  - Maintenance and fault finding procedures.
  - Safety precautions
  - Software for data monitoring with detailed description.
  - Details of data acquisition
  - Factory test reports in details on various parameters.
  - Trouble shooting procedures
  - All maintenance requirements and their schedules, including detailed instructions on how to perform each task.
  - Detailed schematics of all power instrumentation and control equipment and subsystems along with their interconnection diagrams. Schematics shall indicate wiring diagrams, their numbers and quantities, type and ratings of all components and subsystems.
  - A detailed bill of materials which shall list components model numbers, quantities and manufacturer of each supplied item.
  - All documents and write ups shall be in English. They shall be clean and legible, and must be checked, signed, approved and dated by a competent representative of the Bidder/Bidding Consortium.



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

s. The Bidder/Bidding Consortium/Bidding Consortium should note that Inverters/PCU is going to be installed in an area which is prone to hot air of 48 to 50 degree centigrade. Thus the room shelters and air blower/ fan (auto operated as per requirement), if required, for Inverter will be in scope of supply. Integrated solutions into prefabricated structures or in standard metallic container may be accepted. The Bidder/Bidding Consortium/Bidding Consortium shall provide data sheet for Inverter/ Power Conditioning Unit along with their offer.

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

u. MNRE latest additional guidelines for Inverters:

1. The inverters should be tested as per IEC standards. The following criteria should be followed:

i. The benchmarking efficiency criteria for Grid Tied (string inverters) inverter

- At nominal voltage and full Load is  $\geq 95\%$ .
- For Load  $\geq 25\%$  is  $\geq 92\%$ .

ii. In case of standalone / grid interactive inverter the bench marking efficiency criteria

- At full Load is 85%
- For the Load  $\geq 25\%$  is 80%

iii. No Load losses should not be more than 5%.

2. The following tests are to be conducted on the inverters:

- a) Efficiency measurement as per IS/IEC 61683 (for system with no MPPT)
- b) Overall efficiency for Grid Tied inverter as per EN50530
- c) Islanding Prevention test as per IS 16169/IEC 62116
- d) PV system characteristics of utility interface as per IEC 61727 (the system should meet all the clauses as per the standard except the clause 5.2.2 of IEC 61727. In case of clause 5.2.2 it should withstand the over /under frequency in the range of 47 to 52Hz)
- e) Overall charge controller efficiency should be  $\geq 85\%$  at  $\geq 10\%$  Load and  $\geq 92\%$  at full Load.
- f) System should have IP 65 certification for outdoor use IP 21 & 22 for indoor use.
- g) Environmental testing as per IEC 60068-2-(1,2,14&30)

3. All the test laboratories should provide a clear cut verdict in the end of the test report regarding conformity / non conformity of the system against the standard / specifications



for which it has been tested. Any discrepancy in the specifications of sample submitted, the test labs should specify the same in the report.

4. From 1st July' 2017 all test laboratories should start the data logging of all the test parameters during testing and soft copy of the same will be maintained for a period of 5years.

#### **5. ENERGY METERING**

Digital Communicable Energy Meters shall be provided for measuring power consumption by grid side Loads on continuous basis and register the cumulative energy on 30-minute interval basis (Programmable/adjustable), daily, monthly and annually the energy generated. The Energy Meter shall have default display of Cumulative kWh. The following parameters to be displayed on-demand:

- a. The Energy Meter shall have 4-quadrant measurement method and shall be suitable for 3-wire as well as 4-wire connection.
- b. The meter shall also record Maximum Demand at set interval. TOD (Time of Day) measurement shall also be possible.
- c. The energy meter shall communicate with the Data Acquisition System / other plant network over MODBUS protocol.
- d. Separate Meters shall be provided for Solar Power Generation and Auxiliary Load consumption.
- e. In case more than one inverter circuits are used for synchronizing with the grid then similar meters shall be provided for each inverter output circuit.
- f. Additionally one digital summator shall also be provided for calculation and display of total concurrent energy/ demand of all the feeders.
- g. Meters shall comply with the requirements of CEA Regulations on Installation & Operation of Meters.
- h. The functional Specification of the energy meters shall be as follows:
  - Applicable IS : IS 13779 or IS 14679 depending upon accuracy of meters.
  - Accuracy Class Index: 0.2S
  - Power factor range: Zero lag-unity-zero lead
  - Display parameters : LCD test, KWH import, KWH export, MD in KW export, MD in KW import, Date & Time, AC(phase wise and line wise) current and voltages and power



factor and frequency (Cumulative KWH will be indicated continuously by default & other parameters through push-button) .

- Power Consumption: Less than 4VA in Voltage circuit and 2 VA for Current circuit. - Frequency: 50 Hz with + / -5% variation
- Test Output Device: Flashing LED visible from the front
- Billing data: Meter serial number, Date and time, KWH import, KWH export, MD in KW (both export and import), History of KWH import and export, & MD (both export & import).
- All these data shall be accessible for reading, recording and spot billing by downloading through optical port/RS485 on MRI or Laptop computers at site.

#### **6. INTEGRATION OF PV POWER WITH GRID:**

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.

#### **7. DATA ACQUISITION AND LOGGING**

- i. Data Acquisition System shall be provided for each of the solar PV plant.
- ii. 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.
- iii. 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.
- iv. 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
- v. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
  - a. AC Voltage.
  - b. AC Output current.



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- c. Output Power
  - d. Power factor.
  - e. DC Input Voltage.
  - f. DC Input Current.
  - g. Time Active.
  - h. Time disabled.
  - i. Time Idle.
  - j. Power produced
  - k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage).
- vi. 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.
- vii. 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.
- viii. 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.
- ix. 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.
- x. Computerized AC energy monitoring shall be in addition to the digital AC energy meter.
- xi. 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.
- xii. All instantaneous data shall be shown on the computer screen.
- xiii. Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.
- xiv. Provision for Internet monitoring and download of data shall be also incorporated.





- xv. 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.
- xvi. Ambient / Solar PV module back surface temperature shall be also monitored on continuous basis.
- xvii. 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.
- xviii. Remote Monitoring and data acquisition from ranging of 1kWp through Remote Monitoring System software at the Beneficiary department/TSREDCO 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 supplier. Provision for interfacing these data on TSREDCO server and portal in future shall be kept.

**8. POWER & CONTROL CABLES:** Cables of appropriate size to be used in the system shall have the following characteristics:

- i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii. Temp. Range: -10oC to +80oC.
- iii. Voltage rating 660/1100V
- iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- v. Flexible
- vi. Sizes of cables between array inter connections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- vii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- viii. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25years.
- ix. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.



- x. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured 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.
- xi. The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.
- xii. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

**9. DC DISTRIBUTION BOARD:**

9.1 DC Distribution panel to receive the DC output from the array field.

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

**10. AC DISTRIBUTION PANEL BOARD:**

- a) 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.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- c) The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- d) 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
- e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- g) Should conform to Indian Electricity Act and rules (till last amendment).



h) 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

Variation in supply voltage --- +/- 10 %

Variation in supply frequency ---- +/- 3 Hz

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

11.1 The combined wattage of all inverters should not be less than rated capacity of power plant under STC.

11.2 Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

**12. EARTHING AND LIGHTNING PROTECTION SYSTEM**

The system should be provided with all necessary protections like earthing, Lightning, and grid islanding as follows:

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

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

**12.3. EARTHING PROTECTION:**

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

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



**12.4 GRID ISLANDING:**

- i. 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.
- ii. A manual disconnect 4pole 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

**13. POWER CONSUMPTION:**

Regarding the generated power consumption, priority need to give for internal consumption first and thereafter any excess power can be exported to grid. Finalization of tariff is not under the purview of TSREDCO or MNRE. Decisions of appropriate authority like DISCOM, state regulator may be followed.

**14. CIVIL WORKS:**

This section of the specification covers entire civil engineering work for technological structures, new equipment and facilities for all production, auxiliary and ancillary units, foundation for all structures and main equipment described elsewhere in this specification on a Turnkey basis for installation of the Solar PV power plant.

The scope shall cover complete civil engineering work for the proposed plant within its battery limit, on turnkey basis including design, supply of all materials and execution.

**15. PROJECT SCHEDULE & PROGRESS MONITORING**

Bidder/Bidding Consortium shall submit Overall schedule along with the offer. The overall schedule should be planned in weeks. The heads to be covered in the schedules shall broadly be as follows:

- i. Basic engineering and approval
- ii. Preparation and issue of ordering / technical specifications for sub vendors



- iii. Placement of orders on sub-vendors
- iv. Detailed design and engineering
- v. Submission and approval of drawings for civil & structural works
- vi. Manufacture and supply of all equipment/ piping/ cables, etc
- vii. Fabrication and supply of building and technological structures
- viii. Submission and approval of erection drawings and manuals
- ix. Erection of building and technological structures
- x. Erection of equipment, piping, cables, etc.
- xi. Testing and commissioning

The major milestones for the project are to be highlighted in the schedule. The Bidder/Bidding Consortium shall submit an overall erection plan for the plant and equipment under his scope of supply along with the tender.

The successful Bidder/Bidding Consortium shall have to submit the Level-II network schedule both in hard and editable soft copy (in MS Project/Primavera) covering further details of construction, fabrication and erection activities, area-wise, for approval and finalization of the Employer / Consultant. The format of progress report to be discussed and agreed.

The Bidder/Bidding Consortium/Bidding Consortium has to clearly specify to complete the work as per terms and conditions of agreement.

#### **16. DRAWINGS, DATA AND DOCUMENTS**

The Bidder/Bidding Consortium shall furnish following documents/ information along-with the offer.

- General description of equipment offered specifying the important features, make, technical parameters, materials of construction, etc. to enable the owner to have proper understanding of the equipment offered and its operation.
- Technical literature, catalogue and publications
- Layout of Complete Power Plant Installation showing location of all major sub-systems
- Single line diagrams of all systems and sub systems of the entire power plant including that of the MMS structures.
- Typical general arrangement and foundation details
- General lighting scheme



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- Type tests certificates of all major equipments like switchgear, Inverters, Solar Modules etc.
- Single line schematic diagram of electrical system for grid interfacing and grid interconnection from Solar plant
- General arrangement drawings and circuit diagrams of Module, Inverters, Transformers, and overall solar plant arrangement
- The Bidder/Bidding Consortium shall submit a list of all drawings and documents proposed to be submitted. The list will be approved by employer/ consultant and may be modified if necessary
- Each drawing/ documents in the list shall be identified with a serial number, description and scheduled date of submission.

### **For Approval:**

- Equipment layout plan
- Single line diagram with rating of all equipment, cable sizes and details of protection and metering
- Front view, general arrangement of equipment with plan and sectional views; clearly showing the position of various components, and clearance between components. The make and type of components, together with vital technical parameters shall also be furnished along with GA drawings
- Control, alarm, indications, interlocking and other schematics
- Lighting layout drawings with illumination levels, type and make of fittings.
- Wiring terminal plan drawings with cable connections
- Earthing scheme and layout of earthing network with design calculations, for outdoor switch yard and other areas/premises, if applicable.
- Cable layout drawings, cable channels details
- Installation drawings of all equipment with layout of equipment, cables, lighting systems, (if applicable) and earthing network.
- Calculation for design of LT busduct, sizing of busbars, busbar supports considering the temperature rise and fault current.
- Calculations for design of supporting structures for outdoor switchyard w.r.t. wind pressure, short circuit forces etc. (if applicable).

### **Instruction Manuals for Operation & Maintenance**

- Complete and comprehensive instruction manuals for operation and maintenance of the equipment with drawings. This shall include the following:



- Preventive maintenance schedule for each equipment
- Procedure for shut down and start-up of the entire power plant
- Safety procedures for safe operation of equipment and complete system
- Specification of equipments installed.
- Test procedure for site tests

Upon installation and commissioning supplier shall incorporate revisions/modifications if any in the reproducible and submit 'as built' drawings for employer's record as per general condition of contract.

#### **17. DELIVERY**

The completion period of the project is limited to 4 months. No further extension shall be provided except under Force Majeure.

#### **18. INSTALLATION GUIDELINES**

- All the electrical installations shall conform to the Indian Electricity Act, Indian Electricity Rules, and regulations.
- The mechanical and Civil installation shall conform to the applicable Acts and Rules of corresponding Inspectorate and other relevant authorities, if any.
- Provision of cable glands, ferrules, cable lugs, tags, sealing kits shall be arranged.
- Supply and installation of first aid boxes, shock treatment charts, rubber mats, and key board etc.
- Erection, testing and commissioning of various equipment shall be done strictly as per manufacturer's instructions.
- Cables shall be laid in conduits as per the electrical installation procedures
- The minimum bending radius of cables shall be 12D and 15D for LT and LT cable respectively.
- Interplant cable shall be laid to trenches, tunnel or overhead structure as per site condition. Digging and refilling of cable trenches, required erection accessories shall be in the scope of work of the Bidder/Bidding Consortium.
- Cable shall be fixed to cable racks or cable trays or run on cleats or in conduits, which shall be fixed to concrete brick work or steel structure as required for proper support of the cables, easy accessibility and neatness of appearance.
- Perforated trays shall be provided for control cables.



- Approved type of danger boards, boards inscribing 'ISOLATED', 'DO NOT CLOSE, MEN AT WORK' in English, Telugu, Hindi and Local languages shall be provided in sufficient numbers.
- Special care shall be taken to make the enclosed equipment protected against entry of rats, lizard, and creeping reptiles which may create electrical short circuits.
- Approved cable markers of reinforced concrete shall be provided and fixed to mark each and every diversion of all buried cable routes. A marker shall also be placed every 50 meters along straight portions of each route. A concrete cable marker shall also be provided and fixed to mark the position of every buried joints.
- Distinguishing labels of non-corrodible material marked in accordance with the cable numbers of the cabling diagram shall be permanently attached to each end of every cable. The phase or polarity of each power cable core at the cable ends shall be identified.
- Mounting of Inverters, Electrical panels, Dc and Ac junction boxes, Monitoring systems shall be done with proper mounting procedures with neat look.

#### **19. ERECTION, TESTING, COMMISSIONING**

The scope of work of the Bidder/Bidding Consortium shall be complete erection of the equipment, cables, auxiliary systems and sub systems under the scope of work. The Bidder/Bidding Consortium shall make all arrangements to deliver the equipment at site by wagons/ trucks/ trailers, build his own stores (covered, uncovered, air-conditioned, if necessary) for the proper storage of equipment, maintain the stores and all related documents and records, transport the equipment to site for erection purpose. The Bidder/Bidding Consortium also shall make all security arrangements.

- The Bidder/Bidding Consortium shall be responsible for proper, quick retrievable and neat storage and also undertake the conservation of all consignments including damaged boxes. During storage of equipment, the Bidder/Bidding Consortium shall take into account deterioration and carry out the re-conservation of the complete equipment/parts/supplies as may be necessary as per the storage instructions of the Manufacturer of equipment/ components. The Bidder/Bidding Consortium shall also supply the consumables required for such re-conservation work and repair/ replace parts required thereof for the proper functioning of the equipment after erection and commissioning.
- The Bidder/Bidding Consortium shall retrieve the equipment/ materials from stores and transport the same to erection site.





## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

- The Bidder/Bidding Consortium shall unpack and do visual checking against physical damages to the equipment/cases, clean equipment before start of erection. Damage/shortage, if any, shall be reported to the Employer/ Consultant and shall be rectified/replaced expeditiously, so as not to upset the erection and commissioning schedule.
- The Bidder/Bidding Consortium shall provide all necessary erection equipment and tools & tackles including material handling equipment, cranes, compressors and other equipment and instruments and consumables, all commissioning equipment and instruments, welding equipment, winches, alignment tools, precision levels, etc., which may be required for carrying out the erection and commissioning work efficiently.
- All instruments shall be properly calibrated before use. Unless otherwise specified, the above erection equipment/ materials shall be the property of the Bidder/Bidding Consortium. However, Employer's prior permission shall be required for removal of these erection equipment/ materials from the site. The Bidder/Bidding Consortium shall ensure that proper procedure and documentation is maintained at entry gate of Employer's premises for such items as might be carried back by the Bidder/Bidding Consortium after completion of work.
- The Bidder/Bidding Consortium shall provide erection consumables like oxygen and acetylene gas, welding rods, solder lugs, oil, grease, kerosene, cotton waste, etc. required for erection of equipment and steel structures.
- The Bidder/Bidding Consortium shall construct and maintain his own site offices and stores as required for the work and arrange for maintaining in the area placed at the Bidder/Bidding Consortium's disposal in a neat manner.
- The Bidder/Bidding Consortium shall provide his scheme for mobilization with Bar Chart indicating clearly the resources, manpower and machinery proposed to be deployed to ensure timely completion of work and quality of workmanship
- On request, the Employer may help the Bidder/Bidding Consortium by providing any special handling/construction equipment needed in the interest of work subject to availability and on payment of hire charges and other conditions of Employer. The charges shall be recovered from any bill of the Bidder/Bidding Consortium due immediately thereafter.
  - o All safety, health and pollution control measures as required to be adopted as per the Statutory Regulations and the Safety conditions for Bidder/Bidding Consortiums issued along with the tender or otherwise required or implied by statutory regulations or practices shall be strictly followed by the Bidder/Bidding Consortium during the execution



## ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

of the Contract. The Bidder/Bidding Consortium shall set up a suitable safety organization of his own at site in this regard.

- Labor facilities such as shelter, food shall be arranged by the Bidder/Bidding Consortium. On request drinking water shall be provided by the employer.
- The Employer shall deploy/supply Supervising/operating & maintenance personnel and all raw materials, utilities & services required for commissioning.
- Auxiliary power supply facility for system testing & commissioning, Inverter auxiliary, luminaries, control room, Inverter room, site office and other power consuming areas shall be provided by the Employer
- The results of pre commissioning Test, start-up tests and commissioning report shall be recorded jointly by the Bidder/Bidding Consortium and the TSREDCO. And a cumulative report shall be duly submitted by the Bidder/Bidding Consortium to
- The Bidder/Bidding Consortium shall rectify the defects observed during the Commissioning period promptly.
- Successfully commissioning as accepted if the complete system remains synchronized with the grid for a period of 48 hours without any disturbance or interruption. During this period the system shall generate power during sunshine hours and export power to the grid and during dark hours shall remain synchronized with the grid. If there is an outage isolation from the grid during this period due to defects in the system, then commissioning period shall start afresh after rectification of the said defect. However if the ambient or the grid parameter are beyond the specified limits if any shall not be considered as stoppage.
- The Commissioning and project completion certificate shall be issued by the Employer subject to relevant conditions.

### **20. CONNECTIVITY**

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. Following criteria have been suggested for selection of voltage level in the distribution system for ready reference of the solar suppliers.

<b>Plant Capacity</b>	<b>Connecting voltage</b>
Up to 10KW	230- Single Phase or 415V - three phase at the option of the consumer/ beneficiary
Above 10kW	At 415V - three phase or HT/EHT level (11kV/33kV/66kV) as per DISCOM rules



- i. The maximum permissible capacity for rooftop shall be 1 MW for a single net metering point.
- ii. Utilities may have voltage levels other than above, DISCOMS may be consulted before finalization of the voltage level and specification be made accordingly.
- iii. For large PV system (Above 100 kW) for commercial installation having large Load, the solar power can be generated at low voltage levels and stepped up to 11 kV level through the step up transformer. The transformers and associated switchgear would require to be provided by the SPV bidders.

**21. TOOLS & TACKLES AND SPARES:**

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

**22. DANGER BOARDS AND SIGNAGES:**

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

**23. FIRE EXTINGUISHERS:**

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

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



**24. Technical Specifications:**

- 1) The Solar panels to be used in this project should be from Indian manufacturers certified by the Ministry of New & Renewable Energy (MNRE).
- 2) The SPV panels shall carry a warranty of minimum 25years.
- 3) The SPV panel must be warranted for their output peak watt capacity which shall not be less than 90% at the end of 10years and 80% at the end of 25years.
- 4) In addition any components those are to be used in the project should have the certification of MNRE.

**25. PLANNING AND DESIGNING:**

- i. The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to TSREDCO for approval.
- ii. TSREDCO 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.
- iii. The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submits three sets and soft copy in CD of final drawing for formal approval to proceed with construction work.

**26. TRANSFORMER "IF REQUIRED" & METERING:**

- i. 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.
- ii. The bidirectional electronic energy meter as per the requirement shall be installed for the measurement of import/Export of energy.
- iii. The bidder must take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network and submit the same to TSREDCO before commissioning of SPV plant.
- iv. Reverse power relay shall be provided by bidder (if necessary), as per the local DISCOM requirement.



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020



**SECTION - VI**

**OTHER PROVISIONS**



SECTION - VI  
OTHER PROVISIONS

1 ROLE OF BENEFICIARY DEPT.

It is envisaged that the beneficiary Dept. shall appoint any officer which will provide necessary support to facilitate the required approvals and sanctions in a time bound manner so as to achieve commissioning of the Projects within the scheduled Timeline. This may include facilitation in the following areas:

The beneficiary Dept. shall undertake the following activities also to achieve the objectives of speedy establishment and implementation of Solar Power Plant in the Host Area

- a. Obtain statutory & non-statutory clearances and to make area development plan within project location.
  - b. Frame out transparent project land allotment/right to use policy and specify procedures pursuant to the relevant State policies and their amendments thereof.
  - c. Enter into Right to Use/ Lease agreement and give possession of land within 03 (Three) months from the Effective Date of the PPA to the SPD for the entire period of the Project.
  - d. Coordination among various State and Central agencies for speedy implementation of projects
  - e. Support during commissioning of projects and issue of commissioning certificates.
- While it will be the endeavor of the beneficiary Dept.as described above to facilitate support in their respective area of working but nevertheless, SPD shall be overall responsible to complete all the activities related to Project Development at its own risk and cost.

2 SCOPE MATRIX

The scope matrix indicating roles and responsibilities of beneficiary Dept. and SPD are indicated on the table below:-

S. N.	KEY FUNCTIONS	ROLE/ RESPONSIBILITY
1	Providing the shadow free Rooftop/ Land/Plot	Beneficiary Dept.
2	Internal Water Supply Arrangement	Beneficiary Dept.
3	Land Leveling/ Roof clearing	Beneficiary Dept.
4	Illumination System (For Primary Pathways)	SPD
5	Construction of Cable Tray	SPD
6	Construction of Office Complex (if required)	SPD
7	Construction of Boundary Wall/ Fencing for the projects (where ever required)	SPD



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

8	O & M Services	SPD
9	Construction Power Arrangement from plant to 230/440/11 KV existing Line	SPD
10	Approval from TSTRANSCO/TS DISCOMS/CEIG / Electrical Inspectorate, etc.	SPD

### **4.1 LIGHTING**

Lighting has been planned along the path & walkways. Area lighting shall be provided for safety and operational needs.

### **4.2 DRAINAGE SYSTEM (where ever required)**

Keeping in view of the topography of the area necessary cutting, filling & leveling work shall be taken up to have different benches suitable to our plant requirement as well as compatible with the Road network.

### **4.3 SECURITY (If Required)**

Multilevel security arrangements to be provided, such as deployment of security personal at entry gate, patrolling boundary lines & other strategic location. (Where ever required)

### **4.4 BUILDING CONTROL ROOM**

It is proposed to a build a suitable control room for the Solar Project. (Where ever required)

### **4.5 WEATHER MONITORING STATION (WMS)**

One No. of Weather Monitoring Station (WMS) shall be developed for monitoring rainfall, solar radiation, wind speed, atmospheric pressure, temperature and other necessary parameters on real-time basis. This Weather Monitoring System should be SCADA compatible & work in line with Sub-station SCADA System.

**4.6 CONSTRUCTION POWER:** To be arranged by the SPD.

**4.7 WATER RESOURCE:** To be made available by the SPD.



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

---



**SECTION - VII**

**FINANCIAL BID**





# Telangana State Renewable Energy Development Corporation Ltd

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

## SECTION-VII

### FINANCIAL BID

(On the official Letterhead of the firm)

(To be submitted in a separate envelope)

Design, Supply, Installation, Commissioning, Maintenance and Operation of **200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode**

Project Type	Levellised cost for supply of power for 25 years from Grid Connected Solar PV Power Plant as per MNRE/TSREDCO/TRANSCO/DISCOM Specifications under Net Metering Scheme under RESCO MODE (Rs./KWh)	
	In Figures	In Words
Design, Supply, Installation, Commissioning, Maintenance and Operation of <b>200KWp GCRT power plant at Telangana Forest Academy, Dulapally, Hyderabad under RESCO mode</b>		

#### Certified that:

1. The bidder has to quote unit rate only and will be uniform for the entire 25 years period.
2. above rates are in accordance with specifications & various terms & conditions mentioned in the tender document.
3. The rates are inclusive of all taxes and duties of Govt. of Telangana as well Govt. of India prevailing from time to time.
4. Amount shall be quoted in INR / kWh up to two decimal places.
5. In the event of any discrepancy between the values entered in figures and in words, the values entered in words shall be considered.

Authorized Signature:

Name:

Designation:

Name & Address of the Company/Consortium



***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020



**SECTION - VIII**

**SAMPLE FORMS & FORMATS  
FOR BID SUBMISSION**



## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### **Format-I Covering Letter**

**(The covering letter should be on the Letter Head of the Bidding Company)**

#### **BIDDERS UNDERTAKING COVERING LETTER (Letter shall be submitted on Bidder(s) Letter Head)**

Ref No:

Date:

To

**The V.C & Managing Director**

**Telangana State Renewable Energy Development Corporation Limited (TSREDCO)**

Corporate Office: D.No. 6-2-910, Visvesvaraya Bhavan,

The Institution of Engineers Building, Khairatabad, Hyderabad - 500 004.

Telangana State, India

Dear Sir,

**Sub:** Design, Supply, Installation, Commissioning, Maintenance and Operation of Grid connected Solar Power plants under State Net Metering Policy- reg.

**Tender Reference:** TSREDCO/ SE/S PV/ Govt./ FOREST ACADEMY/ RESCO/ 2020,  
**Dt.** \_\_\_\_ .11.2020

\*\*\*\*

1. We have examined the Tender for Supply, Installation and Commissioning of Grid connected Solar Power plants as specified in the Tender. We undertake to meet the requirements and services as required and as set out in the Tender document.
2. We attach our Technical Bid and Financial Bid in separate sealed covers as required by the Tender both of which together constitute our proposal, in full conformity with the said Tender.
3. We have read the provisions of Tender and confirm that these are acceptable to us. We further declare that additional conditions, variations, deviations, if any, found in our response shall not be given effect to.
4. We undertake, if our Bid is accepted, to adhere to the requirements as specified in the Tender or such modified plan as may subsequently be agreed.
5. We agree to unconditionally accept all the terms and conditions set out in the Tender document and also agree to abide by this Bid response for a period as mentioned in the Tender from the date fixed for bid opening and it shall remain binding upon us with full force and virtue, until within this period a formal contract is prepared and executed, this Bid response, together with your written acceptance thereof in your notification of empanelment, shall constitute a binding contract between us and TSREDCO.
6. We affirm that the information contained in the Technical Bid or any part thereof, including its schedules, and other documents, etc., delivered or to be delivered to TSREDCO is true, accurate, and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead TSREDCO as to any material fact.
7. We also agree that you reserve the right in absolute sense to reject all or any of the products/ service specified in the bid response without assigning any reason whatsoever.
8. It is hereby confirmed that I/We are entitled to act on behalf of our company/ organization and empowered to sign this document as well as such other documents, which may be required in this connection.
9. We agree to use only indigenous PV modules in this project.
10. We also declare that our Company/Organisation is not blacklisted by any of the State or Central Government and organisations of the State or Central Government.



***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

11. We undertake to use the BOS components other than PV Modules and Solar grid tie Inverters as per the standards stipulated.

Signature of the authorised person:

Name of the authorised person:

Designation:

Name and Address of Bidder

Stamp of bidder

**CERTIFICATE AS TO AUTHORISED SIGNATORIES**

I, certify that I am (Name) ..... (Designation) ....., and that (Name)..... who signed the above Bid has been duly authorized to sign the same on behalf of our Organisation.

Date:

Signature:

Seal:

TSREDCO



**Format-II**

**FORMAT FOR BANK GUARANTEE FOR - EARNEST MONEY DEPOSIT**

This deed of Guarantee made on..... day of Month & Year by Name & Address of the bank (hereinafter called the „GUARANTOR“) on the one part, on behalf of M/s Name & address of the Firm (hereinafter called the “Firm“) ) in favour of VC& Managing Director, TSREDCO, Hyderabad on the following terms and conditions.

Whereas the FIRM is submitting its tender for (Name of the work) and this guarantee is being made for the purpose of submission of Earnest money deposit with the tender document.

Know all people by these presents that the GUARANTOR, hereby undertake to indemnify and keep TSREDCO indemnified up to the extent of Rs.....during the validity of this bank guarantee and authorize TSREDCO to recover the same directly from the GUARANTOR. This bank guarantee herein contained shall remain in full force and effect till the expiry of its validity or till any extended period (if extended by the bank on receiving instructions from FIRM.). The liability under the guarantee shall be binding on the GUARANTOR or its successors.

Whereas the GUARANTOR further agrees that their liability under this guarantee shall not be affected by any reason of any change in the offer or its terms and conditions between the FIRM and TSREDCO with or without the consent or knowledge of the GUARANTOR.

Whereas the GUARANTOR further agrees to pay guaranteed amount hereby under or part thereof, on receipt of first written demand whenever placed by TSREDCO during the currency period of this guarantee. The GUARANTOR shall pay TSREDCO immediately without any question, demure, reservation or correspondence.

Whereas the GUARANTOR hereby agrees not to revoke this guarantee bond during its currency period except with the previous consent of TSREDCO in writing.

Notwithstanding anything contained herein

1. Our liability under this bank guarantee shall not exceed Rs. ....
2. This Bank guarantee shall be valid up to .....
3. We are liable to pay the guaranteed amount or any part thereof under this bank guarantee only and only against the written claim or demand on or before ..... Sealed with the common seal of the bank on this .....day of Month and Year

**Witness :**

- 1.
- 2

**(Signature and seal of Bank)**



**Format-III**

**FORMAT FOR PERFORMANCE BANK GUARANTEE (PBG)**

{To be submitted for the Allocated capacity in different locations of Telangana state at the time of Project allocation separately}

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

In consideration of the ----- [Insert name of the Bidder] (hereinafter referred to as selected Solar Power Developer') submitting the response to Tender inter alia for selection of the Project under RESCO MODE of the capacity of \_\_\_\_ kWp / MWp, at .....[Insert location details] under Roof Top scheme in response to the Tender no.....dated..... issued by Telangana State Renewable Energy Development Corporation Limited (hereinafter referred to as TSREDCO) and TSREDCO considering such response to the Tender of .....[insert the name of the selected Solar Power Developer] (which expression shall unless repugnant to the context or meaning thereof include its executers, administrators, successors and assignees) and selecting the Solar Power Project of the Solar Power Developer and issuing Letter of allocation No ----- to (Insert Name of selected Solar Power Developer) as per terms of Tender and the same having been accepted by the selected SPD or a Project Company, M/s ----- {a Special Purpose Vehicle (SPV) formed for this purpose}, if applicable ]. As per the terms of the Tender, the \_\_\_\_\_ [insert name & address of bank] hereby agrees unequivocally, irrevocably and unconditionally to pay to TSREDCO at [Insert Name of the Place from the address of the TSREDCO] forthwith on demand in writing from TSREDCO or any Officer authorised by it in this behalf, any amount upto and not exceeding Rupees----- [Total Value] only, on behalf of M/s \_\_\_\_\_ [Insert name of the selected Solar Power Developer / Project Company]

This guarantee shall be valid and binding on this Bank up to and including..... and shall not

be terminable by notice or any change in the constitution of the Bank or the term of contract or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rs. \_\_\_\_\_

Our Guarantee shall remain in force until.....

TSREDCO shall be entitled to invoke this Guarantee till .....

The Guarantor Bank hereby agrees and acknowledges that TSREDCO shall have a right to invoke this BANK GUARANTEE in part or in full, as it may deem fit.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand by TSREDCO, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to TSREDCO.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by -----[Insert name of the selected bidder]. The Guarantor Bank shall not require TSREDCO to justify the invocation of this



***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. **TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020**

BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against TSREDCO in respect of any payment made hereunder

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Delhi shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly TSREDCO shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the selected Solar Power Developer / Project Company , to make any claim against or any demand on the Successful bidder or to give any notice to the selected Solar Power Developer / Project Company or to enforce any security held by TSREDCO or to exercise, levy or enforce any distress, diligence or other process against the selected Solar Power Developer / Project Company .

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. \_\_\_\_\_ (Rs. \_\_\_\_\_ only) and it shall remain in force until

..... We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if TSREDCO serves upon us a written claim or demand.

Signature \_\_\_\_\_

Name \_\_\_\_\_

Power of Attorney No. \_\_\_\_\_

For \_\_\_\_\_ [Insert Name of the Bank] \_\_\_\_\_ Banker's Stamp and Full Address.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_

Witness:

1. ....

2.....

Signature

Signature

Name and Address

Name and Address

Notes:

1. The Stamp Paper should be in the name of the Executing Bank and of Appropriate value.
2. The Performance Bank Guarantee (PBG) shall be executed by any scheduled Bank



**Format-IV**

**FORMAT FOR BID SECURITY**

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

Ref. \_\_\_\_\_

Bank Guarantee No. \_\_\_\_\_

Date: \_\_\_\_\_

In consideration of the -----[Insert name of the Bidder] (hereinafter referred to as 'Bidder') submitting the response to Tender inter alia for selection of the Project under RESCO route of the capacity of \_\_\_\_ MWp in the Telangana. State for the districts as indicated in Tender) in response to the Tender No. \_\_\_\_\_ dated \_\_\_\_ issued by Telangana State Renewable Energy Development Corporation Limited (hereinafter referred to as TSREDCO) and TSREDCO considering such response to the Tender of .....[insert the name of the Bidder] as per the terms of the Tender, the \_\_\_\_\_ [insert name & address of bank] hereby agrees unequivocally, irrevocably and unconditionally to pay to TSREDCO at [Insert Name of the Place from the address of TSREDCO] forthwith on demand in writing from TSREDCO or any Officer authorized by it in this behalf, any amount up to and not exceeding Rupees ----- only, on behalf of M/s. \_\_\_\_\_ [Insert name of the Bidder]

This guarantee shall be valid and binding on this Bank up to and including \_\_\_\_\_[insert date of validity in accordance with condition of this Tender] and shall not be terminable by notice or any change in the constitution of the Bank or the term of contract or by any other reasons whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, or agreed with or without our knowledge or consent, by or between parties to the respective agreement.

Our liability under this Guarantee is restricted to Rs. \_\_\_\_\_ (Rs. \_\_\_\_\_ only). Our Guarantee shall remain in foForest Academy until \_\_\_\_ . TSREDCO shall be entitled to invoke this Guarantee till \_\_\_\_ [Insert date which is 30 days after the date in the preceding sentence].

The Guarantor Bank hereby agrees and acknowledges that the TSREDCO shall have a right to invoke this BANK GUARANTEE in part or in full, as it may deem fit.

The Guarantor Bank hereby expressly agrees that it shall not require any proof in addition to the written demand by TSREDCO, made in any format, raised at the above mentioned address of the Guarantor Bank, in order to make the said payment to TSREDCO.

The Guarantor Bank shall make payment hereunder on first demand without restriction or conditions and notwithstanding any objection by ----- [Insert name of the Bidder] and/or any other person. The Guarantor Bank shall not require TSREDCO to justify the





## **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

invocation of this BANK GUARANTEE, nor shall the Guarantor Bank have any recourse against TSREDCO in respect of any payment made hereunder.

This BANK GUARANTEE shall be interpreted in accordance with the laws of India and the courts at Delhi shall have exclusive jurisdiction.

The Guarantor Bank represents that this BANK GUARANTEE has been established in such form and with such content that it is fully enforceable in accordance with its terms as against the Guarantor Bank in the manner provided herein.

This BANK GUARANTEE shall not be affected in any manner by reason of merger, amalgamation, restructuring or any other change in the constitution of the Guarantor Bank.

This BANK GUARANTEE shall be a primary obligation of the Guarantor Bank and accordingly TSREDCO shall not be obliged before enforcing this BANK GUARANTEE to take any action in any court or arbitral proceedings against the Bidder, to make any claim against or any demand on the Bidder or to give any notice to the Bidder or to enforce any security held by TSREDCO or to exercise, levy or enforce any distress, diligence or other process against the Bidder.

Notwithstanding anything contained hereinabove, our liability under this Guarantee is restricted to Rs. \_\_\_\_\_ (Rs. \_\_\_\_\_ only) and it shall remain in force until \_\_\_\_\_ [Date to be inserted on the basis condition of this Tender] with an additional claim period of thirty (30) days thereafter. We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only if TSREDCO serves upon us a written claim or demand.

Signature \_\_\_\_\_

Name \_\_\_\_\_

Power of Attorney No. \_\_\_\_\_

For \_\_\_\_\_ [Insert Name of the Bank] \_\_\_\_\_ Banker's Stamp and Full Address.

Dated this \_\_\_\_ day of \_\_\_\_, 20\_\_



**Format-V**

**POWER OF ATTORNEY**

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

(a) 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 implementation of grid connected Roof top solar PV scheme in the State\_\_ in response to the NIT No .....,dated ..... issued by Telangana State Renewable Energy Development Corporation Ltd, (TSREDCO), 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 TSREDCO may require us to submit. The aforesaid Attorney is further authorized for making representations to the TSREDCO and providing information / responses to TSREDCO representing us in all matters before TSREDCO, and generally dealing with TSREDCO in all matters in connection with Bid till the completion of the bidding process as per the terms of the above mentioned NIT.

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 NIT.

Signed by the within named

..... (Insert the name of the executant company)

through the hand of

Mr. ....

duly authorized by the Board to issue such Power of Attorney

Dated this ..... day of .....

Accepted.....

Signature of Attorney



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

(Name, designation and address of the Attorney)

Attested

.....

(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.....

**WITNESS**

1. ....

(Signature)

Name.....

Designation .....

2. ....

(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.

The person authorized under this Power of Attorney, in the case of the Bidding Company / Lead Member being a public company, or a private company which is a subsidiary of a public company, in terms of the Companies Act, 1956, with a paid up share capital of more than Rupees Five crores, should be the Managing Director / whole time director/manager appointed under section 269 of the Companies Act, 1956. In all other cases the person authorized should be a director duly authorized by a board resolution duly passed by the Company.



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

Also, wherever required, the executant(s) should submit for verification the extract of the chartered documents and documents such as a Board resolution / power of attorney, in favour of the person executing this power of attorney for delegation of power hereunder on behalf of the executant(s).

TSREDCO



**Format-VI**

**CONSORTIUM AGREEMENT**

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

THIS Consortium Agreement (“Agreement”) executed on this \_\_\_\_\_ day of \_\_\_\_\_ 2019 between M/s [insert name of Lead Member] \_\_\_\_\_ a Firm / Company incorporated under the laws of \_\_\_\_\_ and having its Registered

Office at \_\_\_\_\_ (hereinafter called the “Lead Member”, which expression shall include its successors, executors and permitted assigns)

And M/s \_\_\_\_\_ a Firm / Company incorporated under the laws of \_\_\_\_\_ and having its Registered Office at \_\_\_\_\_ (hereinafter called the “Technical Member”, which expression shall include its successors, executors and permitted assigns), which expression shall include its successors, executors and permitted assigns)

WHEREAS, each Member individually shall be referred to as the “Member” and both the Members shall be collectively referred to as the “Members” in this Agreement.

WHEREAS the Telangana State Renewable Energy Development Corporation Ltd Limited(hereinafter called TSREDCO) , a Company incorporated under the Company’s Act, 1956 has invited response to Tender No. \_\_\_\_ dated \_\_\_\_ for design, manufacture, supply, erection, testing and commissioning including warranty, operation & maintenance of Roof Top Solar PV power system under RESCO MODE.

WHEREAS the Tender documents stipulate that the Lead Member may enter into a Technical Consortium Agreement with another Company / Corporate entity to fulfill the Technical Eligibility Criteria as stipulated in the Tender document. The Members of the Bidding Consortium will have to submit a legally enforceable Consortium Agreement in a format enclosed with the Tender document.

NOW THEREFORE, THIS AGREEMENT WITNESSTH AS UNDER:

In consideration of the above premises and agreements all the Members in this Consortium do hereby mutually agree as follows:

1. We, the Members of the Consortium and Members to the Agreement do hereby unequivocally agree that (M/s \_\_\_\_\_), shall act as the Lead Member as defined in the Tender for self and agent for and on behalf of Technical Member \_\_\_\_\_.
2. The Lead Member is hereby authorized by the Technical Member of the Consortium to bind the Consortium and receive instructions for and on their behalf.
3. The Lead Member shall be liable and responsible for ensuring the individual and collective commitment of each of the Members of the Consortium in discharging all of their respective obligations. Each Member further undertakes to be individually liable for



***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

the performance of its part of the obligations without in any way limiting the scope of collective liability envisaged in this Agreement.

4. Subject to the terms of this Agreement, the Technical member shall be responsible for providing technical knowledge for “Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance” to the lead member.

5. In case of any breach of any commitment by any of the Consortium Members, the Lead Member shall be liable for the consequences thereof.

6. This Agreement shall be construed and interpreted in accordance with the Laws of India and courts at Delhi alone shall have the exclusive jurisdiction in all matters relating thereto and arising there under.

7. It is hereby further agreed that in case of being shortlisted, the Members do hereby agree that they shall abide by the terms & conditions of the TENDER BID document.

8. It is further expressly agreed that this Agreement shall be irrevocable and shall form an integral part of the Tender submitted to TSREDCO and shall remain valid till completion of the job assigned to the Contractor.

9. The Lead Member is authorized and shall be fully responsible for the accuracy and veracity of the representations and information submitted by the Members respectively from time to time in the response to Tender.

10. It is hereby expressly understood between the Members that no Member at any given point of time, may assign or delegate its rights, duties or obligations under this agreement without the explicit permission of TSREDCO.

11. This Agreement

(a) Has been duly executed and delivered on behalf of each Member hereto and constitutes the legal, valid, binding and enforceable obligation of each such Member;

(b) Sets forth the entire understanding of the Members hereto with respect to the subject matter hereof; and

(c) May not be amended or modified except in writing signed by each of the Members and with prior written consent of TSREDCO.

IN WITNESS WHEREOF, the Members have, through their authorised representatives, executed these present on the Day, Month and Year first mentioned above.

For M/s-----[Lead Member] -----  
(signature, Name & Designation of the person authorized vide Board Resolution Dated [●])

**Witnesses:**

1) Signature-----

2) Signature -----

Name:

Name:

Address:

Address:



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

---

For M/s-----

[Technical Member] -----

(signature, Name & Designation of the person authorized vide Board Resolution Dated [●])

Witnesses:

TSREDCO



**DOCUMENTS REQUIRED FOR PROJECT SANCTION**

Following documents will be required to be submitted for project sanction:

1. Agreement between the bidder and the owner of the Project and Building/Roof top (Notarised original agreement on stamp paper of appropriate value should be enclosed).
2. All Agreement shall generally have reference to the TSREDCO's Tender No. and Letter of Allocation and provisions as per terms and conditions, technical specification and performance parameter in line with the TSREDCO's Tender Document against which Letter of Allocation has been issued. In addition, it shall indicate the price / 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 TSREDCO officials for the entire plant life, obligation of the roof top owner regarding providing of data to TSREDCO as per the TENDER BID Document etc.
3. No Objection Certificate from the concerned DISCOM for grid connectivity or CEIG approval (In case CEIG approval is suffice for grid connectivity). Undertaking of Successful Bidder on stamp Paper for indemnification of TSREDCO shall be furnished in case approval of CEIG is only furnished for grid connectivity.

(Not mandatory during project identification, however mandatory for project commissioning/operation).

4. Summary Project Report as per Format at Annexure.

**OPERATION AND MAINTENANCE GUIDELINES OF GRID CONNECTED PV PLANTS**

1. Periodic cleaning of solar modules, preferably once every fortnight.
2. O&M of Solar Power Plant shall be compliant with grid requirements to achieve committed energy generation.
3. Periodic checks of the Modules, PCUs and BoS shall be carried out as a part of routine preventive and breakdown maintenance.
4. Immediate replacement of defective Modules, Invertors/PCUs and other equipment as and when required.
5. Supply of all spares, consumables and fixtures as required. Such stock shall be maintained for all associated equipments and materials as per manufacturer/ supplier's recommendations.





- 6. All the equipment testing instrument required for Testing, Commissioning and O&M for the healthy operation of the Plant shall be maintained by the Bidder. The testing equipments must be calibrated once every 2 years from NABL accredited labs and the certificate of calibration must be kept for reference as required.
- 7. If negligence/ mal-operation on part of the Bidder's operator results in failure of equipment, such equipment should be repaired/ replaced by the Bidder free of cost.
- 8. If any jobs covered in O&M Scope as per TENDER BID are not carried out by the contractor/ Bidders during the O&M period, the Engineer-In-Charge shall take appropriate action as deemed fit.
- 9. TSREDCO reserves the right to make surprise checks/ inspection visits at its own or through authorized representative to verify the O&M activities being carried out by the Bidder. Failure to adhere to above guidelines will result in penal action including debarring from participation in next tender.

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

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

**Solar PV Modules/Panels**

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



# **Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. **TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020**

	Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
IEC/IS 61683 (as applicable)	Photovoltaic Systems - Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
BS EN 50530 (as applicable)	Overall efficiency of grid-connected photovoltaic inverters: This European Standard provides a procedure for the measurement of the accuracy of the maximum power point tracking (MPPT) of inverters, which are used in grid-connected photovoltaic systems. In that case the inverter energizes a low voltage grid of stable AC voltage and constant frequency. Both the static and dynamic MPPT efficiency is considered.
IEC 62116/ UL 1741/ IEEE 1547 (as applicable)	Utility-inteForest Academyonected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures
IEC 60255-27	Measuring relays and protection equipment - Part 27: Product safety requirements
IEC 60068-2 (1, 2, 14, 27, 30 & 64)	Environmental Testing of PV System - Power Conditioners and Inverters a) IEC 60068-2-1: Environmental testing - Part 2-1: Tests - Test A: Cold b) IEC 60068-2-2: Environmental testing - Part 2-2: Tests - Test B: Dry heat c) IEC 60068-2-14: Environmental testing - Part 2-14: Tests - Test N: Change of temperature d) IEC 60068-2-27: Environmental testing - Part 2-27: Tests - Test Ea and guidance: Shock e) IEC 60068-2-30: Environmental testing - Part 2-30: Tests - Test Db: Damp heat, cyclic (12 h + 12 h cycle) f) IEC 60068-2-64: Environmental testing - Part 2-64: Tests - Test Fh: Vibration, broadband random and guidance
IEC 61000 - 2,3,5 (as applicable)	Electromagnetic Interference (EMI) and Electromagnetic Compatibility (EMC) testing of PV Inverters

## **Fuses**

IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, ciForest Academyuit
	breakers (AC/DC):
	a) Low-voltage Switchgear and Control-gear, Part 1: General Rules
	b) Low-Voltage Switchgear and Control-gear, Part 2: CiForest Academyuit Breakers
	c) Low-voltage switchgear and Control-gear, Part 3: Switches, dis connectors, switch-dis connectors and fuse-combination units
	d) EN 50521: Connectors for photovoltaic systems - Safety requirements and tests
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
<b>Surge Arrestors</b>	
IEC 62305-4	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD)	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control



## Telangana State Renewable Energy Development Corporation Ltd

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

IEC 61643- 11:2011	Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
<b>Cables</b>	
IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1 & 2)/IEC69947	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables

### Earthing /Lightning:

IEC 62561 Series (Chemical earthing)	IEC 62561-1 Lightning protection system components (LPSC) - Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) - Part 7: Requirements for earthing enhancing compounds
<b>Junction Boxes</b>	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use
<b>Energy Meter</b>	
IS 16444 or as specified by the DISCOMs	A.C. Static direct connected watt-hour Smart Meter Class 1 and 2 – Specification (with Import & Export/Net energy measurements)
<b>Solar PV Roof Mounting</b>	<b>Structure</b>
IS 2062/IS 4759	Material for the structure mounting

### Note:-

- Equivalent standards may be used for different system components of the plants. In case of clarification following person/agencies may be contacted.
- Ministry of New and Renewable Energy (Govt. of India) National Institute of Solar Energy
- The Energy & Resources Institute TUV / Rheinland / UL



**Format-VII**

**PROJECT REPORT FORMAT**

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

1. Name of Bidder
2. Tender 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	Specificati ons	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 101 kWp to 1000 kWp)			
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



# Telangana State Renewable Energy Development Corporation Ltd

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

## Format-VIII

### BIDDER INFORMATION

(In technical bid)

1	Name of the organization	
2	Year of establishment	
3	Complete postal address	
4	Name & Designation of Authorized person	
5	Phone No.'s	
6	Fax No.	
7	Email	
8	Nature of the firm (Proprietary/partnership/etc...)	
9	<b>Bank Details of the Agency:</b>	
	Bank Name	
	Bank Address	
	Bank Account Number	
	IFSC Code	
10	PAN No.	
11	TIN No.	
12	Service Tax Registration No.	
13	Total No. of branch offices in Telangana	
14	Bid Document Fee (Non refundable)	Amount Rs. : DD No. : DD Date : Issuing Bank & Branch :
15	EMD	Amount Rs. : DD/BG No. : DD/BG Date : Issuing Bank & Branch :
16	Details of certificates enclosed.	

IN COVER 'A'



# ***Telangana State Renewable Energy Development Corporation Ltd***

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

## **Forms**

Turn over details of item/product - **2017-18 to 2019-20**

<b>S.No</b>	<b>Solution</b>	<b>Amount (Rs in Lakhs)</b>

List of Major Customers - **2017-18 to 2019-20**

<b>S. No</b>	<b>Customer Full Address</b>	<b>Details of Supplies made</b>	<b>Turn Over (Rs. In Lakhs)</b>



## Telangana State Renewable Energy Development Corporation Ltd

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

### CHECK LIST

#### IMPORTANT:

The Bidder must ensure that the following details in the check list are furnished along with the bid document. The bidder must also carefully go through all the contents of the BID Document and any additional information/documents, required more than the items listed in the check list below, also shall have to be furnished. Non-furnishing of any required information/document as per the Tender Document will lead to rejection of the bid. (in the following order only).

S.No	Particulars	Yes / No	Pg. No.	Name of the File uploaded
1	Tender Document Fee of Rs.29,500/- in the form of DD.			
2	EMD of Rs.2,00,000/-(DD/BG) drawn from any Nationalised/ Scheduled Bank			
3	Bidder Information Sheet			
4	Tender document, duly signed and stamped in token of accepted all the terms and conditions of the tender schedule.			
5	Registration Certificate (firm registration)			
6	Copy of PAN & GST			
7	Original Manufacturer Certificate			
8	<b>Valid Registration with TSREDCO</b>			
9	The bidder shall submit the Solvency certificates from Banks etc) of not less than Rs.2.00Cr for 200KWp capacity.			
10	Solar PV Module Efficiency has to be greater than 15% @STC. (proof to be submitted)			
11	ISO Certificate			
12	The firms are having the solar GCRT system experience of minimum 200kWp cumulative capacity of Solar PV of grid or grid connected rooftop systems in any one FY from last 3 FY.			
13	List of present clients with contact address & telephone numbers along with work orders & latest performance certificates of each capacity/ order			
14	Certificate to the effect the solar PV modules are indigenously manufactured in India			
15	Power of Attorney, wherever applicable			
16	<b>Original Consortium</b>			
17	Any other information/documents that are required in the bid document			

**NOTE: All pages of the bid documents must be serially numbered and signed.**



**Telangana State Renewable Energy Development Corporation Ltd**

Tender Notice. No. TSREDCO/SE/SPV/Govt./FOREST ACADEMY/RESCO/2020

---



**SECTION - IX**

**DRAFT PPA**