


Kerala Tenders		eTendering System Government of Kerala				
		Tender Details				
		Date : 21-Feb-2022 02:25 PM				
		 Print				
Basic Details						
Organisation Chain	ANERT					
Tender Reference Number	ANERT-TECH/17/2022-PE1(RTS)					
Tender ID	2022_ANERT_471961_2					
Tender Type	Open Tender	Form of contract	Supply and Service			
Tender Category	Works	No. of Covers	2			
General Technical Evaluation Allowed	No	ItemWise Technical Evaluation Allowed	No			
Payment Mode	Online	Is Multi Currency Allowed For BOQ	No			
Is Multi Currency Allowed For Fee	No	Allow Two Stage Bidding	No			
Payment Instruments			Cover Details, No. Of Covers - 2			
Online Bankers	S.No	Bank Name	Cover No	Cover	Document Type	Description
	1	SBI MOPS	1	Fee/PreQual /Technical	.pdf	Technical Bid
					.pdf	Pre Agreement and Signed Tender document
					.pdf	All other documents
			2	Finance	.xls	Financial Bid
Tender Fee Details, [Total Fee in ₹ * - 2,950]			EMD Fee Details			
Tender Fee in ₹	2,950		EMD Amount in ₹	50,000	EMD through BG/ST or EMD Exemption Allowed	Yes
Fee Payable To	Nil	Fee Payable At	Nil		EMD Percentage	NA
Tender Fee Exemption Allowed	Yes			EMD Payable To	EMD Payable At	Nil
Work /Item(s)						
Title	Retender for the Supply, Installation and Commissioning of 7 Nos of standalone OffGrid SPV Power Plants all over Kerala					
Work Description	Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power Plants					
Pre Qualification Details	Please refer Tender documents.					
Independent External Monitor/Remarks	NA					
Tender Value in ₹	54,40,000	Product Category	Solar Power Plants	Sub category	NA	
Contract Type	Tender	Bid Validity(Days)	90	Period Of Work(Days)	30	
Location	all over Kerala	Pincode	695001	Pre Bid Meeting Place	NA	
Pre Bid Meeting Address	NA	Pre Bid Meeting Date	NA	Bid Opening Place	ANERT HQ	
Should Allow NDA Tender	No	Allow Preferential Bidder	No			
Critical Dates						
Publish Date	21-Feb-2022 02:00 PM	Bid Opening Date	01-Mar-2022 03:00 PM			
Document Download / Sale Start Date	21-Feb-2022 02:00 PM	Document Download / Sale End Date	28-Feb-2022 02:00 PM			

Clarification Start Date	NA	Clarification End Date	NA
Bid Submission Start Date	21-Feb-2022 02:00 PM	Bid Submission End Date	28-Feb-2022 02:00 PM

Tender Documents

NIT Document	S.No	Document Name	Description	Document Size (in KB)
	1	Tendernotice_1.pdf	NIT and Abstract	341.61

Work Item Documents	S.No	Document Type	Document Name	Description	Document Size (in KB)
	1	Tender Documents	OffGrid.pdf	Tender Document	565.08
	2	Additional Documents	preagree1.pdf	Pre Agreement	165.70
	3	BOQ	BOQ_684000.xls	Financial Bid	358.00

Tender Inviting Authority

Name	CEO ANERT
Address	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram - 695 033



**AGENCY FOR NEW & RENEWABLE ENERGY
RESEARCH AND TECHNOLOGY (ANERT)**

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-TENDER DOCUMENT

***Retender for the Supply, Installation and
Commissioning of 7 Nos of standalone Off-
Grid SPV Power Plants all over Kerala***

Ref. No.: ANERT-TECH/17/2022-PE1(RTS)

PART – 1

Date of Publishing of Bids : - 21/02/2022

Last Date of Submission of Bids : - 28/02/2022

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FORMAT FOR COVERING LETTER

(This letter to be submitted on the official letter head of the tenderer, signed by the authorised signatory.)

Sir,

I/We hereby e-tender to supply, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached specification and quantity decided by the Agency for New & Renewable Energy Research and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. towards the cost of e-tender and Earnest Money Deposit by electronic payment vide transaction No dtd.....

Yours faithfully,

Place:

Signature

Date:

Name

Designation

(Office Seal)

E-TENDER NOTICE

Competitive e-tenders in one cover system with Earnest Money Deposit (EMD) and Price Bid in accordance with the ANERT approved technical specifications are invited from ***experienced EPC contractors / System Integrators*** for the ***Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power Plants all over Kerala***. The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala. Tender form will not be available in any other form.

Thiruvananthapuram

CEO

21/02/2022

TENDER ABSTRACT

Ref. No.	ANERT-TECH/17/2022-PE1(RTS)
Name of Work	Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power Plants all over Kerala
Download of Tender Form	http://www.etenders.kerala.gov.in
Last date of submission of Tender	28/02/2022 @ 1.00 PM
Date and Time of opening the Tender	01/03/2022 @ 1.30 PM
Estimated Tender Value	Rs. 54,40,000/-
Cost of Tender form	Rs. 2,950/- (Including GST)
EMD	Rs. 50,000/-
Warranty period	5 years from the date of Commissioning the system.
Availability of Tender Forms	Website http://www.etenders.kerala.gov.in
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala

Thiruvananthapuram

21/02/2022

Sd/-
CEO

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for the Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power Plants all over Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala (www.etenders.kerala.gov.in). Prospective bidders willing to participate in this tender shall necessarily register themselves with above mentioned e-procurement portal.

The tender timeline is available in the critical date section of this tender published in www.etenders.kerala.gov.in

1. ONLINE BIDDER REGISTRATION PROCESS:

- 1.1 Bidders should have a Class III or above Digital Signature Certificate (DSC) to be procured from any Registration Authorities (RA) under the Certifying Agency of India. Details of RAs will be available on www.cca.gov.in. Once, the DSC is obtained, bidders have to register on www.etenders.kerala.gov.in website for participating in this tender. Website registration is a one-time process without any registration fees. However, bidders have to procure DSC at their own cost.
- 1.2 Bidders may contact e-Procurement support desk of Kerala State IT Mission over telephone at 0471- 2577088, 2577188, 2577388 or 0484 – 2336006, 2332262 - through email: helpetender@gmail.com/etendershelp@kerala.gov.in for assistance in this regard

2. ONLINE TENDER PROCESS:

The tender process shall consist of the following stages:

- i. Downloading of tender document: Tender document will be available for free download on www.etenders.kerala.gov.in. However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.
- ii. Pre-bid meeting: (not applicable)
- iii. Publishing of Corrigendum: All corrigenda shall be published on www.etenders.kerala.gov.in and shall not be available elsewhere.

- iv. Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on www.etenders.kerala.gov.in. No manual submission of bid is allowed and manual bids shall not be accepted under any circumstances.
- v. In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screen shot of the error message with date & time stamp on the web-browser along with the query shall be e-mailed by the bidder to the help desk (**helpetender@gmail.com/etendershelp@kerala.gov.in**), for resolution of the problem. At the same time, problem must be intimated to the concerned Tender Inviting Authority via email.
- vi. The time taken to ascertain, evaluate and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid **at least 2 working days before the due date** and time of bid submission to avoid any last-minute issues that may come up.
- vii. Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the eligible bidder's will open the same day of opening and the work will be awarded.

3. DOCUMENTS COMPRISING BID:

- 3.1 The 2 cover bid shall contain the scanned copies of the following documents which every bidder has to upload:
 - i. The tender document duly signed downloaded from the website.
 - ii. Summary of Bid documents (Annexure 1A)
 - iii. Pre-Agreement in the prescribed format (Annexure 1B) on Govt. of Kerala stamp paper worth Rs. 200/-
 - iv. Declaration regarding the use of components
 - v. Declaration by the Bidder (format as in Annexure 1C)
 - vi. Declaration of Subsidy Claim (format as in Annexure 1D)

- vii. Declaration of relationship with ANERT employee (format as in Annexure 1E)
 - viii. Summary of bidders Technical Information (Annexure 2A)
 - ix. The Price Schedule as per BOQ in Excel format for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.
 - x. Bill of Material
- 3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.
- 3.3 The Bidder shall complete the Price bid as per format given for download along with this tender.

Note: The blank price bid should be downloaded and saved on bidder's computer without changing file-name otherwise price bid will not get uploaded. The bidder should fill in the details in the same file and upload the same back to the website.

- 3.4 Fixed price: Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable/ variable price quotation will be treated as non - responsive and rejected.

4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

- 4.1 The Bidder shall pay, a tender document fees of Rs. 890/- and Earnest Money Deposit or Bid Security of Rs. 9,375/-. The Bid security is required to protect the purchaser against risk of Bidder's conduct, which would warrant the forfeiture of security.
- 4.2 Online Payment modes: The tender document fees and EMD can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility

State Bank of India Multi Option Payment System (SBI MOPS Gateway): Bidders are required to avail Internet Banking Facility in any of below banks for making tender remittances in eProcurement System.

A) Internet Banking Options (Retail)			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank
7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		

27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
B) Internet Banking Options (Corporate)			
1	Bank of Baroda	21	Laxmi Vilas Bank
2	Bank of India	22	Oriental Bank of Commerce
3	Bank of Maharashtra	23	Punjab & Maharashtra Coop Bank
4	BNP Paribas	24	Punjab & Sind Bank
5	Canara Bank	25	Punjab National Bank
6	Catholic Syrian Bank	26	RBL Bank
7	City Union Bank	27	Shamrao Vitthal Co-operative Bank
8	Corporation Bank	28	South Indian Bank
9	Cosmos Bank	29	State Bank of India
10	Deutsche Bank	30	Syndicate Bank
11	Development Credit Bank	31	UCO Bank
12	Dhanalaxmi Bank	32	Union Bank of India
13	Federal Bank	33	UPPCL
14	HDFC Bank	34	Vijaya Bank
15	ICICI Bank	35	Axis Bank
16	Indian Overseas Bank		
17	Janta Sahakari Bank		
18	Jammu & Kashmir Bank		
19	Karur Vysya Bank		
20	Kotak Bank		

During the online bid submission process, bidder shall select **SBI MOPS** option and submit the page, to view the **Terms and Conditions** page. On further submitting the same, the e-Procurement system will re-direct the bidder to MOPS Gateway, where two options namely **SBI** and **Other Banks*** will be shown. Here, Bidder may proceed as per below:

- a) SBI Account Holders shall click **SBI** option to with its Net Banking Facility., where bidder can enter their internet banking credentials and transfer the Tender Fee and EMD amount.
- b) Other Bank Account Holders may click **Other Banks** option to view the bank selection page. Here, bidders can select from any of the 54 Banks to proceed with its Net Banking Facility, for remitting tender payments.

**Transaction Charges for Other Banks vide SBI Letter No. LHO/TVM/AC/2016-17/47 – 1% of transaction value subject to a minimum of Rs. 50/- and maximum of Rs. 150/-*

** Bidders who are using Other Banks option under SBI MOPS Payment Gateway, are advised by SBI to make online payment 72 hours in advance before tender closing time.*

5. SUBMISSION PROCESS:

- 5.1 For submission of bids, all interested bidders have to register online as explained above in this document. After registration, bidders shall submit their Technical bid and Financial bid online on www.etenders.kerala.gov.in along with online payment of tender document fees and EMD.
- 5.2 For page by page instructions on bid submission process, please visit www.etenders.kerala.gov.in and click “Bidders Manual Kit” link on the home page.
- 5.3 It is necessary to click on “Freeze bid” link/ icon to complete the process of bid submission otherwise the bid will not get submitted online and the same shall not be available for viewing/ opening during bid opening process.

6. VALIDITY

- 6.1 The tender offer shall be kept valid for acceptance for a period of 6 months from the date of opening of offers. The offers with lower validity period are liable for rejection.
- 6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

7. DEVIATIONS

- 7.1 The offers of the Tenderers with Deviations in Commercial terms and Technical Terms of the Tender Document are liable for rejection.

8. BLACK LIST

- 8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future tenders/ association with ANERT and EMD shall be forfeited against any losses incurred by ANERT.

9. BIDDER'S LOCATION

- 9.1 The tenderers are requested to furnish the exact location of their factories/godown with detailed postal address and pin code, telephone and fax nos. etc. in their tenders to arrange inspection by ANERT, if considered necessary.
- 9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

BID QUALIFICATION REQUIREMENTS

10. BID QUALIFICATION REQUIREMENTS

- 10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.
- 10.1.2 An agreement in Rs.200/- Kerala stamp paper as per the format given in Annexure IC must be submitted along with e-tender document.
- 10.1.3 Declaration regarding the use of components. The bidder must use PV modules listed in the ALMM list issued by MNRE vide order No. F. No. 283/54/2018-GRID Solar – Part (1) dtd 10/03/2021. Inverter must be selected with in the approved component list of ANERT. A detailed BoM in the letter head of the bidder is to be provided along with the bid.
- 10.1.4 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Kerala stamp paper worth Rs. 200/- agreeing to set up such facility and intimate the same within 15 days of letter of intent. Urja Mithra service centres supported by ANERT can also be included as service centres provided the bidders make separate agreements with them.
- 10.1.5 Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.

10.2 Eligibility Requirement

10.2.1 The detail of eligibility requirements is provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

S. No.	Criteria	Documents Required
1.1	<p>The Bidder should have any of the following legal status:</p> <p>a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto; OR</p> <p>b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto; OR</p> <p>c) Firm registered under Partnership Act, 1932 in India; OR</p> <p>d) Sole Proprietor</p> <p>In case of JV, all the members must fulfil this requirement and submit the documents as per the Tender Document.</p>	<p>a) In case of Company – Copy of Registration/ Incorporation Certificate</p> <p>b) In case of LLP – Copy of Deed of Partnership</p> <p>c) In case of Partnership – Copy of Deed of Partnership</p> <p>d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor</p>
1.2	The Bidder must have the required GST Registration	Copy of GST registration certificate with legible GSTIN.
1.3	The Bidder must have valid PAN Number	Copy of Pan Card
1.4	<p>The bidder must have completed Solar Installations of at least 1 MW in India.</p> <p style="text-align: center;">OR</p> <p>The bidder must have completed Solar installations of at least 500 kW in Kerala</p>	Statutory Documents substantiating this requirement along with Documents submitted in Clause 1.2 of this Section above.
1.5	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by “any state/ central government” department/ company / entity” as on date of bid opening.	The bidder shall provide an Undertaking as per the format provided as Format A.

10.3 Qualification Requirement

The details of qualification requirements are provided in the table below. The bidders are required to furnish the required supporting documents along with the Technical Bid.

S. No.	Criteria	Documents Required
1.1.	Technical Criteria	
	Bidder shall have experience in the execution of supply, Installation and Maintenance of grid connected / off-grid Solar Photovoltaic Systems of an aggregate capacity of 2 MW during last Five financial years OR The bidder must have completed Solar installations of at least 500 kW in Kerala	The details of projects executed during period mentioned above should be listed. Copy of work orders and a certificate issued by the SNA/ Govt. Organization/ SECI/PSUs towards the satisfactory work completion to be furnished by the bidder. In absence of any one, it will not be considered for qualifying in technical bid.
1.2.	Financial Criteria	
1.2.1.	The Bidder should have positive net worth in at least 2 years out of the last five Financial Years (FY 15-16, FY 16-17, FY17-18, FY18-19 & FY19-20).	1. Certificate fulfilling required financial criteria in the name of Bidder duly certified by Practicing Chartered Accountant as per the format provided Format B, duly mentioning UDIN
1.2.2.	Minimum Average Annual Turnover (MAAT) during any 2 best out of last five financial years (FY15-16, FY16-17, FY17-18, FY18-19, and FY19-20) of the bidder shall not be less than 1 Cr.	2. Firm's Annual Audit Report, Balance sheet, Profit & Loss and Income Tax Returns / CA certificate for last Five years i.e. FY: FY15-16, FY16-17, FY17-18, FY18-19, and FY19-20

11. GENERAL CONDITIONS

11.1 The tenders should be submitted online at www.etenders.kerala.gov.in

11.2 The tenders should be as per the prescribed form which should be downloaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transferable. Tenders that are not in the prescribed form are liable to be rejected.

11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accepted.

- 11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.
- 11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.
- 11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.
- 11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representatives who may be present with proper authorisation issued by the tenderer.
- 11.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.
- 11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.
- (a) The tenderer should use the components with in the approved component list published by ANERT.
- (b) The ANERT empanelled agency can take approval for the new components by submitting a request with relevant certificates and test reports.
- 11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.
- 11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfilment of the contract within the period to be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the

agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

- (a) A non-refundable licensing fee of 2.5% has to be remitted by tenderer. This will be deducted from the payment of tenderer while releasing payment. The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 5% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. The amount of security may be deposited in the manner prescribed in clause 8 supra or in Fixed Deposit Receipts of State Bank of India endorsed in favour of District Engineer of the concerned District Office, ANERT. There will be no exemption for MSE's in depositing this security amount. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.
- (b) In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.
- (c) If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 % of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract price of the delayed stores and services. Once the

maximum is reached, the purchaser may consider termination of the contract at the risk and cost of the contractor.

11.12 The Security deposit shall, subject to the conditions specified herein be returned to the contractor within three months after the expiration of the contract but in the event of any dispute arising between ANERT and the contractor, ANERT shall be entitled to deduct out of the deposits or the balance thereof, until such dispute is determined the amount of such damages, costs, charges and expenses as may be claimed. The same may also be deducted from any other sum which may be due at any time from ANERT to the contractor. In all cases where there are guarantee for the goods supplied, the security deposit will be released only after the expiry of the guarantee period.

(a) All payments to the contractors will be made by CEO ANERT in due course by NEFT transfer only

(b) All incidental expenses incurred by ANERT for making payments outside the State in which the claim arises shall be borne by the contractor.

11.13 Payments will be made only after the supply, Installation and Commissioning of the items and certification by the competent Technical personnel of ANERT.

11.14 The contractor shall not assign or make over the contract on the benefits or burdens thereof to any other person or body corporate. The contractor shall not underlet or sublet to any person or persons or body corporate the execution of the contract or any part thereof without the consent in writing of the purchasing officer who shall have absolute power to refuse such consent or to rescind such consent (if given) at any time if he is not satisfied with the manner in which the contract is being executed and no allowance or compensation shall be made to the contractor or the subcontractor upon such rescission. Provided always that if such consent be given at any time, the contractor shall not be relieved from any obligation, duty or responsibility under this contract.

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes

any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which under any clause or clauses any act of insolvency or in case in which under any clause(s) of this contract the contractor shall have rendered himself liable to damages amounting to the whole of his security deposits, the contract shall, thereupon, after notice given by the Purchasing Officer to the contractor, be determined and ANERT may complete the contract in such time and manner and by such persons as ANERT shall think fit. But such determination of the contract shall be without any prejudice to any right or remedy of ANERT against the contractor or his sureties in respect of any breach of contract committed by the contractor. All expenses and damages caused to ANERT by any breach of contract by the contractor shall be paid by the contractor to ANERT and may be recovered from him under the provisions of the Revenue Recovery Act in force in the State.

11.16 In case the contractor fails to supply and deliver any of the said articles and things within the time provided for delivery of the same, or in case the contractor commits any breach of any of the covenants, stipulations and agreements herein contained, and on his part to be observed and performed, then and in any such case, it shall be lawful for ANERT (if they shall think fit to do so) to arrange for the purchase of the said articles and things from elsewhere of on behalf of ANERT by an order in writing under *the* hand of the CEO put an end to this contract and in case ANERT shall have incurred sustained or been put to any costs, damages or expenses by reason of such purchase or by reason of this contract having been so put an end to or in case any difference in price, compensation, loss, costs, damages, expenses or other moneys shall then or any time during the continuance of this contract be payable by the contractor to ANERT under and by virtue of this contract, it shall be lawful for ANERT from and out of any moneys for the time being payable or owing to the contractor from ANERT under or by virtue of this contract or

otherwise to pay and reimburse to ANERT all such costs, damages and expenses they may have sustained, incurred or been put to by reason of the purchase made elsewhere or by reason of this contract having been so put an end to as aforesaid and also all such difference in price, compensation, loss, costs, damages, expenses and other moneys as shall for the time being payable by the contractor aforesaid.

- 11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.
- 11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.
- 11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.
- 11.20 No representation for enhancement of rate once accepted will be considered.
- 11.21 The prices quoted should be inclusive of GST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during the course of execution of the contract.
- 11.22 The tenderer will invariably furnish the required certificates with their bills for payment –

“Certified that the goods which GST has been charged have not been exempted under the GST Rules made there under and the charges on account of sales tax on these goods are correct under the provisions of the relevant Act or the rules made there under certified further that we (or our Branch or Agent) (Address) are registered as dealers in the State of under Registration No.”

- 11.23 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.
- 11.24 The tenderer should send along with this tender an agreement executed and signed in Kerala Stamp Paper of value Rs.200/-. A specimen form of agreement is given as Annexure B to this tender. Tenders without the agreement in stamped paper will be rejected outright.
- 11.25 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.
- 11.26 ANERT, by notice sent to the Supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT’s convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.
- 11.27 E-tender shall be opened at the time and date announced in the tender notice, and the price bid will be evaluated on the same day.
- 11.28 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.

11.29 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

12. SPECIAL CONDITIONS

- 12.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.
- 12.2 The tenders will be opened in the presence of bidders present at the date and time advised in the Bidding Document. If the due date for receiving and opening the tender happens to be declared holiday, then the tender will be received and opened on the very next day, for which no prior intimation will be given.
- 12.3 If the bidder has NOT submitted the requisite EMD OR Agreement, OR if the price bid is not submitted along with the tender, such tenders will be summarily rejected.
- 12.4 During the tender evaluation, ANERT may seek more clarifications/details from any or all of the tenderers, if felt necessary.
- 12.5 The price bids of the tenderers, which submitted the required documents only will be opened and the L1 bidder will be awarded the work of supply and installation of items after fulfilling all the requirements.
- 12.6 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the Work order to next higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.
- 12.7 The tenderer should use the components approved by ANERT for installation.
(Component list published in ANERT website)
- 12.8 If the components quoted are not available in the existing list, bidders may submit the components for approval by submitting the relevant test certificate/reports.
- 12.9 During the implementation stage of the project, if the successful bidder could not supply the particular Make/Model of Solar Module/Inverter/BOS due to any

valid reason, that should be intimated and approval may be sought from ANERT for change of any Make/Model of the above equipment.

12.10 The ANERT empanelled agency can take approval for the new components by submitting a request with relevant certificates.

12.11 The rate quoted should be all inclusive including delivery of materials at the locations to be specified, and the cost of materials and labour for the civil works, installation and commissioning, Warranties, Application fees, GST and all other expenses.

12.12 The price quotes should be inclusive of initial cost of supply, installation and commissioning, support during the warranty period of 5-years.

12.13 The tender offer shall be kept valid for acceptance for a period of 6 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.14 The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST.

13. SCHEDULE OF SUPPLY

13.1 Solar Power Plants with Battery backup of capacity mentioned is to be installed at the Roof top of the buildings as mentioned below as specified by ANERT, under prior intimation and supervision of ANERT.

Requirement: 1. Prior site visit before submission of price quotes.

District	Name of Institution	Plant capacity (kW)	Min Battery bank (Whr)
Thrissur	Grama Panchayath Office, Pazhayannur	20	1,44,000
Palakkad	Grama Panchayath Office, Thachampura	5	36,000
Kozhikode	Block Panchayath, Balussery	5	36,000
Kannur	Block Panchayath Office, Kalliyasseri	5	18,000
Kozhikode	Block panchayath Office, Vadakara	3	10,800

District	Name of Institution	Plant capacity (kW)	Min Battery bank (Whr)
Ernakulam	ANERT District Office, Ernakulam	2	7,200
Idukki	Chikkanamkudy L.P School, Mankulam	1.5	5,400

13.2 The Supply, Installation and Commissioning of the entire system shall be completed within **45 days from the date of supply order**. This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

13.3 Supply of the main components such as PCU, charge controller and battery should be from the approved component list published in ANERT Website. The PV module must be from the ALMM list published by MNRE from time to time.

13.4 If suitable Equipment with the above Specifications is not in the list of ANERT, tender may be quoted with the suitable equipment (Inverter, Battery etc.) as per the specifications with all necessary certifications described in the respective clauses.

13.5 Penalty for delay in supply and installation will be imposed at 0.5 % per week up to a maximum 10 %. In case of delay in supply and installation, CEO, ANERT may cancel the contract and take recourse to other action as deemed appropriate.

14. PAYMENT

14.1 No advance payment will be given. Payment will be released on receipt of invoices and successful installation and commissioning of power plant certified by the concerned District Office of ANERT.

14.2 The terms of payment shall be:

- i. 2.5 % of the invoice amount shall be charged by ANERT as non-refundable license fee.
- ii. On Delivery of Materials, 30% of the remaining contract value will be released upon certification of competent authority of ANERT

- iii. On completion of the installation and commissioning of power plant, 60% of the remaining contract value will be released
- iv. The remaining 10% shall be retained as performance security as given below. On submission of equivalent bank guarantee for 5 years, the same shall be released.
- v. The security deposit of 5% furnished along with the contract agreement shall be released on successful completion of supply, installation and commissioning.

14.3 Income tax, contribution to workers' welfare fund and other statutory deductions shall be made from the payment as per prevailing norms.

15. SERVICE AND MAINTENANCE

15.1 The faulty system or components should be replaced/ repaired within 10 days of fault reporting. The servicing should be carried out at the site of installation. The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis.** Delay in servicing beyond 15 days of fault reporting would attract penalty at the rate of at the rate fixed by CEO, ANERT and further actions will be initiated against the agency.

15.2 A designated contact Telephone Number and address should be submitted for reporting faults during the warranty period.



**AGENCY FOR NEW & RENEWABLE ENERGY
RESEARCH AND TECHNOLOGY (ANERT)**

Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
www.anert.gov.in , projects@anert.in

E-TENDER DOCUMENT

***Retender for the Supply, Installation and
Commissioning of 7 Nos of standalone Off-
Grid SPV Power Plants all over Kerala***

Ref. No.: ANERT-TECH/17/2022-PE1(RTS)

PART – 2

Date of Publishing of Bids : - 21/02/2022

Last Date of Submission of Bids : - 28/02/2022

TECHNICAL SPECIFICATIONS

16. SCOPE OF THE WORK

The scope covers supply, installation and commissioning of Off-Grid Solar Power Plant at the site mentioned below:

District	Name of Institution	Plant capacity (kW)	Min Battery bank (Whr)
Thrissur	Grama Panchayath Office, Pazhayannur	20	1,44,000
Palakkad	Grama Panchayath Office, Thachampra	5	36,000
Kozhikode	Block Panchayath, Balussery	5	36,000
Kannur	Block Panchayath Office, Kalliyasseri	5	18,000
Kozhikode	Block panchayath Office, Vadakara	3	10,800
Ernakulam	ANERT District Office, Ernakulam	2	7,200
Idukki	Chikkanamkudy L.P School, Mankulam	1.5	5,400

The Supply, Installation and commissioning of the Off-grid standalone solar power plant in accordance with the electrical installation practices for building under IEC 60364-7-712 & SPV design comply with IEC 62124.

16.1 Additional Works

- Pazhayannur GP Office – Additional Structure work required to correct the slope of the slightly stilt RCC roof
- Vadakara BP Office – Permanent Access ladder to the roof to be provided
- Thachampra GP Office – MMS height to be a minimum of 2m for shading correction, pathway for cleaning and permanent ladder for accessing the roof of the building
- Baluseery BP Office - Pathway for cleaning of SPV modules on GI sheet roof and permanent ladder for accessing the roof of the building

17. DEFINITION

Standalone solar PV power plant system comprises of C-Si (crystalline Silicon) solar PV modules with, battery bank, intelligent Inverter with MPPT charging technology which feeds uninterrupted quality AC power to electrical loads. Batteries will be charged from solar energy by charge controller integrated in the inverter or by an external charge controller with MPPT technology.

18. DUTY CYCLE

The system should be capable for operating for 3 hours based on the design of the PV Power Plant.

19. LOAD

The system should be connected to the specified available load within the limits of the PV power plant.

20. SPV MODULES

- 20.1 The PV module should have IS14286 qualification certification for solar PV modules (Crystalline silicon terrestrial photovoltaic (PV) modules — design qualification and type approval)
- 20.2 In addition, the module must conform to IEC 61730 “Photovoltaic (PV) Module safety qualification, Part-1 - Requirements for construction & Part-2 Requirements for testing.
- 20.3 The PV Module should have IEC 61215 Certification (Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval)
- 20.4 The PV module should comply Salt Mist Corrosion Test IEC 61701.
- 20.5 Shading correction/ bypass diode for optimizing PV out to be incorporated in each solar module or panel level and shading optimization to be provided.
- 20.6 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.
 - a. Name of the manufacturer of PV Module

- b. Name of the manufacturer of Solar cells
- c. Month and year of the manufacture (separately for solar cells and module)
- d. Country of origin (separately for solar cell and module)
- e. I-V curve for the module
- f. Peak Wattage, I_m , V_m and FF for the module
- g. Unique Serial No. and Model No. of the module
- h. Date and year of obtaining IEC PV module qualification certificate
- i. Name of the test lab issuing IEC certificate
- j. Other relevant information on traceability of solar cells and module as per ISO 9000 series

20.7 The following details should be provided on the module

- a. Name of the manufacturer
- b. Month and year of manufacture
- c. Rated Power at STC
- d. V_{mp} , I_{mp} , V_{oc} , I_{sc}

20.8 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

20.9 PV modules used in solar power plant/ systems must be warranted for their output peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

20.10 Original Equipment Manufacturers (OEM) Warrantee of the PV Modules shall be submitted by the successful bidder when the materials delivered at site.

20.11 The PV Module should be manufactured indigenously.

21 POWER CONDITIONING UNIT

21.1 Power Conditioning Unit (PCU) shall comprise of charge controller, MPPT unit (Integrated with the inverter or separate), Bi-Directional Inverter without Grid Feeding facility and distribution panel along with necessary displays, indicators and alarms. The Inverter shall be of bi-directional type without Grid

feeding facility.

CHARGE CONTROLLER & MPPT

- 21.2 The control system should continuously adjust the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter standby mode when input power reduces below the standby mode threshold. Front Panel display should provide the status and fault indication (if any)
- 21.3 The charge controller and MPPT should conform to IEC 60068-2 (1, 2, 14, 30) for environmental testing.
- 21.4 The charge controller and MPPT should conform to following electrical parameters:
- a. Operational Voltage Range: 48 V / 96V or any suitable System Voltage according to the battery bank and panel array
 - b. Controlling element: IGBT/ MOSFET
 - c. The Charge controller/MPPT units should conform to IEC 60068-2 (1,2,14,30), if charge controller is not part of the inverter
- 21.5 Solid State MPPT based series pulse width modulation charger with minimum three stages (bulk, absorb and float)
- 21.6 Current rating as required for panel array and battery bank
- 21.7 Electronic protection for:
- a. Short circuit
 - b. Overload
 - c. Over temperature
 - d. Reverse polarity
- 21.8 Auto resetting electronic over current protection
- 21.9 Digital LED/ LCD display of input SPV voltage and current, battery voltage and current. Separate indication for SPV charging shall also be provided. Battery Charge Level LED Indicator (s) – Low, Medium, High, Full. Battery Low indicator and Alarm/ cut-off.

INVERTER The Inverter shall be of bi-directional type without Grid feeding facility.

- 21.10 48/96V or higher volt DC to 230 VAC. **1 ϕ , 3kVA inverter** for 3kWp PV capacity. Rated capacity of inverter shall be minimum of **3kVA or up to 5 kVA** maximum capacity.
- 21.11 48/96V or higher volt DC to 230 VAC. **1 ϕ , 5kVA inverter** for 5kWp PV capacity. Rated capacity of inverter shall be minimum of **5kVA or up to 7.5 kVA** maximum capacity.
- 21.12 48/96V or higher volt DC to 230 VAC. **3 ϕ , 20kVA inverter** for 20kWp PV capacity. Rated capacity of inverter shall be minimum of **20kVA or up to 22.5 kVA** maximum capacity.
- 21.13 The total load/segregated load from the designated building shall be connected to the inverter. Should have the following features:
- Conform to IEC 61683/ IS 61683 for efficiency measurement, and IEC 60068-2 (1,2 ,14,30) or equivalent BIS standard for environmental testing.
 - Type: Self commuted, current regulated, IGBT/ MOSFET based.
 - Output voltage: Output voltage 230V
 - Output frequency :50 Hz
 - THD: Less than (<) 5%
 - Efficiency: 85% or above at full load.
 - Ambient temperature: 5 to 55°C
 - Relative humidity: 90% non-condensing

21.12 Protections:

- Short circuit (circuit breaker & electronic protection against sustained fault)
- Over-load protection
- Under voltage & Over-voltage of Battery
- Auto/ Manual re-connects provision
- Reverse polarity protection both for the PV array and Battery bank (DC)

21.13 Cooling: Air cooled

21.14 Other Features:

- Surge Protection: 150% of the rated capacity for a period of 10 seconds
- Provision for connection of Data-logger to monitor at least ten system

parameters & events logs.

- c) Acoustic Noise Level \leq 50 dB

21.15 Indicators / Displays / Alarms

- a) Digital Display(s) of input DC SPV voltage & current, along with Energy Meter
- b) Digital Display (s) AC output voltage, frequency, power and current
- c) Digital Display of output AC kWh meter (Daily/ Cumulative)
- d) Overload Alarm / cut-off
- e) System Cut-off Indicator
- f) System Reset Button

22 ELECTRICAL SAFETY, EARTHING AND PROTECTION

- a) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, over load and cooling fan failure (if fitted) is obligatory.
- b) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations itself and internal faults in the power conditioner, operational errors and switching transients.
- c) Cabling practice: Cable connections must be made using PVC insulated copper cables, as per BIS specifications. All cable connections must be made using suitable terminations for effective contact. The PVC copper cables must be run in GL trays with covers for protection.
- d) Fast acting semiconductors type current limiting fuses at the main bus-bar to protect from the short circuit contribution.
- e) The inverter shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- f) All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed and painted or otherwise suitably protected to survive nominal 30 years design life of the unit.
- g) The inverter enclosure shall be weather proof and capable of surviving climatic

changes and should keep the inverter intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the inverter enclosure. Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

23 FACTORY TESTING

- a) Operation of all controls, protective and instrumentation circuit shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.
- b) Operation of start-up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the inverter and response to control signals shall also be tested and demonstrated.
- c) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.
- d) Factory testing of the Inverter/ Inverters should be carried out and witnessed by the Purchaser's Engineers at the manufacturer's premises, if necessary.

24 ATS PANEL FOR AUTOMATIC CHANGE OVER

There should be an ATS Panel incorporated with the Inverter or separate with an Automatic Change-over System for Changing from PV System to Grid whenever the PV System could not provide the sufficient Power to the Load. The ATS Panel shall get the Power Supply from the existing Grid.

25 LOAD SEGREGATION AND CONNECTED LOAD

Connected Load to the PV System should be within limits of the specifications of the Inverter/Power Conditioning System. Load Segregation is the responsibility of the EPC Contractor to suit to the capacity of the Inverter and there shall be a vertical DB for the segregated load as per the needs of the building.

26 INGRESS PROTECTION

All PV equipment if installed outdoors, should have an ingress protection of at least IP65.

27 LABELLING OF PV SYSTEM EQUIPMENT

All PV System shall be labelled as per IEC 62446 standard.

28 BATTERY BANK

- 28.1 Battery bank comprising of **Gel batteries** conforming to IEC 61427 or applicable BIS standards should be supplied, installed, and commissioned.
- 28.2 Test certificate submitted should qualify the minimum requirements as per above standards for capacity test, ampere-hour efficiency test, watt-hour efficiency test, self-discharge test.
- 28.3 The battery bank will have a minimum rating as mentioned under the scope of works
- 28.4 Battery capacity is rated C/10 at 27°C discharge rate. 75% of the rated capacity of the battery should be between fully charged & load cut-off conditions.
- 28.5 The following additional information on the batteries to be supplied:
- a) Overcharge voltage
 - b) Load disconnect voltage
 - c) Modules reconnect voltage
 - d) Float voltage
 - e) Temperature compensation required for proper operation
 - f) Ampere-hour efficiency/ watt-hour efficiency
 - g) Self-discharge (less than 3% per month at 30°C)

29 ARRAY SUPPORT STRUCTURE

Structures shall be of adequate size with sufficient strength for the individual structural members. IS 875 (Part 3)-1987, "Code for practice of design loads (other than earthquake) for buildings and structures," is directly applicable to the design of PV module mounting structures.

- 28.6 Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent, which provides sufficient spraying thickness, if steel frame is used. Aluminium frame structures with adequate strength and in accordance with relevant BIS standards can also be used.
- 28.7 Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site.
- 28.8 The structures shall be designed to allow easy replacement of any module.
- 28.9 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° from the horizontal.
- 28.10 Each panel frame structure shall be so fabricated as to be fixed on the roof top column/ wall structures/ground. The structure should be capable of withstanding a wind load of 150 km/hr after grouting and installation. The front end of the solar array must be 50 cm above the roof top. Grouting material for SPV structures shall be as per M15 (1:2:4) concrete specification. If the module arrays are installed on ground, proper PCC foundation to be provided and the bottom of the array should be elevated to a height of 0.60 metre from the ground.
- 28.11 The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to, the following;
- i. Determination of true south at the site
 - ii. Array tilt angle to the horizontal, with permitted tolerance
 - iii. Details with drawings for fixing the modules
 - iv. Details with drawings for fixing the junction/ terminal boxes
 - v. Interconnection details inside the junction/ terminal boxes
 - vi. Structure installation details and drawings
 - vii. Electrical grounding (earthing as per BIS specifications) and surge protections.
 - viii. Inter-panel/ inter-row distances with allowed tolerances; and

- ix. Lightning protection for PV array.
- x. Safety precautions to be taken.

28.12 The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop column properly. Detailed design and drawing shall be submitted to ANERT for acceptance and approval before execution of work.

30 EARTHING AND SURGE PROTECTION

Surge Protection Device (SPD): The system should have installed with Surge Protection Device (SPD) for higher withstand of the continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements through integrated DC in-built bypass fuse (parallel) which should get tripped driving failure mode of MOV, extinguishing DC arc safely in order to protect the installation against fire hazards.

Earthing for PV Array:

- The PV module, BOS and other components of power plant require adequate Earthing for protecting against any serious faults.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043-1987 (Reaffirmed 2006)
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joints of each Earthing pit for periodic checking or earth resistance.
- The complete Earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- In compliance to Rule 11& 61 Of Indian Electricity Rules,1956(as amended up to date), all non-current carrying metal parts shall be Earthing with two separate and

distinct earth continuity conductors to an efficient earth electrode.

- The bidder shall submit the detailed specification for the Earthing arrangements.

31 LIGHTNING PROTECTION FOR PV ARRAY

- Necessary concrete foundation for holding the lightning arrester in position to be made after giving due consideration to shadow on PV array, maximum wind speed and maintenance requirements at site in future. Lightning protection should follow IS 2309-1989 (Reaffirmed 2010)
- The lightning conductor shall be earth through flats and connected the earth mats as per applicable Indian standard with earth pits. Each lightning conductor shall be fitted with individual earth pit as per the requirement & standards, including accessories and providing masonry enclosure with cast iron cover plate having locking arrangements, watering pipe using charcoal or coke and salt as required as per the provisions of IS.
- If necessary, more numbers of lightning conductors may be provided.
- The bidder shall submit the drawing and detailed specifications of the PU Array lightning protection system.

32 AC DISTRIBUTION PANEL BOARD

AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.

33 CONNECTED LOAD

Connected Load to the PV System should be within limits of the specifications of the Inverter/Power Conditioning System.

34 MANUAL CHANGE- OVER SWITCHES

- 34.1 Necessary Change-over switches (4-pole 2-way for 3-ph and 2-pole 2-way for 1-ph) shall be provided by the supplier to connect the PCU to the load. The change-over switch shall be used to switch the load to utility power.
- 34.2 **The above Change - Over Switch will be the additional emergency requirement if the ATS Panel /Automatic Change - Over Switch fails.**

35 CABLES, SWITCHES AND GENERAL REQUIREMENTS

- 35.1 PVC insulated copper cables with current rating suitable for AC and DC as per the National Electric Code, and meeting:
 - 35.1.1 General Test and Measuring Method as per IEC 60189/ IS 694
 - 35.1.2 PVC insulated cables for working voltages up to 1100 V and UV resistant for outdoor installation as per IEC 60502/ IS 1554 (Pt. I & II)
- 35.2 Cable Marking: All cable/wires are to be marked in proper manner by good quality ferule or by other means so that the cable can be easily identified.
- 35.3 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/DC.
- 35.4 Junction boxes, enclosures for inverters/ charge controllers shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

36 LOAD SEGREGATION

The load segregation works as per the capacity of the PCU and should be done by the bidder. Based on the capacity of Power Conditioning Unit necessary load may be segregated and connected to separate distribution board for connecting with Solar Power Conditioning Unit.

37 AC/DC WIRING

Before submitting the tender, actual measurement of cables required for wiring from AC output of inverter/PCU to load point should be calculated and this work is also included in the tender. The actual cable required from module to DC distribution board and DC distribution board to inverter input should be calculated and this work should be done as a part of Solar Power Plant installation. A separate drawing for exclusively for the AC/DC Wiring should be provided.

38 LOAD SEGREGATION AND INTERCONNECTION OF LOAD

- 38.1 The load segregation and interconnection of load with inverter output and change of load should be done after assessing the actual load conditions at the site.

38.2 All the electrical works required for the interconnection of load with inverter output should be done by the successful bidder as a part of the Solar Power Plant installation.

38.3 Bidder should visit the actual site and ensure the exact place for providing Solar Modules, Batteries and Inverter etc. in presence of technical representative from the ANERT.

38.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation

39 WARRANTY

39.1 5 years warranty should be provided by the supplier for the system and components or part of the system has to be provided as per the special conditions of the contract.

39.2 PV modules used in solar power Plant/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years

39.3 The Warranty Card to be supplied with the system must contain the details of the system supplied.

39.4 OEM Warrantee Certificate PV Modules and Inverters shall be produced along with the supply of the material.

40 TECHNICAL DOCUMENTATION, DRAWING AND INSPECTION

40.1 A Technical Documentation and Inspection of the PV Power Plant shall be guided by IEC 62446, Ed. (2009-05). The critical documents shall include:

- i. Contact Information
- ii. Data Sheets of Key Equipments
- iii. IEC Certifications
- iv. Warranty Documents of Key Equipment by OEM
- v. Warranty Documents of the entire Roof-top system as a whole by the installer
- vi. General Estimation Report based on realistic Weather conditions
- vii. Operation & Maintenance Manual of the PV System
- viii. Test Results & Commissioning Certificate

ix. Contracting Documents/ Bills etc.

40.2 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system following minimum details must be provided in the manual:

- a. About Photovoltaic
- b. About solar power plant – its components and expected performance.
- c. About PV module
- d. About battery
- e. About electronics
- f. About charging and significance of indicators
- g. DO's and DON'T's
- h. Clear instructions on regular maintenance and troubleshooting of solar power plant
- i. Name and address of the contract person in case of non-functionality of the solar power plant.

41 BILL OF MATERIAL

The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer. The Bill of Materials should include the following details:

S/N	Item	Make	Model	Quantity	Remarks
1	Solar Module				Make & Model
2	Off-Grid PCU/Inverter				Make & Model
3.	Module Mounting Structure				
3	DC Cables				
4	AC Cables				
5	DC Junction Box				

6.	ACDB				
7	Lightning Arrester				
8	Earthing System				

42 SITE INSPECTION

It is recommended that the bidders visit all the sites listed here for the physical verification and for correctly estimating the quantity, especially related to structure and cabling, before submitting the bids. **Bidder must include all the AC/DC wiring cost only after visiting the proposed site.**

43 ENGINEERING DRAWINGS

The bidder should submit and get the necessary approval of the following detailed Engineering Drawings before execution of the project:

- a. Electrical Single Line Diagram (SLD) of the PV Power Plant
- b. Detailed Plot Plan for the Deployment of PV Array
- c. Equipment Layout Diagram
- d. Module Mounting Structure (Plan & Elevation)
- e. Wiring and Earthing Layout Diagram

43.1 If suitable Equipment with the above Specifications are not in the Empanelled list of ANERT, tender may be quoted with the suitable equipment (PV Module, Inverter, Battery etc.) as per the specifications above with all necessary certifications described in the respective clauses.

43.2 During the implementation stage of the project, if the successful bidder could not supply the particular Make/Model of Solar Module/Inverter/BOS due to any valid reason, that should be intimated and approval may be sought from ANERT for change of any Make/Model of the above equipment.

44 DISPLAY BOARD

A Display board of size (Min 60cm x 30 cm) with the logo of ANERT and details of the scheme as specified in the work order.

45 INSURANCE

The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 5 years after commissioning. The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils Policy (Material Damage)**. The insurance premium for the 5 years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

ANNEXURE 1A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder)

1.	Name of the bidder	
2.	Empanelment No.	EA/
3.	Address in full	
4.	Contact Details Mobile Land Phone Fax Email	
5.	Name and Designation of the authorised signatory	
6.	Details of EMD submitted along with the bid in favour of CEO ANERT	

Documentary evidence for the bid qualification requirements are submitted along with this document and the details furnished above are true and correct.

Signature
of authorised signatory

Name

Designation

Date:

(office seal)

ANNEXURE 1B-AGREEMENT

ARTICLES OF AGREEMENT executed on this the day of
Two thousand andbetween the **Agency for
New & Renewable Energy Research and Technology** (hereinafter referred to as
ANERT) of the one part and Sri
(Name and Address of the tenderer) hereinafter referred to as “the Bounden”) of the other
part.

WHEREAS in response to the Notification No.
dated the bounden has submitted to ANERT a e-tender for the ***Retender for
the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power
Plants all over Kerala*** specified therein subject to the terms and conditions contained in
the said e-tender.

AND WHEREAS the bounden has furnished to ANERT a sum of Rs. as
Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of
the contract in case his e-tender is accepted by ANERT. NOW THESE PRESENTS WITNESS
and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by ANERT and the contract
for is
awarded to the bounden, the bounden shall within Fifteen days of acceptance of this e-
tender, execute an agreement with ANERT incorporating all the terms and conditions
under which ANERT accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms
and conditions governing the contract, ANERT shall have power and authority to recover
from the bounden any loss or damage caused to ANERT by such breach as may be

determined by ANERT by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

All sums found due to ANERT under or by virtue of this agreement shall be recoverable from the bounden and his properties movable and immovable under the provisions of the Revenue Recovery Act for the time being in force as though such sums are arrears of land revenue and in such other manner as ANERT may deem fit.

In witness whereof Sri (Name and Designation) for and on behalf of the Agency for New & Renewable Energy Research and Technology and Sri the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri Signed by Sri

(Date) (Date)

in the presence of witnesses in the presence of witnesses

1. 1.

2. 2.

ANNEXURE 1C – DECLARATION BY THE BIDDER

e-Tender Notification No:, dtd for
Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid
SPV Power Plants all over Kerala

To

The CEO
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 3 months from the date fixed as deadline for the submission of tenders in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
4. If our Bid is accepted, we commit to submit a Security Deposit in the amount of 5 percent of the Contract Price for the due performance of the Contract;
5. We are not participating, as Bidders, in more than one Bid in this bidding process;
6. Our firm, its affiliates or subsidiaries, including any subcontractors or suppliers for any part of the Contract, has not been declared ineligible by the ANERT or Government of Kerala;
7. We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed.
8. Our firm has obtained the certifications from MNRE or NABL approved Test laboratories that the goods and services are satisfying the technical criteria specified in the bid.

Signature

Date

Name

ANNEXURE 1D- DECLARATION ON SUBSIDY CLAIM

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.:

Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid SPV Power Plants all over Kerala

To
The CEO
ANERT

I hereby declare that we will not apply directly to MNRE for claiming the subsidy for this SPV project withkW capacity and proposed to be installed at

Signature of Bidder:

Name :

Date:

Office Seal

ANNEXURE 1E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE

(to be signed and submitted by the bidder along with the bid)

Tender Notification No.:
Retender for the Supply, Installation and Commissioning of 7 Nos of standalone Off-Grid
SPV Power Plants all over Kerala

To
The CEO
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

This is to put on record that Shri/Smt
currently working as in ANERT is related
to, who is the bidder in the bid. We are aware of
the Anti-corruption policy of ANERT and will observe the highest standards during the
procurement and the execution of contract and shall retain from corrupt, fraudulent,
collusive or coercive practices on competing for the contract.

Signature

Name

Date

ANNEXURE 2A - BIDDER'S TECHNICAL INFORMATION SUMMARY

(To be filled in by bidder. Use copies, for each model offered)

1.	Name of the bidder as in registration certificate	
2.	Address in full	
3.	Contact Details Mobile Land Phone Fax No. Email address	
4.	Name of the authorised signatory	
5.	Designation of the authorised signatory	
6.	Whether the bidder is a bonafide manufacturer/integrator of the item tendered?	

7. Details of main components in the systems offered and the test certificates

S/N	Criteria	PV Module	Inverter	Battery
1.	Make offered			
2.	Model offered			
3.	IEC to which complies , as per the test certificate			
4.	Lab from which Test certificate obtained			
5.	Test certificate No.			
6.	Copy of test certificate enclosed at page no. (of this tender submission)			

I have read the General Tender Terms & Conditions for e-Procurement, General Conditions, Special Conditions and Bidder's Technical Information summary of this e-tender and hereby agree to participate in the e-tender strictly adhering to the conditions and the details furnished along with bid are true and correct.

Signature
of authorised signatory

Name

Designation

Date:

(office seal)