eTendering System Government of Kerala

Kerala Tenders

Tender Details

Date : 10-Jun-2024 01:10 PM

Print

Basic Details

Organisation Chain	ANERT		
Tender Reference Number	ANERT-TECH/414/2021-PE2(RTS)		
Tender ID	2024_ANERT_673607_1	**Withdrawal Allowed**	Yes
Tender Type	Open Tender	**Form of contract**	EPC Contract
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

	S.No	Bank Name
Online Bankers	1	SBI MOPS

Cover Details, No. Of Covers - 2

Cover No	Cover	Document Type	Description
1	Fee/PreQual/Technical	.pdf	Pre Qualification Documents
		.pdf	Technical Bid
2	Finance	.xls	Financial Bid
		.pdf	Financial Bid

Tender Fee Details, [Total Fee in ₹ * - 17,850]

Tender Fee in ₹	17,850		
Fee Payable To	Nil	**Fee Payable At**	Nil
Tender Fee Exemption Allowed	Yes		

EMD Fee Details

EMD Amount in ₹	5,00,000	**EMD Exemption Allowed**	Yes
EMD Fee Type	fixed	**EMD Percentage**	NA
EMD Payable To	Nil	**EMD Payable At**	Nil

Work /Item(s)

Title	Design, Supply, Engineering, Erection Testing, Commissioning of 1.5 MWp SPV Power Plant with Grid connectivity along with 15 years of operation and maintenance under RESCO model at Central University of Kerala, Kasaragod				
Work Description	Design, Supply, Engineering, Erection Testing, Commissioning of 1.5 MWp SPV Power Plant with Grid connectivity along with 15 years of operation and maintenance under RESCO model at Central University of Kerala, Kasaragod				
Pre Qualification Details	Please refer Tender documents.				
Independent External Monitor/Remarks	NA				
Tender Value in ₹	NA	**Product Category**	Solar Power Plants	**Sub category**	NA
Contract Type	Tender	**Bid Validity(Days)**	90	**Period Of Work(Days)**	150
Location	Central University of Kerala, Kasaragod	**Pincode**	671320	**Pre Bid Meeting Place**	NA
Pre Bid Meeting Address	NA	**Pre Bid Meeting Date**	NA	**Bid Opening Place**	Online
Should Allow NDA Tender	No	**Allow Preferential Bidder**	No		

Critical Dates

Publish Date	25-May-2024 05:40 PM	**Bid Opening Date**	15-Jun-2024 03:00 PM
Document Download / Sale Start Date	25-May-2024 05:40 PM	**Document Download / Sale End Date**	15-Jun-2024 02:00 PM
Clarification Start Date	NA	**Clarification End Date**	NA

Bid Submission Start Date	25-May-2024 05:40 PM	**Bid Submission End Date**	15-Jun-2024 02:00 PM

Tender Documents

NIT Document

S.No	Document Name	Description	Document Size (in KB)
1	Tendernotice_1.pdf	NIT and Abstract	257.63

Work Item Documents

S.No	Document Type	Document Name	Description	Document Size (in KB)
1	Tender Documents	TD.pdf	Tender Document	1237.69
2	BOQ	BOQ_1047762.xls	Financial Bid	320.00

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

Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

Date of Publishing of Bids : - 25/05/2024

Last Date of Submission of Bids : - 15/06/2024

CONTENTS

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

Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

VOL – 1: GENERAL CONDITIONS

Date of Publishing of Bids : - 25/05/2024

Last Date of Submission of Bids : - 15/06/2024

E-TENDER NOTICE

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

Competitive e-tenders in two cover system with Earnest Money Deposit (EMD) and Price Bid are invited from experience and eligible bidders to participate in the ***Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India***. 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.

Bid documents which include Eligibility criteria, "Technical Specifications", various conditions of contract, formats, etc. can be downloaded from website www.etenders.kerala.gov.in. Any amendment (s)/corrigendum/clarifications with respect to this Bid shall be uploaded on the above website only. The Bidder should regularly follow up for any Amendment/Corrigendum/Clarification on the above website.

Thiruvananthapuram CEO

25/05/2024

TENDER ABSTRACT

Ref. No.	**ANERT-TECH/414/2021-PE2(RTS)**
Document Description	**Implementation of 1.5 MWp Grid Connected Ground Mounted Solar PV Power Plant for Central University of Kerala, Kasaragod under RESCO Model**
Name of Work	**Design, Supply, Engineering, Erection Testing, Commissioning of 1.5 MWp SPV Power Plant with Grid connectivity along with 15 years of operation & maintenance under RESCO model at Central University of Kerala, Kasaragod.**
Site	**Central University of Kerala, Kasaragod, Kerala (12°23'45.98"N, 75° 5'33.64"E)**
Download of Tender Form	http://www.etenders.kerala.gov.in
Pre-bid Conference/ Clarification Meeting	03/06/2024 @ 11.00 AM (web based)
Last date of submission of Tender	15/06/2024 @ 02.00 PM
Date and Time of Bid opening (Techno-Commercial)	15/06/2024 @ 03.00 PM
Date and Time of Bid opening (Financial)	Conveyed through auto-online massage system by tender portal to qualified / shortlisted bidders
Cost of Tender form	**Rs. 17,850/- (Including GST)**
EMD	**Rs. 5,00,000/-** *(Exempted for MSMEs, NSIC registered entities)*
Warranty period	Project execution under RESCO model. Minimum guaranteed PR and CUF of the plant as specified in the Technical Specification to be maintained for a period of 15 Years.
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
Name, Designation, Address and other details (For Submission of response to RFS)	Mr. Vinay P, Project Engineer ANERT, Trivandrum; Ph: +91 9400902550 E mail: projects@anert.in
Thiruvananthapuram 25/05/2024	Sd/- CEO
Important Note: Prospective Bidders are requested to remain updated for any notices/amendments/clarifications etc. to the RFS document through the website www.anert.gov.in/www.etenders.kerala.gov.in. No separate notifications will be issued for such notices/amendments/clarification etc. in the print media or individually.	

DISCLAIMER

1. Though adequate care has been taken while preparing the NIT document, the Bidders shall satisfy themselves that the document is complete in all respect. Intimation regarding any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within Ten (10) days from the date of notification of NIT / issuance of e-Tender documents, it shall be considered that the document is complete in all respect and has been received / acknowledged by the Bidder(s).
2. Agency for New and Renewable Energy Research and Technology (ANERT) reserves the right to modify, amend or supplement this document.
3. While this tender document has been prepared in good faith, neither ANERT 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 document, even if any loss or damage is caused by any act or omission on their part.

GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published as the Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India. The tender is invited in two cover system from experienced manufacturers / EPC contractors 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 and site visit: A pre-bid cum clarification Meeting will be arranged for the prospective bidders at CUK Office, Palakkad at a convenient date to be announced soon.

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 qualified bidders will open on the day to be intimated to all bidders 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 and sealed 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. Copy of Registration Certificate of the bidder firm

v. Copy of GST Registration Certificate

vi. The bidder must have an experience of successful commissioning of at least 1.5 MW SPV Power Plants in India.

vii. Documentary evidence to support the bidders experience in any completed or ongoing RESCO/CAPEX model SPV contract with a Govt. Department / Govt. undertaking / PSU / Private sector for having a single plant capacity not less than 1 MW. The plant shall be in operation at least 3 months before the date of opening of this bid proposal.

viii. Documents to prove the annual Turnover of the bidder (audited statement as given in Format A)

ix. Certifications required for proving Technical Compliance as per tender document

x. Declaration by the Bidder (format as in Annexure 1C)

xi. Declaration of relationship with ANERT employee (format as in Annexure 1D)

xii. Summary of bidders Technical Information (Annexure 1E)

xiii. 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.

xiv. 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.

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

4.1 The Bidder shall pay, a tender document fees of Rs. 17,850/- and Earnest Money Deposit or Bid Security or Bid Bond of Rs. 5,00,000/-. 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	Shamrao Vithal 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	Tamil Nadu Mercantile Bank
17	DCB Bank	48	Tamil Nadu 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 bidders 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.

CONDITIONS OF CONTRACT

10. GENERAL CONDITIONS

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

10.2 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.

10.3 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.

10.4 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.

10.5 The tenderer shall submit a copy of GSTIN of the agency.

10.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.

10.7 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.

10.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.

10.9 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.

10.10 The final acceptance/rejection of the tenders rests entirely with CEO ANERT who do not bind themselves to accept the lowest or any tender.

10.11 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:

10.11.1 The successful tenderer shall **a) deposit a sum equivalent to 5% of the total project cost as Security Deposit till the completion of Installation works. The deposit shall be in the form of a BG which shall be returned after COD (Commercial Operation Date). b) Deposit a sum equivalent to 3 months of the estimated energy charges** as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with this tender. The amount of security may be deposited as Bank Guarantee or in Fixed Deposit Receipts of State Bank of India endorsed in favour of CEO ANERT. There will be no exemption for MSE's in depositing this security amount. If the successful bidder 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.

10.11.2 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.

10.12 Return the Security deposit shall, subject to the conditions specified herein 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 Central University of Kerala in due course by NEFT transfer only

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

10.13 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.

10.14 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.

10.15 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the Director 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.

10.16 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.

10.17 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.

10.18 No representation for enhancement of rate once accepted will be considered.

10.19 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.

10.20 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 1B to this tender. Tenders without the agreement in stamped paper will be rejected outright.

10.21 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.

10.22 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 be 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.

10.23 The E-tender shall be opened at the time and date announced in the tender notice, and the price bid will be evaluated as intimated vide auto generated email only.

10.24 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.

10.25 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.

11. SPECIAL CONDITIONS

11.1 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.

11.2 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.

11.3 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.

11.4 During the tender evaluation, ANERT may seek more clarifications/details from any or all of the tenderers, if felt necessary.

11.5 The price bids of only the technically qualified tenderers, which submitted the required all the requisite 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.

11.6 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.

11.7 The tender offer shall be kept valid for acceptance for a period of 3 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

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

Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

VOL – 2: SCHEDULE AND SCOPE OF WORKS

Date of Publishing of Bids : - 25/05/2024

Last Date of Submission of Bids : - 15/06/2024

REQUEST FOR SELECTION (RFS)

FOR

12. Implementation of 1.5 MWp Grid Connected, Ground Mounted Solar PV System to be installed at Central University of Kerala, Kasaragod under RESCO Model

12.1 For the purpose of all procurement activities related to the said works, ANERT shall be referred to as 'Project Management Consultant (PMC)' and 'Central University of Kerala' as "the Owner (CUK)".

12.2 ANERT, therefore, invites bids from eligible bidders to participate in the Request for Selection in the e-tendering platform for Site Survey, Levelling, Design, Manufacture, Supply, Erection, Testing and Commissioning including Warranty, Operation and Maintenance of Ground Mounted Solar PV Power System at proposed location within the Central University of Kerala campus, Kasaragod.

12.3 For the implementation of above mentioned work, Bidders should submit their bid proposal online complete in all aspect on or before Last date of Bid Submission.

12.4 Bid documents, which include Eligibility Criteria, Technical Specifications, various Conditions of Contract, and Formats etc., can be downloaded from website www.anert.gov.in. It is mandatory to download official copy of E-TENDER Document from Kerala Tenders Portal. Any amendment(s)/corrigendum/clarification(s) with respect to this Bid shall be uploaded on www.etenders.kerala.gov.in. The Bidder should regularly check for any Amendment(s)/Corrigendum/Clarification(s) on the above website only.

12.5 The bidding process under this is for DC capacity of 2000 kWp comprising of RESCO Model.

12.6 This bidding process will be only one price for RESCO Model (Rs. Per kWh - Tariff).

12.7 To ensure timely payments to successful bidders / developers under

RESCO Model, Payment Security Mechanism (PSM) shall be provided by ANERT in consultation with CUK. The aim is to give comfort to the developers for assured & timely payment for the energy supplied to CUK which will be finalised after the pre-bid meeting.

12.8 Bidder has to apply for the Solar PV System cumulative capacity of 2000 kWp

12.9 The detailed scope of work includes:

12.9.1 All bidders are requested to visit the site and check the feasibility of space including installation capacity in consultation with ANERT. The Successful bidders need to submit Grid Connectivity Consent (PPA agreement between successful bidder and CUK at the quoted tariff with the approval of ANERT. The PPA shall be executed in the prescribed format provided by ANERT to the successful bidder. However, ANERT shall facilitate the process.

12.9.2 Site Survey, Ground Levelling, refilling, if required, Design, Engineering, Manufacture, Supply, Storage, Civil work, Erection, Testing & Commissioning of the grid connected ground mounted Solar PV Project including Power evacuation, Operation and Maintenance (O & M) of the project for a period of 15 years for after commissioning of project.

12.9.3 The generated electric power shall be injected at 11 kV bus at the Electrical substation owned and within the premise of CUK.

13. DEFINITIONS & ABBREVIATIONS

a) In this "Bid / RFS Document" the following words and expression will have the meaning as herein defined where the context so admits:

13.1 **"Affiliate"** shall mean a company that either directly or indirectly

a. controls or
b. is controlled by or
c. is under common control with

13.2 **"B.I.S"** shall mean specifications of Bureau of Indian Standards (BIS);

13.3 **"Bid"** shall mean the Techno Commercial and Price Bid submitted by the Bidder along with all documents/credentials/attachments annexure etc., in response

to this RFS, in accordance with the terms and conditions hereof.

13.4 **"Bidder/Bidding Company"** shall mean Bidding Company submitting the Bid. Any reference to the Bidder includes Bidding Company / including its successors, executors and permitted assigns as the context may require;

13.5 **"Bid Deadline"** shall mean the last date and time for submission of Bid in response to this RFS as specified in the Tender Abstract;

13.6 **"Bid Capacity"** shall means capacity offered by the bidder in his Bid.

13.7 **"CEA"** shall mean Central Electricity Authority.

13.8 **"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;

13.9 **"Competent Authority''** shall mean (Designation of Competent Authority) of [Name of the Organization] himself and/or a person or group of persons nominated by MD for the mentioned purpose herein;

13.10 **"Commissioning,"** means Successful operation of the Project / Works by the Contractor, for carrying out Performance Test(s) as defined in RFS.

13.11 **"Company"** shall mean a body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment thereto;

13.12 **Commercial Operation Date**: The date of successful conducting field acceptance tests and injection of power at delivery point shall be the "Commercial Operation Date"

13.13 **"Capacity Utilization Factor" (CUF)** shall mean the ratio of actual energy generated by SPV project over the year to the equivalent energy output at its rated capacity over the yearly period.

$$CUF = \frac{actual\ annual\ energy\ generated\ from\ the\ plant\ in\ kWh}{(installed\ plant\ capacity\ in\ kW * 365 * 24)}$$

13.14 **"Eligibility Criteria"** shall mean the Eligibility Criteria as set forth in Clause 16 of this RFS;

13.15 **"Financially Evaluated Entity"** shall mean the company which has been evaluated for the satisfaction of the Financial Eligibility Criteria set forth in Clause 16.3 hereof;

13.16 **"IEC"** shall mean specifications of International Electro-Technical Commission;

13.17 **"kWp"** shall mean kilo-Watt Peak;

13.18 **"kWh"** shall mean kilo-Watt-hour;

13.19 **"MNRE"** shall mean Ministry of New and Renewable Energy, Government of India;

13.20 **"O&M"** shall mean Operation & Maintenance of Solar PV system for PPA period.

13.21 **"Owner of the project"** shall mean Central University of Kerala, shall mean anyone who has ownership (including lease ownership also) of the land / roof and is the legal owner of all equipments of the project. Owner of the project can enter into a PPA with the consumer (s) of power for supply of solar power for agreed time (years) from the date of Commissioning of project.

13.22 **"Project Cost / Project Price" shall** mean the price offered by the Bidder for the Scope of work as per RFS document for the site.

13.23 **"Project capacity"** means Capacity in kWp offered by the Bidder. The project capacity specified is on "DC" output Side only.

13.24 **"Performance Ratio" (PR) means**

"Performance Ratio" (PR) means the ratio of plant output versus installed plant capacity at any instance with respect to the radiation measured.

$$PR = \frac{\text{Measured output in kW}}{\text{Installed Plant capacity in kW} * (1000 / \text{Measured radiation intensity in W/m2})}$$

13.25 "**Parent"** shall mean a company, which holds more than 51% equity either directly or indirectly in the Bidding Company or Project Company or a Member in a Consortium developing the Project

13.26 **"Project Company"** shall mean Company incorporated by the bidder as per Indian Laws in accordance with Clause no 16.1.

13.27 **"Price Bid"** shall mean BoQ, containing the Bidder's quoted Price as per the Volume- IV of this RFS;

13.28 **"Qualified Bidder"** shall mean the Bidder(s) who, after evaluation of their Techno Commercial Bid stand qualified for opening and evaluation of their Price Bid;

13.29 **"RFS"** shall mean Request for Selection (RFS)/Bid document/Tender document

13.30 **"RESCO"** shall mean Renewable Energy Service Companies;

13.31 **"RESCO model"** shall mean where the bidders intend to take a site owned by some other entity on mutually agreed terms and conditions from the site owner(s) and enters into the PPA with them for supply of Solar power for agreed time period from the date of Commissioning of project.

13.32 **"Statutory Auditor"** shall mean the auditor of a Company appointed under the provisions of the Companies Act, 1956 or under the provisions of any other applicable governing law;

13.33 **"Successful Bidder(s) /Contractor/Project Developers(s)"** shall mean the Bidder(s) selected by Owner pursuant to this RFS for Implementation of Grid Connected Ground mounted Solar PV System as per the terms of the RFS Documents, and to whom an Allocation Letter has been issued;

13.34 "Site" shall mean the project location at the address mentioned below.

Central University of Kerala
Tejaswini Hills,Periye (PO),
Kasaragod (DT), Kerala-671320

13.35 **"SNA"** shall mean State Nodal Agency, ANERT.

13.36 **"Tendered Capacity"** shall mean the Total aggregate capacity in MW proposed to be tendered by ANERT to the Successful Bidder through this bidding process as per terms and conditions specified therein;

13.37 **"Wp"** shall mean Watt Peak.

13.38 **1MWp** for the purpose of conversion in **kWp** shall be considered as 1000kWp.

b) INTERPRETATIONS

i. Words comprising the singular shall include the plural & vice versa

ii. An applicable law shall be construed as reference to such applicable law including its amendments or re-enactments from time to time.

iii. A time of day shall save as otherwise provided in any agreement or document be construed as a reference to Indian Standard Time.

iv. 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 to give effect to each part.

v. 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.

14. INTRODUCTION

The Agency for New and Renewable Energy Research and Technology (ANERT) is an autonomous organisation functioning under Power Dept, with its Head Quarters at Thiruvananthapuram. ANERT is the State Nodal Agency (SNA) for the Ministry of New and Renewable Energy (MNRE), Govt. of India, to carry out the Centrally Assisted Programmes in Kerala.

ANERT has an objective to make available knowledge and experience to the State Government, Central Government. Local Bodies, Semi-Government and other agencies in the State and elsewhere and also offer consultancy services on all such matters pertaining to alternative sources of energy, energy conservation and rural technology as may be referred to it from time to time and to undertake on its own or in collaboration or on other arrangement with national or international agencies, program of research, application, extension and development of new energy sources, methods of energy conservation and rural technologies.

14.1 OWNER: CUK (herein referred as Owner) is in possession of 310 Acre stretch at Tejasiwni Hills Periye, in Kasaragod, the northernmost district of Kerala state, India. It is located close to River Chandragiri which originates from Chandragupta Vasti in Coorg where the Mauryan Emperor Chandragupta is believed to have spent his last days as a sage. CUK Intents to put up a 1.5 MWp capacity of Solar Power Plant at this land and utilize the electricity generated for its captive consumption within the premise. Power evacuation works, including substation augmentation are also included in the scope of the successful bidder.

The Kerala State Electricity Regulatory Commission (Connectivity and Intrastate Open Access) Regulations, 2013 shall apply to connectivity and Captive consumer within own premises for use distribution systems in the State of Kerala, including when such system is used in conjunction with inter-State transmission system.

14.2 Bidder shall submit bids under RESCO for the project site mentioned in RFS.

14.3 The scheme targets Installation of Ground mounted, Grid-connected Solar Photovoltaic power generation system on the site, under the possession of CUK. The project owner may utilize the generated solar power for captive consumption. The scheme aims to reduce the fossil fuel-based electricity load on main grid and make building self-sustainable from the point of electricity to the extent possible.

14.4 ANERT, on behalf of Central University of Kerala, hereby invites interested companies to participate in the bidding process for the selection of Successful Bidder(s) for implementation of large scale grid-connected ground mounted Solar Photovoltaic Projects under RESCO model in the project location.

14.5 The Bidders are advised to read carefully all instructions and conditions appearing in this document and understand them fully. All information and documents required as per the bid document must be furnished. Failure to provide the information and / or documents as required may render the bid technically unacceptable.

14.6 The bidder shall be deemed to have examined the bid document, to have obtained his own information in all matters whatsoever that might affect the carrying out the works in line with the scope of work specified elsewhere in the document at the offered rates and to have satisfied himself to the sufficiency of his bid. The bidder shall be deemed to know the scope, nature and magnitude of the works and requirement of materials, equipment, tools and labour involved, wage structures and as to what all works he has to complete in accordance with the bid documents irrespective of any defects, omissions or errors that may be found in the bid documents.

15. BID DETAILS:

15.1 Bids in RESCO Model: The bidding process under this RFS is for a 1.5 MWp SPV Power Plant for RESCO Model.

15.1.1 Bids are invited from the prospective bidders for the tendered capacity as indicated above, based on the levellised tariff for RESCO Model.

15.1.2 Rates shall be offered for three different intervals of the project cycle. Component A shall be valid for initial 60 months from CoD and Component B shall be valid for the subsequent 60 months and Component C for the final 60 months.

15.1.3 The Power evacuation details will be finalised in due course and the final termination point at 11kV level will be updated during the Pre-bid meeting to be held at the site.

15.1.4 Permanent water supply and auxiliary LT electric power supply for construction at a single point will be provided by CUK inside the premise.

BID QUALIFICATION REQUIREMENTS

16. ELIGIBILITY CRITERIA

16.1 General

i. The Bidder should be either a body incorporated in India under the Companies Act, 1956 or 2013 including any amendment thereto and engaged in the business of Solar Power.

ii. A copy of certificate of incorporation shall be furnished along with the bid in support of above.

iii. Joint Venture/Partnership is allowed. Participant/Bidder must have to qualify the technical qualifying criteria, indicated in point no 16.4 below. The aggregate equity share holding of the successful bidder in the issued and paid-up equity share capital of the project company shall not be less than fifty-one percent (51%) up to period of Twenty-five (25) years from the date of commissioning of project

16.2 Technical Eligibility Criteria:

The Bidder should have installed & commissioned at least one Grid connected Solar PV Power Project having a capacity of not less than 1.5 MW, which should have been commissioned at least three months prior to Techno-Commercial Bid Opening date. The list of project commissioned at least 3 months prior to Techno-Commercial Bid Opening date, indicating whether the project is grid connected, along with a copy of the Commissioning certificate and Work order / Contract / Agreement/ from the Client/Owner shall be submitted in support of Clause 16.2.

16.3 Financial eligibility criteria

The Bidder should have an Annual Turnover or Net worth as indicated below.

i. The Average Annual Turnover in any of the 3 out of the last 5 years must be Rupees 8 Crores subject to the condition that the Bidder should at least have completed two financial years.

OR

ii. Net worth equals to or greater than the value calculated at rate of Rs. 10 Crore. The Computation of Net worth shall be based on unconsolidated audited annual accounts of the last financial year immediately preceding the Bid Deadline. Share premium can be included in the Net-worth calculation in case of listed companies in India only.

The formula of calculation of net-worth shall be as follows:

Net-worth = (Paid up share capital) + {(Free reserves - Share premium) +Share premium of listed companies)} - (Revaluation of reserves)- (Intangible assets) - (Miscellaneous expenditure to the extent not written off and carry forward losses).

For the purposes of meeting financial requirements, only unconsolidated audited annual accounts shall be used. However, audited consolidated annual accounts of the Bidder may be used for the purpose of financial requirements provided the Bidder has at least twenty-six percent (26%) equity in each company whose accounts are merged in the audited consolidated accounts; and provided further that the financial capability of such companies (of which accounts are being merged in the consolidated accounts) shall not be considered again for the purpose of evaluation of the Bid.

Bidders shall furnish documentary evidence as per the Format - 8, duly certified by Authorized Signatory and the Statutory Auditor / Practising Chattered Accountant of the Bidding Company in support of their financial capability.

16.4 Incorporation of a project company

16.4.1 In case the Bidder wishes to incorporate a Project Company, in such a case, Bidder if selected as a Successful Bidder can incorporate a Project Company. Bidder shall be responsible to get all clearance required/obtained in the name of the Bidding Company transferred in the name of the Project Company.

16.4.2 The aggregate equity share holding of the Successful Bidder in the issued and paid up equity share capital of the Project Company shall not be less than fifty-one percent (51%) up to a period of two (2) years from the date of commissioning of the entire Sanctioned Capacity of the Project Developer.

16.5 Bid submission by the bidder

16.5.1 The Bidder shall submit the information and/or documents as per the formats specified in Volume-IV.

16.5.2 Strict adherence to the formats wherever specified, is required. Wherever, information has been sought in specified formats, the Bidder shall refrain from referring to brochures /pamphlets. Non-adherence to formats and / or submission of incomplete information may be a ground for declaring the Bid as non-responsive. Each format has to be duly signed and stamped by the authorized signatory of the Bidder.

16.5.3 The Bidder shall furnish documentary evidence in support of meeting Eligibility Criteria as indicated in Clause no. 16.1, 16.2 and 16.3 to the satisfaction of ANERT. They shall also furnish unconsolidated/consolidated audited annual accounts in support of meeting financial requirement, which shall consist of balance sheet, profit and loss account, profit appropriation account, auditors report, etc., as the case may be of Bidding Company or Financially Evaluated Entity for any of the last three(3) financial years immediately preceding the Bid Deadline which are used by the bidder for the purpose of calculation of Annual Turnover or of last Financial Year in case of Net Worth.

16.5.4 In case the annual accounts for the latest financial year are not audited and therefore the bidder cannot make it available, the applicant shall give certificate to this effect from their directors. In such a case, the Applicant shall provide the Audited Annual Reports for 3 (Three) years preceding the year or from the date of incorporation if less than 3 years for which the Audited Annual Report is not being provided.

16.6 Bid submitted by a bidding company

The Bidding Company should designate one person to represent the Bidding Company in its dealings with ANERT. The person should be authorized to perform all tasks including, but not limited to providing information, responding to enquires, signing of Bid etc. The Bidding Company should submit, along with Bid, a Power of Attorney in original (as per Format-2), authorizing the signatory of the Bid.

16.7 Clarifications and Pre bid meeting

16.7.1 ANERT will not enter into any correspondence with the Bidders, except to furnish clarifications on RFS Documents, if necessary. The Bidders may seek clarifications or suggest amendments to RFS in writing, through a letter or by fax (and also soft copy by e-mail) to reach ANERT at the address, date and time mentioned in the Tender Abstract.

16.7.2 The Bidder(s) or their authorized representative(s) is /are invited to attend pre-bid meeting(s), which will take place on date(s) as specified in Tender Abstract

16.7.3 , or any such other date as notified by ANERT.

16.7.4 The purpose of the pre-bid meeting will be to clarify any issues regarding the RFS including in particular, issues raised in writing and submitted by the Bidders.

16.7.5 ANERT is not under any obligation to entertain/ respond to suggestions made or to incorporate modifications sought-for.

16.8 Amendments to RFS

16.8.1 At any time prior to the deadline for submission of Bids, ANERT may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the RFS document by issuing clarification(s) and/or amendment(s).

16.8.2 The clarification(s) / amendment(s) (if any) may be notified on ANERT website www.anert.gov.in at least Two (2) days before the proposed date of submission of the Bid. If any amendment is required to be notified within Two (2) days of the proposed date of submission of the Bid, the Bid Deadline may be extended for a suitable period.

16.8.3 ANERT will not bear any responsibility or liability arising out of non-receipt of the information regarding Amendments in time or otherwise. Bidders must check the website for any such amendment before submitting their Bid.

16.8.4 In case any amendment is notified after submission of the Bid (prior to the opening of Techno-Commercial Bid.

16.8.5 All the notices related to this Bid which are required to be publicized shall be uploaded on website www.etenders.kerala.gov.in

16.9 Bidding process

16.9.1 Bid formats

The Bid shall comprise of the following:

(A) Cover I - Techno-Commercial documents

i. Covering Letter as per the prescribed Format-1
ii. Copy of PAN and TAN certificates of Bidding company
iii. Original power of attorney issued by the Bidding Company in favour of the authorized person signing the Bid, in the form attached hereto as Format-2 or standard power of attorney in favour of authorized person signing the Bid. (Power of Attorney must be supplemented by Board Resolution to above effect for the company). However, ANERT may accept general Power of Attorney executed in favour of Authorised signatory of the Bidder, if it shall conclusively establish that the signatory has been authorized by the Board of Directors to execute all documents on behalf of the Bidding Company.
iv. General particulars of bidders as per Format-3
v. Shareholding certificate signed by the company secretary of the bidding company and shareholding certificate signed by the company secretary of the Parent company (if parent company credentials are used).
vi. Document in support of meeting Eligibility Criteria as per Clause no. 16.1 & 16.2.
vii. Certificates of incorporation of Bidding company and parent company (if parent company credentials are used)
viii. Certificates of incorporation of bidding consortium, if technical consortium is envisaged in the bid submitted by bidder.
viii. Details for meeting Financial Eligibility Criteria as per Clause no. 16.3 along with documentary evidence for the same.

ix. If credentials of Parent company are being used by the Bidding company/lead member of the bidding consortium than Format 4 shall be furnished.

x. Undertakings from the Financially Evaluated Entity or its Parent Company /Ultimate Parent Company as per Format-5.

xi. Board Resolution of the Parent Company /Ultimate Parent Company of the Bidding company duly certified by the Company Secretary to provide the Performance Bank Guarantee (PBG) in the event of failure of the Bidding Company to do so.

xii. Board resolution for Authorised signatory

xiii. Signed and stamped Copy of RFS Documents including amendments & clarifications by Authorised signatory on each page.

(B) Cover II- Price bid for bid submission under RESCO

The Bidder shall inter-alia take into account the following while preparing and submitting the Price Bid digitally signed by the authorized signatory. The Bidder shall submit Price Bid in the Volume- IV for RESCO Model in the e-tender website.

16.10 Validity of Bid

16.10.1 The bid and the Price Schedule included shall remain valid for a period of 06 months from the date of techno-commercial bid opening, with bidder having no right to withdraw, revoke or cancel his offer or unilaterally vary the offer submitted or any terms thereof. In case of the bidder revoking or cancelling his offer or varying any term & conditions in regard thereof or not accepting letter of allocation, ANERT shall forfeit the Bid Bond furnished by him.

16.10.2 In exceptional circumstances when letter of acceptance is not issued, ANERT may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The EMD provided shall also be suitably extended. A Bidder may refuse the request without forfeiting its Bid Bond. A Bidder granting the request will neither be required nor permitted to modify its Bid in any manner.

16.11 Cost of bidding

The bidder shall bear all the costs associated with the preparation and submission of his offer, and ANERT will in no case be responsible or liable for those costs, under any conditions. The Bidder shall not be entitled to claim any costs, charges and expenses of and incidental to or incurred by him through or in connection with his submission of bid even though ANERT may elect to modify / withdraw the invitation of Bid.

16.12 Performance Security / Performance Bank Guarantee (PBG)

16.12.1 Within 30 days from the date of issue of Allocation letter, Successful Bidder shall furnish the Performance Security for the amount of Rs 50 Lakhs.

16.12.2 The Performance Security shall be denominated in Indian Rupees and shall be in one of the following forms:

a. A demand draft, or a bank guarantee in the format given in Format-7 from the list of banks mentioned in clause 4.
b. Be confirmed for payment by the branch of the bank giving the bank guarantee at Thiruvananthapuram.

16.12.3 The PBG shall be forfeited as follows without prejudice to the Bidder being liable for any further consequential loss or damage incurred to ANERT, if the Successful Bidder is not able to commission the projects to the satisfaction of ANERT.

16.12.4 The Performance Security shall be valid for a minimum period of 18 months from the date of issue of LoA and shall be renewed / extended till the commissioning of the power plant.

16.13 Right to withdraw the RFS and to reject any bid

16.13.1 This RFS may be withdrawn or cancelled by ANERT at any time without assigning any reasons thereof. ANERT further reserves the right, at its complete discretion, to reject any or all of the Bids without assigning any reasons whatsoever and without incurring any liability on any account.

16.13.2 ANERT reserve the right to interpret the Bid submitted by the Bidder in accordance with the provisions of the RFS and make its own judgment regarding the interpretation of the same. In this regard ANERT shall have no liability towards any Bidder and no Bidder shall have any recourse to ANERT with respect to the selection process. ANERT shall evaluate the Bids using the evaluation process specified in Volume - III, at its sole discretion. ANERT's decision in this regard shall be final and binding on the Bidders.

16.13.3 ANERT reserves its right to vary, modify, revise, amend or change any of the terms and conditions of the Bid before submission. The decision regarding acceptance or rejection of bid by ANERT will be final.

16.14 Zero Deviation

This is a ZERO Deviation Bidding Process. Bidder is to ensure compliance of all provisions of the Bid Document and submit their Bid accordingly. Tenders with any deviation to the bid conditions shall be liable for rejection.

16.15 Examination of Bid document

16.15.1 The Bidder is required to carefully examine the Technical Specification, terms and Conditions of Contract, and other details relating to supplies as given in the Bid Document.

16.15.2 The Bidder shall be deemed to have examined the bid document including the agreement/contract, to have obtained information on all matters whatsoever that might affect to execute the project activity and to have satisfied himself as to the adequacy of his bid. The bidder shall be deemed to have known the scope, nature and magnitude of the supplies and the requirements of material and labour involved etc. and as to all supplies he has to complete in accordance with the Bid document.

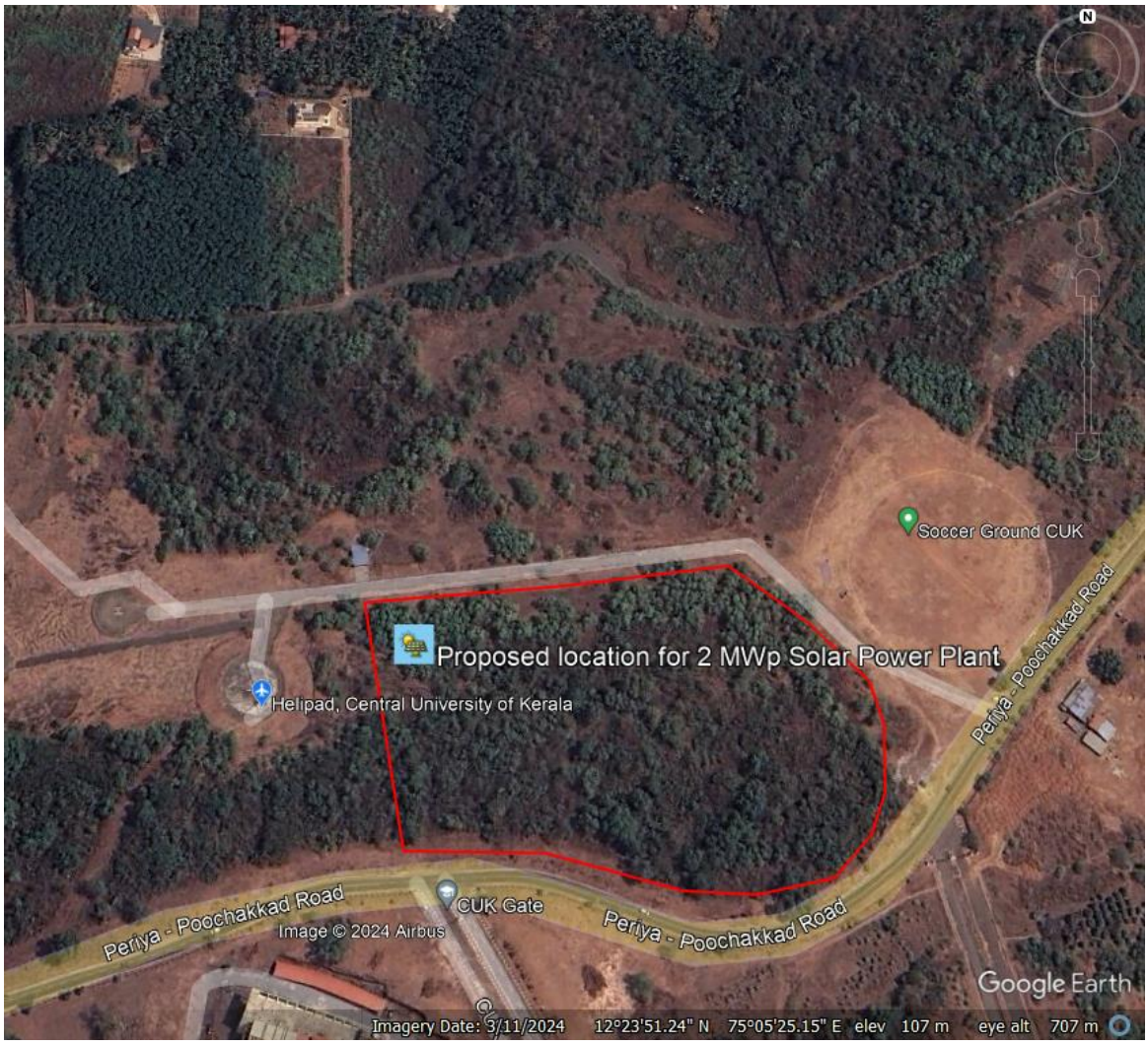
16.15.3 Bidder is advised to submit the bid on the basis of conditions stipulated in the Bid Document. Bidder's standard terms and conditions if any will not be considered. The cancellation / alteration / amendment / modification in Bid documents shall not be accepted by ANERT.

16.15.4 Bid not submitted as per the instructions to bidders is liable to be rejected. Bid shall confirm in all respects with requirements and conditions referred in this bid document.

SCOPE OF WORK

17. SCOPE OF WORKS

The scope of work for the bidder include, Obtaining No Objection Certificates (NOC)" from Distribution Company (DISCOM) as well as Transmission wing of KSEBL for grid connectivity, Electrical Inspectorate / Central Electrical Authority certification for energisation of plant and associated electrical, complete design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the Grid connected ground mounted solar PV Power Plant including operation and maintenance (O&M) of the project under RESCO model for 15 years after Commercial Operation Date (COD).



The Power plant is proposed at the 6.5 Acre land near the Helipad inside the Central University campus at Periye, Kasaragod.

17.1 ASSOCIATED WORKS

The Works to be performed by the contractor shall also include but not limited to

a. Soil Test, pull test to understand the soil strength.
b. Survey to be conducted to understand the coordinates, which is to be reflected in construction drawings and further in as Built. Also, elevation details of solar structure & other associated structures to be denoted in the drawings based on this survey.
c. Works of any kind necessary for the due and satisfactory construction, completion and maintenance of the works to the intent and meaning of the drawings adopted, technical specifications, to best Engineering standards and orders that may be issued by the Engineer from time to time, compliance by the agency with all Conditions of Contract,
d. Site Clearing, levelling and grading
e. Supply of all materials, apparatus, plants, equipment, tools, fuel, water, strutting, timbering, transport, offices, stores, workshop, staff, labour and the provision of proper and sufficient protective works, diversion, fencing, lighting, and watching required for the safety of the public and protection of works on adjoining land.
f. Power infrastructure required for auxiliary and local consumption.
g. The existing well in the premise shall be utilised for water recharge and other utilisation.
h. Office / Control room, fencing, surveillance, internal roads, drainage, Approach roads (approx. 150m), water recycling, rainwater harvesting etc.
i. 11 kV bay extension facility at the nearest substation for injection of power, if required.
j. First-aid equipment, sanitary accommodation for the staff and workmen, effecting and maintenance of all insurances.
k. The payment of all wages, salaries, provident fund, fees, royalties, duties or other charges arising out of erection of works, insurance of labours and regular

clearance of rubbish, clearing up, leaving the site perfect and tidy on completion & any permission required for clearance and disposal of debris shall be taken up by the contractor.

17.2 SUBMITTALS

On commencement of the Project, the Contractor shall submit the following to ANERT:

a. Prior to the technical submittals, the contractor shall submit detailed baseline program and methodology indicating the proposed overall schedule for documentation such as calculations, shop/ working drawings, plan/ procedures and records. Submission of samples, process of fabrication / delivery to site storage yard for the approval of the Employer. Also, Contractor shall submit Method statements and Quality Assurance plan for each activity to be done and get approval from ANERT before commencing the work. Contractor shall maintain the necessary Quality and Quantity documentation. All the documents shall be submitted to Employer for their review and records.

b. Detailed work procedures and schedules shall be submitted by contractor at least one month before start of work and shall get necessary approval from ANERT authorities and various entities. If required meeting shall be called to settle all the open issues. Contractor to ensure that all issues are closed one month prior to start of work.

c. Complete fabrication drawings, materials list, cutting lists, bolt lists, welding schedules and QC schedules, based on the design drawing furnished to him and in accordance with the approved schedule. It is highlighted that structural steel members, dimensions thereof indicated in tender drawings are tentative only, and may be modified during final design stage.

d. Results of any tests, as and when conducted and as required by Employer.

e. A detailed list of all constructional Plant & Equipment, such as cranes, derricks, winches, welding sets etc. their makes, model, present condition and location,

available to the contractor and the ones he will employ on the job to maintain the progress of work in accordance with the contract.

f. The total number of experienced personnel of each category, like fitters, welders, riggers etc., which he intends to deploy on the project.

g. The contractor shall submit complete design calculations for any alternative sections proposed by him, for the approval of Employer and records of Owner.

18. PROJECT COST / LEVELLISED TARIFF

18.1 The Project cost/Levelized tariff 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 15 years under RESCO model, goods and services including spares required if any during O&M period. The Bidder has to take all permits, approvals and licenses, Insurance etc., provide training and such other items and services required to complete the scope of work mentioned above.

18.2 The levelized tariff quoted is on lump sum turnkey basis and the bidder is responsible for the total Scope of Work described at Clause 17 above.

18.3 The levellized tariff shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work for payment of energy charges. 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.

18.4 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 during the PPA period.

18.5 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 15 years under RESCO model.

18.6 The levellized tariff shall be specified in sanction letter based on Successful Bidder's quote for the project. The project cost shall be in accordance with all terms, conditions, specifications and other conditions of the Contract as accepted by ANERT and incorporated into the sanction letter.

18.7 The Bidder shall complete the Price Bid for RESCO as per Volume -IV for the project location, as furnished in the RFS Documents.

19. ANERT SERVICE CHARGES

The RESCO contractor shall pay an amount equal to 2% of the energy charges as service charges to ANERT at the end of every billing period. The charges shall be transferred to ANERT bank account within 5 working days of receipt of payment from the owner/ their bankers.

20. INSURANCE

20.1 The Bidder shall be responsible and take an Insurance Policy for transit-cum-storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The bidder shall also take appropriate insurance during O&M period.

20.2 The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.

21. WARRANTIES AND GUARANTEES

The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide system warrantee covering the

rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of the PPA term from the date of commissioning. The successful bidder has to transfer all the Guarantees /Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be joint responsibility of the Successful bidder and the owner of the project and ANERT will not be responsible in any way for any claims whatsoever on account of the above.

22. TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP

22.1 The Design, Engineering, Manufacture, Supply, Installation, Testing and Performance of the equipment shall be in accordance with latest appropriate IEC/Indian Standards as detailed in the Vol- III (Technical specifications) of the bid document. Where appropriate Indian Standards and Codes are not available, other suitable standards and codes as approved by the MNRE shall be used.

22.2 The specifications of the components should meet the technical specifications mentioned in Volume III.

22.3 Any supplies which have not been specifically mentioned in this Contract, but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the Bidder without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV plant.

23. OPERATION & MAINTENANCE

i. The bidder shall be responsible for Operation and Maintenance of the Solar PV system for the PPA period, during which ANERT will monitor the project for effective performance in line with conditions specified elsewhere in the bid document. During this period, the bidder shall be responsible for supply of all spare parts as required from time to time for scheduled and preventive maintenance, major overhauling of the plant, replacement of defective modules, inverters, PCU's etc and maintaining log sheets for operation detail, deployment of

staff for continuous operations and qualified engineer for supervision of O&M work, complaint logging & its attending.

ii. If any Operation & Maintenance issues are not resolved within 7 days, then complaint may be raised to ANERT, pursuant to which a penalty as decided by CEO ANERT will be imposed.

iii. If the outage of the plant is more than 30 days continuously, then the 50% PBG amount shall be encashed by Owner.

iv. If the outage is exceedingly more than 60 days than complete PBG amount shall be encashed by Owner. (This will be applicable till 25 years of O&M as per the Scope of the RFS.)

24. METERING AND GRID CONNECTIVITY

Metering and grid connectivity of the solar PV system under this project would be the responsibility of the Bidder in accordance with the prevailing guidelines of the concerned DISCOM and / or CEA (if available by the time of implementation). ANERT could facilitate connectivity; however, the entire responsibility lies with bidder only.

25. PLANT PERFORMANCE EVALUATION

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance. Minimum CUF shall not be less than 16% for a period of 10 years. The bidder should send the periodic plant output details to ANERT for ensuring the CUF. The PR will be measured at Inverter output level during peak radiation conditions.

26. PROGRESS REPORT

The bidder shall submit the progress report monthly to ANERT in Prescribed Proforma. ANERT will have the right to depute his/their representatives to ascertain the progress of contract at the premises of works of the bidder.

27. PROJECT INSPECTION

The project progress will be monitored by ANERT and the projects will be inspected for quality at any time during commissioning or after the completion of the project either by officer(s) from ANERT or any authorized agency/ experts.

28. APPLICABLE LAW

The Contract shall be interpreted in accordance with the laws of the Union of India.

29. SETTLEMENT OF DISPUTE

29.1 If any dispute of any kind whatsoever arises between ANERT and Successful bidder in connection with or arising out of the contract including without prejudice to the generality of the foregoing, any question regarding the existence, validity or termination, the parties shall seek to resolve any such dispute or difference by mutual consent.

29.2 If the parties fail to resolve, such a dispute or difference by mutual consent, within 45 days of its arising, then the dispute shall be referred by party by giving notice to the other party in writing of its intention to refer to arbitration as hereafter provided regarding matter under dispute. No arbitration proceedings will commence unless such notice is given.

29.3 In case the contractor is a public sector enterprise or a Government department.

29.3.1 In case the Contractor is a Public Sector Enterprise or a Government Department, the dispute shall be referred for resolution in Permanent Machinery for Arbitration (PMA) of the Department of Public Enterprise, Government of India. Such dispute or difference shall be referred by party for Arbitration to the sole Arbitrator in the Department of Public Enterprises to be nominated by the Secretary to the Government of India in-charge of the Department of Public Enterprises. The award of the Arbitrator shall be binding upon the parties to the dispute, provided, however, any party aggrieved by such award may make a further reference for setting aside or revision of the award to the Law Secretary, Department of Legal Affairs, Ministry of Law & Justice,

Government of India. Upon such reference the dispute shall be decided by the Law Secretary or the Special Secretary / Additional Secretary, when so authorized by the Law Secretary, whose decision shall bind the Parties finally and conclusive. The Parties to the dispute will share equally the cost of arbitration as intimated by the Arbitrator.

29.4 In case the contractor is not a public sector enterprise or a Government department.

29.4.1 In all other cases, any dispute submitted by a party to arbitration shall be heard by an arbitration panel composed of three arbitrators, in accordance with the provisions set forth below.

29.4.2 ANERT and the Contractor shall each appoint one arbitrator, and these two arbitrators shall jointly appoint a third arbitrator, who shall chair the arbitration panel. If the two arbitrators do not succeed in appointing a third arbitrator within Thirty (30) days after the latter of the two arbitrators has been appointed, the third arbitrator shall, at the request of either party, be appointed by the Appointing Authority for third arbitrator which shall be the President, Institution of Engineers.

29.4.3 If one party fails to appoint its arbitrator within thirty (30) days after the other party has named its arbitrator, the party which has named an arbitrator may request the Appointing Authority to appoint the second arbitrator.

29.4.4 If for any reason an arbitrator is unable to perform its function, the mandate of the Arbitrator shall terminate in accordance with the provisions of applicable laws as mentioned in Clause 28 (Applicable Law) and a substitute shall be appointed in the same manner as the original arbitrator.

29.4.5 Arbitration proceedings shall be conducted with The Arbitration and Conciliation Act, 1996. The venue or arbitration shall be New Delhi.

29.4.6 The decision of a majority of the arbitrators (or of the third arbitrator chairing the arbitration panel, if there is no such majority) shall be final and binding and shall be enforceable in any court of competent jurisdiction as decree of the court. The parties thereby waive any objections to or claims of immunity from such enforcement.

29.4.7 The arbitrator(s) shall give reasoned award.

29.5 Notwithstanding any reference to the arbitration herein, the parties shall continue to perform their respective obligations under the agreement unless they otherwise agree.

29.6 Cost of arbitration shall be equally shared between the Successful bidder or Contractor and ANERT

30. FORCE MAJEURE

30.1 Notwithstanding the provisions of clauses contained in this RFS document; the contractor shall not be liable to forfeit (a) Security deposit for delay and (b) termination of contract; if he is unable to fulfil his obligation under this contract due to force majeure conditions.

30.2 For purpose of this clause, "Force Majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions and fright embargoes etc. Whether a “Force majeure” situation exists or not, shall be decided by ANERT and its decision shall be final and binding on the contractor and all other concerned.

30.3 In the event that the contractor is not able to perform his obligations under this contract on account of force majeure, he will be relieved of his obligations during the force majeure period. In the event that such force majeure extends beyond six months, ANERT has the right to terminate the contract in which case, the security deposit shall be refunded to him.

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

31. LANGUAGE

All documents, drawings, instructions, design data, calculations, operation, maintenance and safety manuals, reports, labels and any other date shall be in English Language. The contract agreement and all correspondence between ANERT and the bidder shall be in English language.

32. OTHER CONDITIONS

32.1 The Successful bidder shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party without the prior consent of ANERT in writing.

32.2 The Successful bidder shall not display the photographs of the work and not take advantage through publicity of the work without written permission of ANERT and CUK.

32.3 The Successful bidder shall not make any other use of any of the documents or information of this contract, except for the purposes of performing the contract.

32.4 Successors and Assigns:

In case ANERT or Successful bidder may undergo any merger or amalgamation or a scheme of arrangement or similar re-organization & this contract is assigned to any entity (ies) partly or wholly, the contract shall be binding mutatis mutandis upon the successor entities & shall continue to remain valid with respect to obligation of the successor entities.

32.5 Severability:

It is stated that each paragraph, clause, sub-clause, schedule or annexure of this contract shall be deemed severable & in the event of the unenforceability of any paragraph, clause sub-clause, schedule or the remaining part of the paragraph, clause, sub-clause, schedule annexure & rest of the contract shall continue to be in full force & effect.

32.6 Counterparts

This contract may be executed in one or more counterparts, each of which shall be deemed an original & all of which collectively shall be deemed one of the same instrument.

32.7 Rights and Remedies under the contract only for the parties

This contract is not intended & shall not be construed to confer on any person other than the ANERT & Successful bidder hereto, any rights and / or remedies herein.

BID EVALUATION

33. BID EVALUATION

The evaluation process comprises the following four steps:

Step I - Responsiveness check of Techno Commercial Bid

Step II -Evaluation of Bidder's fulfilment of Eligibility Criteria as per Clause 16

Step III -Evaluation of Price Bid

Step IV -Successful Bidders(s) selection

I. Responsiveness check of Techno Commercial Bid

The Techno Commercial Bid submitted by Bidders shall be scrutinized to establish responsiveness to the requirements laid down in the RFS subject to Clause 16.1 and Clause 16.2. Any of the following may cause the Bid to be considered "Non-responsive", at the sole discretion of ANERT:

a. Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney supported by a board resolution, applicable undertakings, format for disclosure, valid Bid Bond, etc.;
b. Bid not signed by authorized signatory and /or stamped in the manner indicated in this RFS;
c. Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria;
d. Information not submitted in the formats specified in this RFS;
e. Bid being conditional in nature;
f. Bid not received by the Bid Deadline;
g. Bid having Conflict of Interest;
h. More than one Member of a Bidding Company using the credentials of the same Parent Company /Affiliate;
i. Bidder delaying in submission of additional information or clarifications sought by ANERT as applicable;
j. Bidder makes any misrepresentation.

Each Bid shall be checked for compliance with the submission requirements set forth in this RFS before the evaluation of Bidder's fulfilment of Eligibility Criteria is taken up. Clause 16.2 shall be used to check whether each Bidder meets the stipulated requirement.

33.1 Preliminary Examination

33.1.1 ANERT will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed and stamped and whether the Bids are otherwise in order.

33.1.2 Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total Amount that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total amount shall be corrected. If there is a discrepancy between words and figures, the amount written in words will prevail.

II. Evaluation of Bidder's fulfilment of eligibility criteria

Evaluation of Bidder's Eligibility will be carried out based on the information furnished by the Bidder as per the prescribed Formats and related documentary evidence in support of meeting the Eligibility Criteria as specified in Clause 16.2. Non-availability of information and related documentary evidence for the satisfaction of Eligibility Criteria may cause the Bid to be non-responsive.

III. Evaluation of Price Bid

The Price Bid of only the Qualified Bidders shall be opened in presence of the representatives of such Qualified Bidders, who wish to be present, on a date as may be intimated by ANERT to the Bidders through ANERT. The evaluation of Price Bid shall be carried out based on the information furnished in the BoQ. The Price Bid submitted by the Bidders shall be scrutinized to ensure conformity with the RFS. Any Bid not meeting any of the requirements of this RFS may cause the Bid to be considered "Non-responsive" at the sole decision of the ANERT. The Price bids shall be evaluated as follows:

RESCO

The tariff quoted for the project shall be evaluated as follows;

a. The tariff for the project shall be evaluated separately on levellized tariff basis quoted for the capacity for three categories of 60 months.
b. Since the maximum allowable levellized tariff for 15 years in this project is Rs. 4.15/kWh, any bidder submitting bid above the maximum allowable project cost shall be rejected.

IV. SUCCESSFUL BIDDER(S) SELECTION

i. Bids qualifying in Clause 16.2 shall only be evaluated in this stage.
ii. The Levellized Tariff requirement for RESCO model projects quoted in all Price Bids of Qualified Bidders shall be ranked from the lowest to the highest. The lowest bidder will be declared as the successful bidder.
iii. Letter of Acceptance (LOA): The Letter of Acceptance (LOA) shall be issued to Successful Bidder selected as per the provisions of this Clause 33
iv. The Successful Bidder shall acknowledge the LOA and return duplicate copy with signature & stamp of the authorized signatory of the Successful Bidder to ANERT within Thirty (30) days of issue of LOA.
v. If the Successful Bidder, to whom the Letter of Acceptance has been issued does not fulfil any of the conditions specified in Bid document, ANERT reserves the right to annul/cancel the award of the Letter of Acceptance of the Successful Bidder and forfeit the Bid security.
vi. ANERT at its own discretion, has the right to reject any or all the Bids without assigning any reason whatsoever, at its sole discretion.

34. NOTIFICATION TO SUCCESSFUL BIDDERS

The name of Successful Bidder shall be notified indicating the awarded project price individually through letter of acceptance.

35. REQUIREMENT OF APPROVALS ON MAKES OF THE COMPONENTS:

The modules should be manufactured in India only. Rest of the components can be procured from any source. However, these items should meet the Technical specification and standards mentioned in RFS.

36. OPERATION OF THE SYSTEM DURING WEEKENDS AND GENERAL HOLIDAYS AND CALCULATION OF CUF:

During grid failure, the SPV system stops generating. Any instances of grid failure need to be mentioned in the monthly report and those instances need to be authorised by local DISCOM. Then the period will be excluded in calculation of CUF.

37. PENALTY FOR DELAY IN PROJECT IMPLEMENTATION

37.1 The Bidder shall complete the project identification, design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the project within 12 months from the date of issue of LOA.

37.2 If the bidder fails to commission the project capacity within 12 months from date of issue of allocation letter, Penalty on per day basis calculated for the Performance Security on a 6 months' period would be levied.

38. TIME OF COMPLETION OF WORKS:

38.1 Project completion shall be 6 months from the date of handover of the land to the successful bidder. Failure of non- compliance of same shall lead to forfeiture of PBG.

38.2 The period of construction given in Time Schedule includes the time required for mobilisation as well as testing, rectifications if any, retesting and completion in all respects to the entire satisfaction of the ANERT.

38.3 A joint programme of execution of the Work will be prepared by the ANERT or its representative nominated for the purpose and Successful bidders based on priority requirement of this project. This programme will take into account the time of completion mentioned in clause 38.1 above and the time allowed for the priority Works by the ANERT.

38.4 Monthly/Weekly implementation programme will; be drawn up by the ANERT jointly with the Successful bidder, based on availability of Work fronts. Successful bidder shall scrupulously adhere to these targets /programmes by deploying adequate personnel, tools and tackles and he shall also supply himself all materials of his scope of supply in good time to achieve the targets/programmes. In all matters concerning the extent of targets set out in the weekly and monthly programmes and the degree of achievements, the decision of the ANERT will be final and binding.

39. COMMERCIAL OPERATION DATE:

39.1 Document Submission for Issue Commissioning/ Completion Certificate:

The following documents will be deemed to form the completion documents:

a. Project completion report from successful bidder as per ANERT format
b. Project completion/satisfaction certificate from ANERT.

39.2 Commercial Operation Date

If the results of system acceptance testing indicate that the System is capable of generating electric energy (at full rated MWp) for 3 continuous days using such instruments and meters as have been installed for such purposes, then the power producer shall send a written notice to Employer to that effect, and the date of successful conducting such tests and injection of power at delivery point shall be the "Commercial Operation Date"

39.3 The energy charges for auxiliary power consumption for lighting, power and for smooth operation of the solar plant shall be paid by the Contractor.

40. CORRUPT OR FRAUDULENT PRACTICES

The Successful Bidders/ Contractors should follow the highest standard of ethics during the execution of contract. In pursuance of this policy, ANERT:

40.1 defines, for the purposes of this provision, the terms set forth as follows:

a. "corrupt practice" means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the bid process or in contract execution; and

b. "fraudulent practice" means a misrepresentation of facts in order to influence a bid process or the execution of a contract to the detriment of ANERT/Govt. scheme, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive ANERT of the benefits of free and open competition;

c. will declare a firm ineligible/debarred, either indefinitely or for a specific period of time, a GOVT contract if at any time it is found that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Government/ ANERT schemes.

AGENCY FOR NEW & RENEWABLE ENERGY RESEARCH AND TECHNOLOGY (ANERT)
Department of Power, Government of Kerala
Thiruvananthapuram, Kerala – 695 033;
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E-TENDER DOCUMENT

Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

VOL – 3: TECHNICAL SPECIFICATIONS

Date of Publishing of Bids : - 25/05/2024

Last Date of Submission of Bids : - 15/06/2024

TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below.

41. DEFINITION

A Grid Tied Solar 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 and switches. PV Array is mounted on a suitable structure. Grid tied SPV system do not have battery backup and should be designed with necessary features to supplement the grid power during daytime. 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 consist of the required number of **Crystalline** PV modules.
- Grid interactive Power Conditioning Unit with Remote Monitoring System
- Mounting structures
- String Monitoring Units / Junction Boxes.
- Power Transformers and other Substation equipment's
- Power evacuation system
- Earthing, lightning, and Fire protections
- IR/UV protected PVC Cables, pipes and accessories
- RTTU / Metering
- SCADA

42. SOLAR PHOTOVOLTAIC MODULES:

Only the PV modules with MONO PERC Half cut cells of module capacity 525 Wp or above listed in the ALMM list issued by MNRE from time to time are to be used. However, the specifications for the PV Module are detailed below:

42.1 The PV modules must be PID compliant, salt, mist & ammonia resistant and should withstand weather conditions for the project life cycle.

42.2 The back sheet of PV modules shall be with minimum of three layers with outer layer (exposure to ambience) and shall be made of PVDF or PVF. The Back sheets for PV Module with 2 layered or 3 layered Polyester types or the back sheets with Polyester (PET type) at Air side material are not permitted for the empanelment; The minimum thickness of the core layers (without adhesive and inner EVA coated) must be 300 microns. The maximum allowed water vapor transmission rate shall be less than 2 g / m2/day and shall have a Partial Discharge > / = 1500V DC

42.3 The front glass shall meet the following specifications:

a. The facing glass must be Tempered, PV grade with Low iron and high transmission.
b. The transmission shall be > 93 %
c. Thickness shall be min 3.2 mm
d. Textured to trap more light
e. The glass shall have an Anti-reflective coating for the better transmission and light absorption.
f. Tempered glass to meet the external load conditions

42.4 The encapsulant used for the PV modules should be UV resistant in nature. No yellowing of the encapsulant with prolonged exposure shall occur. The sealant used for edge sealing of PV modules shall have excellent moisture ingress Protection with good electrical insulation and with good adhesion strength. Edge tapes for sealing are not allowed.

42.5 Anodized Aluminium module frames of sufficient thickness shall be used which are electrically & chemically compatible with the structural material used for mounting the modules having provision for earthing.

42.6 UV resistant junction boxes with minimum three numbers of bypass diodes and two numbers of MC4 connectors or equivalent with appropriate length of 4 sq.mm Cu cable shall be provided. IP67 degree of protection shall be used to avoid degradation during Life.

42.7 Shading correction/ bypass diode for optimizing PV out to be incorporated in each solar module or panel level.

42.8 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, IM, VM 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

42.9 The following details should be provided on the module

a. Name of the manufacture
b. Month and year of manufacture
c. Rated Power at STC
d. VMP, IMP, VOC, Isc

42.10 The successful bidder shall arrange an RFID reader to show the RFID details of the modules transported to sites, to the site Engineer in charge up to their satisfaction, which is mandatory for the site acceptance test.

42.11 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.

42.12 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.

42.13 PV modules used in solar power plant/ systems must be warranted for 10 years for their material, manufacturing defects, workmanship. The 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

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

42.15 The PV modules shall conform to the following standards:

a. IS 14286: Crystalline silicon terrestrial photovoltaic (PV) modules — design qualification and type approval.
b. IEC 61215 / IEC 61646: c-Si (IEC 61215): Crystalline silicon terrestrial photovoltaic (PV) modules – Design qualification and type approval Thin Film (IEC 61646): Design, Qualification & Type Approval
c. IEC 61730-1: Photovoltaic Module safety qualification- Part 1: Requirements for construction
d. IEC 61730-2: Photovoltaic Module safety qualification- Part 2: Requirements for testing
e. IEC 61701: Salt mist corrosion testing of photovoltaic modules
f. IEC 62716: Test Sequences useful to determine the resistance of PV Modules to Ammonia (NH3)

42.16 The PV module should have IS14286 qualification certification for solar PV modules (Crystalline silicon terrestrial photovoltaic (PV) modules — design qualification and type approval). The exemption of this certification and other details are described, as per MNRE's Gazette Notification No. S.O. 3449 (E). Dated 13th July, 2018.

43. ARRAY STRUCTURE

a. Hot dip galvanized MS / Aluminium mounting structures may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However, to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.

b. The Mounting structure shall be designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (min 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 ANERT. Suitable fastening arrangements such as grouting and calming should be provided to secure the installation against the specific wind speed.
c. The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
d. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.
e. The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
f. Regarding civil structures, the bidder need to take care of the load bearing capacity of the soil at the site of installation.
g. The minimum clearance of the structure from the ground level should be 300 mm.
h. Structures shall be supplied complete with all members to be compatible for allowing easy installation at the site. Additional Structures/Frames for required for the installation of modules if any need to be provided by the bidder.
i. The structures shall be designed to allow easy replacement of any module, repairing and cleaning of any module. No Welding is allowed on the mounting structure. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.
j. Aluminium structures used shall be protected against rusting either by coating or anodization. Aluminium frames should be avoided for installations in coastal areas.

k. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years. And shall be free from corrosion while installation.

l. Screw fasteners shall use existing mounting holes provided by module manufacturer. No additional holes shall be drilled on module frames.

m. The total load of the structure (when installed with PV modules) on the roof should be less than 60 kg/m^2.

n. Minimum distance between the lower level of PV Module and the ground shall be 0.6m from the ground level.

o. The PV Panel area shall be accessible for cleaning and for any repair work.

p. Sufficient gap needs to be provided between the rows to avoid falling of shadow of one row on the next row. Seismic factors for the site will be considered while making the design of the foundation.

q. Adequate spacing shall be provided between any two modules secured on PV panel for improved wind resistance.

44. JUNCTION BOXES (JBs)

a. The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

b. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single / double compression cable glands, Provision for earthing the box must be provided.

c. Each Junction Box shall have High quality Suitable Capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement monitoring and disconnection for each of the groups.

d. Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification

e. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

45. DC DISTRIBUTION BOARD:

a. DC bus/ cable which can handle the current and the voltage of inverter output safely with necessary surge arrester as per the relevant IS standards.
b. DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations and remote operating and controlling facility from the main control facility.
c. DCDB shall have sheet from enclosure of dust and vermin proof, the busbar/ cables are to be made of copper of desired size. DCDB shall be fabricated to comply with IP 65 protection.

46. AC DISTRIBUTION PANEL BOARD:

a. AC Distribution Board (ACDB) shall control the AC power from inverters and should have necessary surge arrestors.
b. An ACDB panel shall be provided in between PCU and Utility grid. It shall have MCB/MCCB/ACB or circuit breaker of suitable rating for connection and disconnection of PCU from grid.
c. The connection between ACDB and Utility grid shall be of standard cable/ Conductor with suitable termination. It shall have provision to measure grid voltage, current and power.
d. The incomer shall be selected at required rating. The ACDB enclosure shall be of good protection and suitable for mounting on the trenches / on wall.
e. All the 415 V AC or 230 V AC devices/equipment like bus support insulators, circuit breakers, SFU isolators (if applicable), SPD, etc. mounted inside the switch gear shall be suitable for continuous operation.
f. Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and IEC 60947 part I, II and III.
g. Junction boxes, enclosures, panels for inverters/ Controllers shall meet IP 65 (for indoor) as per IEC 529.

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

47. PCU/ARRAY SIZE RATIO:

a. The combined wattage of all inverters should not be less than 80% of rated capacity of DC power of the plant under STC.
b. Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

48. PCU/ INVERTER

The Power Conditioning Unit shall be String Inverter with power exporting facility to the Grid.

General Specifications:

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

a. The name or trademark of the manufacturer or supplier.
b. A model number, name or other means to identify the equipment.
c. A serial number, code or other markings allowing identification of manufacturing location and the manufacturing batch or date within a three-month time period.
d. Input voltage, type of voltage (A.C. or D.C.), frequency, and maximum continuous current for each input.
e. Output voltage, type of voltage (A.C. or D.C.), frequency, maximum continuous current, and for A.C. outputs, either the power or power factor for each output.
f. The Ingress Protection (IP) rating

48.2 The inverter output shall be 415 VAC, 50 Hz, 3 phase.

48.3 The inverter shall include appropriate self-protective and self-diagnostic feature to protect itself and the PV array from damage in the event of inverter component failure or from parameters beyond the inverter's safe operating range due to internal or external causes.

48.4 PCU shall have the dynamic and efficient MPPT algorithm behaviour which finds maximum power point even in low light conditions. The PCU Company should be able to display this feature.

48.5 The PCU shall be supplied with in-built advanced grid feed-in feature along with dynamic feed-in control considering self-consumption. The PCU shall also include control functions for optimum feed-in of reactive power and effective power. The amount of reactive power injection and absorption can be controlled depending upon under/over excited systems.

48.6 The PCU shall have a provision of external shutdown via remote signal separately with an in-built floating-point contact or similar option using any minimum interface which is to ensure the emergency stop function in the inverter.

48.7 The PCU shall have a higher degree of ingress protection of IP 65 to handle robust environment conditions from dust and water ingress under complete outdoor installations.

48.8 The data logger should possess the feature of extracting the data externally with open protocols like Modbus TCP/RTU. The manufacturer should provide the Modbus register mapping file to utilise this feature.

48.9 **The inverter shall have an efficient cooling concept with better power derating feature to handle higher temperatures and ensure the best efficiency. The inverter shall be able to provide full rated output power even at ambient temperatures of 50^0C. The manufacturer to provide the power derating curves to demonstrate the same.**

48.10 The inverter shall be flexible in terms of the installation and should be capable for installation in a horizontal position facilitating easy installation for site specific requirements.

48.11 The inverter shall have an integrated feature of emergency stop to halt the inverter from operation considering safety scenarios.

48.12 The PCU manufacturer should have an authorised service centre in Kerala. The details of the service centre along with the spare list must be submitted along with the bid.

48.13 **PCU should be able to respond smoothly to the voltage fluctuations on the low-tension grid via active & reactive power control/ support. The PCU should be able to respond separately to fulfil below mentioned:**

48.13.1 Finding out optimisation of the system

48.13.2 Optimal power distribution on each phase

48.13.3 Prevent PCU from unnecessary disconnections

48.14 The PCU Company should have grid connected solar plants running in the country with inverters at least 7 years from the time of bidding to showcase the service reliability and long-term presence. Also, the PCU should have local presence in the county for at least last 5 years. The PCU manufacturer may need to provide authentic details to customer if asked to prove the same.

48.15 The Technical Specification of On-Grid Inverters are summarized below:

Specifications of Inverters	
Parameters	**Detailed specification**
Nominal voltage	230V/415V
Voltage Band	Between 80% and 110% of V nominal
Nominal Frequency	50 Hz
Operating Frequency Range	47.5 to 50.5 Hz
Waveform	Sine wave
Harmonics	AC side total harmonic current distortion < 3%
Ripple	DC Voltage ripple content shall be not more than 1%
Efficiency	Efficiency shall be >98%
Casing protection levels	Degree of protection: Min IP-65
Operating ambient Temp range	-10 to + 60 degree Celsius
Operation	Completely automatic including wakeup, synchronization (phase locking) and shut down
MPPT	MPPT range must be suitable to individual array voltages
Protection Class	1

Specifications of Inverters	
Parameters	**Detailed specification**
Protections	Over voltage: both input and output Over current: both input and output Over / Under grid frequency Over temperature Short circuit Lightning Surge voltage induced at output due to external source Islanding
Ingress Protection	IP 65
Recommended LED indications	ON Grid ON Under/ Over voltage Overload Over temperature
Recommended LCD Display on front Panel	DC input voltage DC current AC Voltage (all 3 phases) AC current (all 3 phases) Frequency Ambient Temperature Instantaneous power Cumulative output energy Cumulative hours of operation Daily DC energy produced
Communication Interface	RS485/ RS232/Wi-Fi (with or without USB)

48.16 The Technical Specification for Interconnection are summarized below:

Sl No	Parameters	Requirements	Reference
1	Overall conditions of service	Reference to regulations	Conditions for Supply of Electricity
2	Overall Grid Standards	Reference to regulations	Central Electricity Authority (Grid standards) Regulations 2010
3	Equipment	Applicable industry standards	IEC/EN standards

Sl No	Parameters	Requirements	Reference
4	Safety and Supply	Reference to regulations, (General safety requirements	Central Electricity Authority (Measures of safety and electricity supply) Regulations, 2010 and subsequent amendments
5	Meters	Reference to regulations and additional conditions issued by the commission.	Central Electricity Authority (Installation & operation of meters) regulations 2006 and subsequent amendments
6	Harmonic current	Harmonic current injections from a generating station shall not exceed the limits specified in IEEE 519	IEEE 519 relevant CEA (Technical Standards for connectivity of the distributed generation resource) Regulations 2013 and subsequent amendments
7	Synchronization	Photovoltaic system must be equipped with a grid frequency synchronization device, if the system is using synchronizer inherently built in to the inverter, then no separate synchronizer is required	Relevant CEA (Technical Standards for Connectivity of the distributed generation resources) regulations 2013 and subsequent amendments.
8	Voltage	The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. beyond the clearing time of 2 seconds, the Photovoltaic system must isolate itself from the grid	
9	Flicker	Operation of Photovoltaic system should not cause voltage flicker in excess of	Relevant CEA regulations 2013 and subsequent if any, (Technical standards

Sl No	Parameters	Requirements	Reference
		the limits stated in IEC 61000 or other equivalent Indian standards if any	for connectivity of the distributed generation resource)
10	Frequency	When the distribution system frequency deviates outside the specified limits (50.5 Hz on upper side and 47.5 Hz on lower side) up to 0.2 sec, the Photovoltaic systems shall automatically disconnect from grid and be in island mode.	
11	DC injection	Photovoltaic system shall not inject DC current greater than 0.5% of full rated output at the interconnection point or 1% rated inverter output current into distribution system under any operating conditions.	
12	Power Factor	While the output of the inverter is greater than 50%, a lagging power factor greater than 0.9 shall be maintained.	
13	Islanding and Disconnection	The photovoltaic system in the event of voltage or frequency variations must island/disconnect itself with the time stipulated as per IEC standards	
14	Overload and overheat	The inverter should have the facility to automatically switch off in case of overload or overheat and should restart when normal conditions are restored	

48.17 The IEC Certifications of On-Grid Inverters are summarized below:

Standard	Description
IEC 61683	Photovoltaic systems - Power conditioners - Procedure for measuring efficiency
IEC 61727	Photovoltaic (PV) systems- Characteristics of the utility interface
IEC/EN 62109-1	Safety of power converters for use in photovoltaic power systems - Part 1: General requirements
IEC/EN 62109-2	Safety of power converters for use in photovoltaic power systems - Part 2: Particular requirements for inverters
IEC/EN 61000-3-3/ 3-11/ 3-5	Electromagnetic compatibility (EMC) - Part 3-11; Limits; Limitation of Voltage Change, Voltage Fluctuations and Flicker in Public Low- Voltage Supply Systems; Rated Current <16A / >16A and <75A / >75A per Phase respectively
IEC/EN 61000-3-2/ -3-12/ -3-4	Electromagnetic compatibility (EMC) - Part 3-12; Limits; Limits for Harmonic Currents produced by equipment connected to the public low voltage systems with Rated Current <16A / >16A and <75A / >75A per Phase respectively
*IEC/EN 61000-6-1 / 6-2	Electromagnetic compatibility (EMC) - Part 6-2: Generic standards - Immunity standard for residential and commercial / industrial environments
*IEC/EN 61000-6-3 / 6-4	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for residential and commercial / industrial environments
IEC 62116	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
IEC 60068-2-1	Environmental testing - Part 2-1: Tests - Test A: Cold
IEC 60068-2-2	Environmental testing - Part 2-2: Tests - Test B: Dry heat
IEC 60068-2-14	Environmental testing - Part 2-14: Tests - Test N: Change of temperature
IEC 60068-2-30	Environmental testing - Part 2-30: Tests - Test Db:, Damp heat, cyclic (12 h + 12 h cycle)

***Recommended but not mandatory**

49. ELECTRICAL SAFETY, EARTHING AND PROTECTION

a. Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload 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 in the grid itself and internal faults in the power conditioner, operational errors and switching transients.

c. Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.

50. CABLING PRACTICE

Cable Cabling is required for wiring from AC output of inverter/PCU to the Grid Interconnection point. It includes the DC cabling from Solar Array to AJB and from AJB to inverter input.

50.1 All cables of appropriate size to be used in the system shall have the following characteristic:

a. Shall conform to IEC 60227 / IS 694 & IEC 60502 / IS 1554 standards.
b. Temperature Range: -10 degree Celsius to +80 degree Celsius
c. Voltage rating: 660/1000V
d. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
e. Flexible

50.2 Sizes of cables between any array interconnections, array to junction boxes, junction boxes to inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum (2%).

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

50.4 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 10kWp systems, XLPE insulated Aluminium cable of suitable area of cross section can be used in the AC side subject to a minimum area of cross section of 10 sq.mm. Outdoor AC cables shall have a UV -stabilized outer sheath IS/IEC 69947.

50.5 All LT XLPE cables shall conform to IS:7098 part I&II.

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

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

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

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

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

50.11 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. The following colour code shall be used for cable wires.

a. DC positive: red (the outer PVC sheath can be black with a red line marking
b. DC negative: black
c. AC single phase: Phase: red; Neutral: black
d. AC three phase: phases: red, yellow, blue; neutral: black
e. Earth wires: green

50.12 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.

50.13 Cable conductors shall be terminated with tinned copper end ferrules to prevent fraying and breaking of individual wire strands. The termination of the DC and AC cables at the Solar Grid Inverter shall be done as per instructions of the manufacturer, which in most cases will include the use of special connectors.

50.14 All cables and connectors used for installation of solar field must be of solar grade which can withstand harsh environment conditions including high temperatures, UV radiation, rain, humidity, dirt, salt, burial and attack by moss and microbes for 25 years and voltages as per latest IEC standards. DC cables used from solar

modules to array junction box shall solar grade copper (Cu) with XLPO insulation and rated for 1.1 kV as per relevant standards only.

50.15 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.

50.16 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.

51. FACTORY TESTING

a. PCU shall be tested prior to shipment and factory test certificate for relevant parameters should be provided with the PCU supplied. ANERT or authorised representative of ANERT may be allowed to witness the tests if required.

b. Factory testing shall not only be limited to measurement of phase currents, efficiencies, harmonic content and power factor, but shall also include all other necessary tests/simulation required and requested by the Purchasers Engineers. Tests may be performed at 25, 50, 75 and 100 percent of the rated nominal power.

52. INTEGRATION OF PV POWER WITH GRID:

The output power from SPV would be fed to the inverters which convert 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.

a. The interconnection of load with inverter output should be done after obtaining permission from Electrical Inspectorate and Electrical Utility.

b. The plan scheme and drawing related to interconnection details should be submitted to Electrical Inspectorate through a licensed Electrical contractor with the guidance appropriate Engineering Authority.

c. Licenced contractor has to be engaged for preparation of plan scheme to be submitted to the Kerala State Electricity Licensing Board and necessary fee should be remitted for energisation of Solar Power Plant.

d. The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.

e. 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.

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

g. Metering Equipment shall be installed and maintained in accordance with the provisions of The Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 as amended from time to time. The Contractor shall maintain the Metering System as per metering code and CEA guidelines. The defective meter shall be immediately tested and calibrated.

h. The accuracy class of the Metering Equipment will be selected so that all levels of energy produced or taken by the Solar Power Plant will be measured accurately, and this equipment has applicable accuracy class.

i. Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.

j. Net Metering Equipment shall measure active energy (both import and export) and reactive energy (import) by 3 ph, 4 wire principle suitable for balanced / un-balanced 3 phase load (With KVAr, KWh, KVA measuring registers). Tri-vector based energy meter shall have an accuracy class of energy measurement of at least Class 0.2 for active energy and at least 0.5 Class for reactive energy according to IEC 60687.

k. Display parameters: LCD test, KWH import, KWH export, MD in KW export, MD in KW import, Date & Time, AC current and voltages and power factor (Cumulative KWH will be indicated continuously by default)

53. DATA ACQUISITION SYSTEM / PLANT MONITORING

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 and integrated software to readout 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.
   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 through Remote Monitoring System software at the owner /ANERT 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 ANERT server and portal in future shall be kept.

54. TRANSFORMER & METERING:

a. 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. All the SS components shall be KSEBL approved makes only.
b. Transformers having 11 kV at HV side with breaker on LT and HT side shall be used for stepping up the voltage to 11kV for the Solar Power Plant.
c. Transformers shall be of reputed make and should have relevant IS or international certifications. Transformers shall have all relevant monitoring and protection devices as per the relevant Indian Standards.
d. The rating of each transformer shall be standard type. The transformer manufacturer shall provide test certificates carried out on the transformers as per relevant IS standards.
e. LV windings voltage is decided based on the inverter output voltage. The rating of transformer (kVA) is decided based on combined rating of Inverters.
f. The high voltage power from the transformers is routed through 11kV HT cable to 11kV substation.
g. 11 kV Transformer shall conform to IS: 2026.
h. The bidirectional electronic energy meter (0.2 S class) shall be installed for the measurement of Import/Export of energy.
i. 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 ANERT before commissioning of SPV plant.

55. PROTECTIONS

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

55.1 LIGHTNING PROTECTION

The SPV power plant should be provided with lightning and over voltage protection. The source of over voltage can be lightning or other atmospheric disturbance. The lightning conductors shall be made as per applicable Indian Standards in order to protect the entire array yard from lightning stroke. The design and specification shall conform to IS/IEC 62305, "Protection against lightning" govern all lightning protection-related practices of a PV system.

- The entire space occupying SPV array shall be suitably protected against lightning by deploying required number of lightning arresters. Lightning protection should be provided as per IS/ IEC 62305.
- Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.
- The protection against induced high voltages shall be provided by the use of surge protection devices (SPDs) and the earthing terminal of the SPD shall be connected to the earth through the earthing system.
- The Vendor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

55.2 SURGE PROTECTION

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. The SPD should be provided in the AC Distribution Box as well.

55.3 EARTHING PROTECTION

The Solar PV Plant should have a dedicated earthing system. The Earthing for array and LT power shall be made as per the provisions of **IS:3043-2018** "Code of practice for earthing (Second Revision)," that governs the earthing practices of a PV system and **IS 732:2019** "Code of practice for electrical wiring installations (Fourth Revision).

a. Earthing System shall connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and PV module mounting structures in one long run. The earth strips should not be bolted. Earthing GI strips shall be interconnected by proper welding.
b. The frame of inverter cabinet shall be connected with the earthing bus bar through the earthing terminals using flexible braided copper wire; All metal casing and shielding of the plant, each array structure of the photovoltaic yard, equipment, inverters and control systems shall be earthed through proper earthing.
c. Earthing system shall connect all non-current carrying metal receptacles, electrical boxes, appliance frames, chassis and photovoltaic module mounting structures in one long run and the earth strips shall be interconnected by proper welding and shall not be bolted.
d. The earthing conductor should be rated for 1.56 times the maximum short circuit current of the PV array. The factor 1.56 considers 25 percent as a safety factor and 25 percent as albedo factor to protect from any unaccounted external reflection onto the PV modules increasing its current
e. In any case, the cross-section area or the earthing conductor for PV equipment should not be less than 6 mm^2 if copper, 10 mm^2 if aluminium or 70 mm^2 if hot-dipped galvanized iron. For the earthing of lightning arrestor, cross-section of the earthing conductor should not be less than 16 mm^2 of copper or 70 mm^2 if hot-dipped galvanized iron. The minimum length of the earth electrode must be incompliance with the National Building Code of India 2016. The complete Earthing system shall be mechanically & electrically connected to provide independent return to earth.

f. Masonry enclosure with the earth pit of size not less than 400mm X 400 mm(depth) complete with cemented brick work (1:6) of minimum 150mm width duly plastered with cement mortar (inside)shall be provided. Hinged inspection covers of size not less than 300mm X 300mm with locking arrangement shall be provided. Suitable handle shall be provided on the cover by means of welding a rod on top of the cover for future maintenance.

g. Minimum required gap shall be provided in between earth pits as per relevant standard. Body earthing shall be provided in inverter, each panel frame, module mounting structure, kiosk and in any other item as required.

h. Earth pit shall be constructed as per IS: 3043-2018. Electrodes shall be embedded below permanent moisture level. Earth pits shall be treated with salt and charcoal if average resistance of soil is more than 20-ohm meter.

i. Earth resistance shall not be more than 5 ohms. Earthing system must be interconnected through GI strip to arrive equipotential bonding. The size of the GI earth strip must be minimum 25mm X 6mm.

j. 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.

k. The equipment grounding wire shall be connected to earth strip by proper fixing arrangement. Each strip shall be continued up to at least 500mm from the equipment.

l. Necessary provisions shall be made for bolted isolating joints of each earthing pit for periodic checking of earth resistance.

m. For each earth pit, a necessary test point shall be provided.

55.4 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 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.

55.5 HT EQUIPMENT

i. The 11 kV side equipment and parts shall be earthed as required under provisions of IS 3043. The system shall be designed with appropriate CTs & PTs to have all relevant protection. In addition, CTs and PTs shall also be provided for metering and protection purposes as elsewhere specified.

ii. The HT side shall have the following protections provided:

Over current & earth fault relay with under voltage & over voltage protection under and over frequency protection relay.

iii. The Solar PV system and associated power evacuation system shall be protected as per relevant Indian Standards.

56. 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: –10°C to +80°C.
iii. Voltage rating 660/1000V
iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
v. Flexible
vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (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 ferrule 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 were 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 Armored cable for underground laying. All cable trays including covers are 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 %.

57. CONNECTIVITY

The maximum capacity for interconnection with the grid at a specific voltage level for this project is given below.

Plant Capacity	Connecting voltage
1.5 MW	**11 kV**

58. STANDARDS AND REGULATIONS TO BE COMPLIED

The connectivity should be as per

a. Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013.
b. KSERC (Connectivity and Intra-state Open Access) Regulations, 2013
c. KSERC (Renewable Energy and Net Metering) Regulations, 2020 and amendments thereto
d. KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014.
e. Central Electricity Authority (Measures relating to Safety and Electric Supply) Regulations, 2023 must be followed safety and Electricity supply.
f. Metering should be as per CEA regulation 2006.
g. Any amendments thereof will also be applicable.

59. 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 administrative block. Text of the signage may be finalized in consultation with ANERT/ owner.

60. FIRE EXTINGUISHERS

A fire detection system and automatic fire suppression system shall comply with the relevant standards. The firefighting system for the proposed power plant for fire protection shall be consisting of:

a. Portable fire extinguishers in the control room for fire caused by electrical short circuits.
b. Sand buckets in the control room
c. The installation of Fire Extinguishers should be confirmed to TAC regulations and BIS standards. The fire extinguishers shall be provided in the control room housing PCUs.

61. DRAWINGS & MANUALS:

i. Two sets of Electrical drawings installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving

details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.

ii. Approved ISI and reputed makes for equipment be used.

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

62. 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 labour. The bidder should submit the array layout drawings along with Shadow Analysis Report to ANERT for approval.

ii. ANERT 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 a 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.

63. DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT

The Contractor shall furnish the following drawings and obtain approval

i. General arrangement and dimensioned layout

ii. Schematic drawing showing the requirement of PV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.

iii. Structural drawing along with foundation details for the structure.

iv. Itemized bill of material for complete PV plant covering all the components and associated accessories.

v. Layout of solar Power Array

vi. Shadow analysis of the area proposed

64. SOLAR PV SYSTEM FOR MEETING THE ANNUAL ENERGY REQUIREMENT

Key Performance Indicators

The following KPIs would be monitored by the ANERT/Owner throughout the contract tenure and the contractor shall furnish monthly reports on above, without fail.

- PV Array Energy Yield
- Final System Yield
- PV System Efficiency (DC/AC)
- Performance Ratio (PR): The performance ratio test as per IS/IEC 61724 has to be carried out at site by the agency in presence of authorized officials of ANERT, deriving sample data within a period of 7 consecutive days sufficient to provide operational data representing insolation and ambient conditions as desired by the agreement authority to prove the Performance ratio of 75%. If a Solar Plant achieves the Minimum Performance Ratio, then the ANERT will issue Commercial Operation Date Certificate.
- Capacity Utilization Factor (CUF)
- Plant uptime
- Reactive Power Consumption
- Auxiliary Energy Consumption
- CO_2 Savings
- Environment, Health & Safety

65. SAFETY MEASURES:

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

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

Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

Ref. No.: ANERT-TECH/414/2021-PE2(RTS)

VOL – 4: ANNEXURES

Date of Publishing of Bids : - 25/05/2024

Last Date of Submission of Bids : - 15/06/2024

FORMAT 1 - 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 and Renewable Energy Research & Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned operated and maintained for 25 years thereafter under a RESCO Business Model 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:

Date:

Signature

Name

Designation

(Office Seal)

FORMAT 2 - POWER OF ATTORNEY

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

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

Know all men by these presents, We …….. (name and address of the registered office of the Bidding Company as applicable) do hereby constitute, appoint and authorize Mr./Ms. …….. (name & residential address) who is presently employed with us and holding the position of …….. as our true and lawful attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to submission of our Bid for Implementation of Grid connected Ground Mounted Solar PV Power Plant at Central University, Kasaragod, Kerala in response to the RFS. No …….. dated …….. issued by ANERT 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 ANERT may require us to submit. The aforesaid Attorney is further authorized for making representations to the ANERT and providing information / responses to ANERT representing us in all matters before ANERT and generally dealing with ANERT in all matters in connection with this Bid till the completion of the bidding process as per the terms of the above mentioned RFS.

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 RFS.

Signed by the within named
…….. (Insert the name of the executant company)
through the hand of Mr. ……..

duly authorized by the Board (vide Board Resolution No_____) to issue such Power of Attorney
Dated this …… day of ……..
Accepted
……..
Signature of Attorney
(Name, designation and address of the Attorney)
Attested
……
(Signature of the executant)
(Name, designation and address of the executant)
……
Signature and stamp of Notary of the place of execution
Common seal of …… has been affixed in my/our presence pursuant to Board of Director's Resolution dated……..(Board of Director's Resolution is also enclosed)
WITNESS

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. 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).

FORMAT 3 – GENERAL PARTICULARS

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

Name of the Agency	
Registered Office	
Nature of Agency (Ltd. Co., Partnership etc.) Attach Copy of partnership Deed/ Certification of Incorporation	
Year of Establishment	
Registration of Number	
Address for Communication	
Telephone number of Contact person(Mobile if any)	
Name of Directors/ Proprietor/Partners(with address and Telephone No)	
GST Registration Number (Copy to be Attached)	
PAN Number	
TAN Number	
Whether the bidder wishes to form a project company for execution of work	
Whether any Civil Suit / Litigation arisen in the contract executed during the last five years/being executed. If yes, please furnish the name of the Contract, employer nature of work, contract value,	

work order and date and brief details of litigation.	
Details of Total Experience in general since inception(Details of similar systems installed till the date of bid)	
Details of Turnover for last Two years. (Copy Audited Statements has to be submitted for last two financial years)	
Details of offices in Kerala, India and abroad- address and contact details	

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)

FORMAT 4 - CONSORTIUM AGREEMENT

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

THIS Consortium Agreement ("Agreement") executed on this_____ day of _____ 2024 between M/s [insert name of Lead Member]_____ a 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 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 [Name of the Organisation] (hereinafter called [NAME OF THE ORGANISATION] or [NAME OF THE ORGANISATION]), a section ___ Company incorporated under the Company's Act, 1956 has invited response to RFS No. _____ dated _____for Design, manufacture, supply, erection, testing and commissioning including warranty, operation & maintenance for a period of 15 years under RESCO of Ground mounted Solar PV Power plant in Central University, Kasaragod.

WHEREAS the RFS documents stipulates 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 RFS document. The Members of the Bidding Consortium will have to submit a legally enforceable Consortium Agreement in a format enclosed with the RFS 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 RFS 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 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 for a defined period as per RFS 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 RFS document.
8. It is further expressly agreed that this Agreement shall be irrevocable and shall form an integral part of the RFS submitted to [NAME OF THE ORGANISATION] 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 RFS.

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 [NAME OF THE ORGANISATION].
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 [NAME OF THE ORGANISATION].

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----------

Name:

Address: 2) Signature ----------

Name:

Address:

For M/s----------[Technical Member]

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

Witnesses:

FORMAT 5 - CERTIFICATE OF RELATIONSHIP OF PARENT COMPANY OR AFFILIATE WITH THE BIDDING COMPANY

(On the Letter Head of the Financially Evaluated Entity or its Parent Company/Ultimate Parent Company)

To,

Director ANERT

Thiruvananthapuram, Kerala

Dear Sir,

Sub: Bid for Implementation of Grid connected Ground Mounted Solar PV Power Plant at Central University, Kasaragod, Kerala.

We hereby certify that M/s……,M/s……,M/s……are the Affiliate(s) /Parent Company of the Bidding Company as per the definition of Affiliate/Parent Company as provided in this RFS and based on details of equity holding as on seven (7) days prior to the Bid Deadline.

The details of equity holding of the Affiliate/Parent Company/Bidding Company or vice versa as on seven (7) days prior to the Bid Deadline are given as below: **Name of Bidding Company/applicant company**	**Name of the Affiliate of the Bidding Company/Applicant company/ Name of the Parent Company of the Bidding Company**	**Name of the Company having common control on the Affiliate and the Bidding Company**	**Percentage of Equity Holding of Parent Company in the Bidding Company/ Applicant company**

(Insert Name and Signature of Statutory Auditor or practising Company Secretary of the Bidder)

FORMAT 6 - UNDERTAKING FROM THE FINANCIALLY EVALUATED ENTITY OR ITS PARENT COMPANY/ ULTIMATE PARENT COMPANY

(On the Letter Head of the Financially Evaluated Entity or its Parent Company/Ultimate Parent Company)

Name:

Full Address:

Telephone No.:

E-mail address:

Fax/No.:

To,

…….

Dear Sir,

We refer to the RFS No……dated……for "Implementation of Grid connected Ground Mounted Solar PV Power Plant at Central University, Kasaragod, Kerala.".

"We have carefully read and examined in detail the RFS, including in particular, Clause ….of the RFS, regarding submission of an undertaking, as per the prescribed Format ____of the RFS.

We confirm that M/s……(Insert name of Bidding Company/) has been authorized by us to use our Technical and or financial capability for meeting the Technical and or Financial Eligibility as specified in Clause….of the RFS referred to above.

We have also noted the amount of the Performance Guarantee required to be submitted as per Clause….of the RFS the ……..(Insert the name of the Bidding Company) in the event of it being selected as the Successful Bidder".

In view of the above, we hereby undertake to you and confirm that in the event of failure of ……..(Insert name of the Bidding Company) to submit the Performance Guarantee in

full or in part at any stage, as specified in the RFS, we shall submit the Performance Guarantee not submitted by ……(Insert name of the Bidding Company)".

We have attached hereto certified true copy of the Board Resolution Whereby the Board of Directors of our Company has approved issue of this Undertaking by the Company.

All the terms used herein but not defined, shall have the meaning as ascribed to the said terms under the RFS.

Signature of Managing Director/Authorised signatory

Common seal of ……..has been affixed in my/our presence pursuant to Board of Director's Resolution dated……

WITNESS

……..

(Signature)

Name……

Designation……..

……..

(Signature)

Name……

Designation……..

FORMAT 7 - PERFORMANCE SECURITY GUARANTEE

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

BG No. :

Amount :

Date :

Valid up to :

In consideration of the Agency for New & Renewable Energy Research and Technology, therein after called "ANERT") have allotted work to M/s..... (hereinafter called the said Contractor) under the terms and conditions of Supply Order No..... issued by ANERT and the agreement dated ..... made between (name of contractor) and ANERT for covering ..... (hereinafter called the said agreement) of Security Deposit for the due fulfilment by the said contractor of the terms and conditions.

Contained in the said agreement, on production of the Bank Guarantee for Rs..... (Rupees..... only) we, ...Bank having our Head Office at ..... (herein after referred to as "the Bank") at the request of M/s. .....(name of contractor) do hereby undertake to pay to the ANERT an amount not exceeding Rs..... (Rupees .... only), against any loss or damage caused to or suffered or would be caused to or suffered by the ANERT by reason of any breach by the said contractor of any of the terms and conditions contained in the said agreement

We, ...Bank, do hereby undertake to pay the amount due and payable under this Guarantee without any demur, merely on a demand from the ANERT stating that the amount claimed is due by way of loss or damage caused to or would be caused to or suffered by the ANERT by reasons of breach by the said contractor of any of the terms or conditions contained in the said agreement. Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. ..... (Rupees ..... only).

This guarantee will not be discharged due to change in the constitution of the bank or the contractor/supplier.

Notwithstanding anything contained hereinbefore:

1) Our liability under this Bank Guarantee shall not exceed Rs.....(Rupees .... only)
2) This Bank Guarantee shall be valid upto .....
3) We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee amount only and only if you serve us a written claim or demand on or before.....

Dated at ..... this .... day of 2020

FORMAT 8 – FINANCIAL CRITERIA

(certified by Authorized Signatory and the Statutory Auditor / Practising Chattered Accountant of the Bidding Company)

Financial Statement (Data For Previous Three Years- In Indian Rupees - Cr)			
a. INFORMATION FROM BALANCE SHEET			
Year	**2022-23**	**2021-22**	**2021-20**
Total Assets			
Total Liabilities			
Net Worth			
Current Assets			
Current Liabilities			
b. INFORMATION FROM INCOME STATEMENT			
Year	**2022-23**	**2021-22**	**2021-20**
Total Revenue			
Profit before Tax			
Profit after tax			
c. TURNOVER			
Year	**2022-23**	**2021-22**	**2021-20**
Amount			

ANNEXURE 1A –SUMMARY OF BID DOCUMENTS

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

Sir,

I/We hereby submit the required documents as desired by the Agency for New and Renewable Energy Research & Technology (ANERT) for the implementation of Ground Mounted Solar PV System with Grid Connectivity under RESCO Model in Central University, Kasaragod, Kerala.

Project Report (As per TOC provided by [NAME OF THE ORGANISATION])
(Project report should contain the following Table of Contents)

- Context / background / Introduction
- Project objectives
- Target beneficiaries
- Project strategy / Approach of work & methodology
- Environmental Impact Assessment, if required.
- Site details including photographs with date & time stamping
- Solar resource assessment
- Technology selection (Module, Inverter and BOS)
- Design, Simulation, BOM and layout of SPV plant
- Grid connectivity and metering scheme
- Means of financing and project budget
- Financial, Economic & Risk Analysis
- Time frame / schedule of implementation

Signature
of authorised signatory

Name

Designation

Date: (office seal)

ANNEXURE 1B – PRE-AGREEMENT

(To be on non-judicial Kerala stamp paper of value Rs. 200)

ARTICLES OF AGREEMENT executed on this the . . . . day of . . . . Two thousand and . . . .between 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 ***Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India*** 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 Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

To

The Director
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 6 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 OF RELATIONSHIP WITH ANERT EMPLOYEE

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

Tender Notification No.: ……..
Request for Selection (RFS) of bidder for the Implementation of a 1.5 MW Ground Mounted Solar PV System with Grid connectivity under RESCO Model in Central University of Kerala, Kasaragod, India

To

The Director
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 1E – BIDDERS TECHNICAL INFORMATION

TECHNICAL PARTICULAR DATA

Solar PV Module

Sl. No	Particulars	Required	Offered
1	PV Module Manufacture name & Country of origin	Manufacture name to be specified	
2	PV Module type	Poly/Mono Crystalline, Mono PERC	
3	No. of PV cells per Module		
4	Total number of PV modules		
5	Max. Power, P_{mp} @STC	330 Wp or above	
6	Max. Power tolerance (%)	Not more than 3%	
7	Max. Power voltage (V_{mp}) @STC	To be specified	
8	Max. Power current (I_{mp}) @STC	To be specified	
9	Open circuit voltage, V_{oc} @ STC	To be specified	
10	Short circuit current, I_{sc} @STC	To be specified	
11	Nominal voltage	To be specified	
12	Nominal Wattage	To be specified	
13	Fill Factor	Not less than 0.7	
14	Temp. coefficient of V_{oc} (%/C)		
15	Temp. coefficient of P_{mp} (%/C)		
16	Temperature Co-efficient of I_{sc} (%/°C)		
17	Normal Operating Cell Temperature (NOCT) (°C)		
18	Operating Temperature (°C)		
19	Module efficiency	>=17%	
20	No. of By-pass Diodes		
21	Mounting arrangement for Solar Module	Fixed Arrangement	

Sl. No	Particulars	Required	Offered
22	Solar Module frame material	Anodized Aluminium	
23	Module dimensions' cm (L x W x H)	To be specified	
24	PV panel Weight (kg)	To be specified	
25	Output Cables	Polarized, UV protected &Weather Proof DC rated multi-contact connector	
26	Output Terminal	PV Connectors	
27	Junction Box	Weather resistant HDPE (IP65)	
28	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

INVERTER

Sl. No.	Particulars	Required	Offered
1	Manufacturer		
2	Model name/No.		
3	Number of units		
4	Nominal AC power		
5	Nominal AC voltage		
6	Nominal AC Current		
7	AC grid Frequency range	50Hz ± 0.5%	
8	AC grid voltage range		
9	Power Factor (+ and -)		

Sl. No.	Particulars	Required	Offered
10	Total Harmonic Distortion	As per IEEE-519 2014	
11	AC over / under voltage over / under frequency protection		
12	Max PV input power		
13	Maximum DC voltage	Less than 1000 V	
14	MPPT voltage range		
15	Maximum DC current		
16	No. of DC input ports		
17	Maximum Efficiency	as perIEC61683	
18	DC voltage ripple		
19	Ambient temperature range		
20	Humidity (non-condensing)	95%, non-condensing	
21	Protective functions - AC over/under voltage, AC over/under frequency, over temperature, AC and DC overcurrent, DC over-voltage, against Islanding		
22	Communication Interface	RS485. MPI Profi-Bus/Telephone Modem/WiFi	
22	User-display standard	LCD panel with membrane keypad	
23	Enclosure environment rating		
24	Safety and EMC		
25	Anti-islanding feature	IEEE1547/UL1741/IEC62116	