
 <b>Kerala Tenders</b>		<b>eTendering System Government of Kerala</b>					
		<b>Tender Details</b>					
		Date : 20-Oct-2023 03:01 PM					
		 Print					
<b>Basic Details</b>							
<b>Organisation Chain</b>	ANERT						
<b>Tender Reference Number</b>	ANERT-TECH/144/2022-T4						
<b>Tender ID</b>	2023_ANERT_614977_1	<b>Withdrawal Allowed</b>	Yes				
<b>Tender Type</b>	Open Tender	<b>Form of contract</b>	Empanelment				
<b>Tender Category</b>	Works	<b>No. of Covers</b>	1				
<b>General Technical Evaluation Allowed</b>	No	<b>ItemWise Technical Evaluation Allowed</b>	No				
<b>Payment Mode</b>	Online	<b>Is Multi Currency Allowed For BOQ</b>	No				
<b>Is Multi Currency Allowed For Fee</b>	No	<b>Allow Two Stage Bidding</b>	No				
<b>Payment Instruments</b>		<b>Cover Details, No. Of Covers - 1</b>					
<b>Online Bankers</b>	<table border="1"> <thead> <tr> <th>S.No</th> <th>Bank Name</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SBI MOPS</td> </tr> </tbody> </table>	S.No	Bank Name	1	SBI MOPS	<b>Cover No</b>	<b>Cover</b>
S.No	Bank Name						
1	SBI MOPS						
		<b>Document Type</b>	<b>Description</b>				
		.pdf	Technical Bid				
		.pdf	PQ Documents				
		.pdf	All other documents				
<b>Tender Fee Details, [Total Fee in ₹ * - 17,700]</b>		<b>EMD Fee Details</b>					
<b>Tender Fee in ₹</b>	17,700	<b>EMD Amount in ₹</b>	5,00,000				
<b>Fee Payable To</b>	Nil	<b>EMD through BG/ST or EMD Exemption Allowed</b>	Yes				
<b>Fee Payable At</b>	Nil	<b>EMD Fee Type</b>	fixed				
<b>Tender Fee Exemption Allowed</b>	Yes	<b>EMD Percentage</b>	NA				
		<b>EMD Payable To</b>	Nil				
		<b>EMD Payable At</b>	Nil				
<b>Work /Item(s)</b>							
<b>Title</b>	EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala						
<b>Work Description</b>	EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala						
<b>Pre Qualification Details</b>	Please refer Tender documents.						
<b>Independent External Monitor/Remarks</b>	NA						
<b>Tender Value in ₹</b>	NA	<b>Product Category</b>	Solar Power Plants				
<b>Contract Type</b>	Empanelment	<b>Sub category</b>	NA				
<b>Bid Validity(Days)</b>	60	<b>Period Of Work(Days)</b>	30				
<b>Location</b>	All over Kerala	<b>Pincode</b>	695033				
		<b>Pre Bid Meeting Place</b>	NA				

<b>Pre Bid Meeting Address</b>	NA	<b>Pre Bid Meeting Date</b>	NA	<b>Bid Opening Place</b>	Online
<b>Should Allow NDA Tender</b>	No	<b>Allow Preferential Bidder</b>	No		

### Critical Dates

<b>Publish Date</b>	20-Oct-2023 03:00 PM	<b>Bid Opening Date</b>	09-Nov-2023 11:00 AM
<b>Document Download / Sale Start Date</b>	20-Oct-2023 03:00 PM	<b>Document Download / Sale End Date</b>	08-Nov-2023 04:00 PM
<b>Clarification Start Date</b>	NA	<b>Clarification End Date</b>	NA
<b>Bid Submission Start Date</b>	20-Oct-2023 03:00 PM	<b>Bid Submission End Date</b>	08-Nov-2023 04:00 PM

### Tender Documents

<b>NIT Document</b>	<b>S.No</b>	<b>Document Name</b>	<b>Description</b>	<b>Document Size (in KB)</b>
	1	Tendernotice_1.pdf	NIT and Abstract	236.13

<b>Work Item Documents</b>	<b>S.No</b>	<b>Document Type</b>	<b>Document Name</b>	<b>Description</b>	<b>Document Size (in KB)</b>
	1	Tender Documents	KUSUMAddl.pdf	Tender Document	1310.09

### Tender Inviting Authority

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



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**FORMAT FOR COVERING LETTER**

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*(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 and Technology (ANERT), at the rates quoted against each item. The articles will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

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

Yours faithfully,

Place:

---

Signature

Date:

Name

Designation

(Office Seal)

## E-TENDER NOTICE

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Competitive e-tenders in two cover system with Earnest Money Deposit (EMD) and Price Bid in accordance with the ANERT approved technical specifications are invited from ***Manufacturers of Solar PV Modules OR Joint Venture of SPV Module Manufacturer & EPC contractor for the EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala.*** The e-tender documents can be downloaded from the e-tendering website of Govt. of Kerala. Tender form will not be available in any other form.

Thiruvananthapuram

CEO

20/10/2023

## TENDER ABSTRACT

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**Table A**

Ref. No.	ANERT-TECH/144/2022-T4
Name of Work	<b>EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala</b>
Building Site and Requirements	<b>All over Kerala</b>
Download of Tender Form	<a href="http://www.etenders.kerala.gov.in">http://www.etenders.kerala.gov.in</a>
Last date of submission of Tender	<b>08/11/2023</b>
Date and Time of opening the Tender	<b>09/11/2023</b>
Estimated Tender Value	<b>Rs.240 Cr</b>
Cost of Tender form	<b>Rs. 15,000/- (ExcludingGST)</b>
EMD	<b>Rs. 5,00,000/-</b>
Warranty period	7 years from the date of commissioning the system.
Location of Sites	More than 80% of sites are in Thrissur, Kasaragod, Malappuram, Palakkad, Ernakulam districts.
Availability of Tender Forms	Website <a href="http://www.etenders.kerala.gov.in">http://www.etenders.kerala.gov.in</a>
Place of opening of tender	Office of CEO, ANERT Law College Road, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala
Contact Details for clarifications	Shri. Jayakumar R Nodal Officer PM- KUSUM Scheme, ANERT +91 9188119425; <a href="mailto:jayakumar@anert.in">jayakumar@anert.in</a>
Thiruvananthapuram	Sd/- CEO



## GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

This e-Tender is being published for the EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala. The tender is invited in two cover system through e-procurement portal of Government of Kerala([www.etenders.kerala.gov.in](http://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](http://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](http://www.cca.gov.in). Once, the DSC is obtained, bidders have to register on [www.etenders.kerala.gov.in](http://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](mailto:helpetender@gmail.com) / [etendershelp@kerala.gov.in](mailto: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](http://www.etenders.kerala.gov.in). However, tender document fees shall be payable at the time of bid submission as stipulated in this tender document.
- ii. Pre-bid meeting: (not applicable).

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

### **3. DOCUMENTS COMPRISING BID:**

3.1 (a) The First Stage - Part-I Pre- Qualification cum Technical Bid with Commercial terms ~~without Price Bid~~

Technical proposal shall contain the scanned copies of the following documents which every bidder has to upload:

**Envelop -1** shall contain, Part-I (this document in PDF form)/scanned copies as below order along with the checklist provided

File No	Name of the file	Documents to up uploaded
1	Pre bid agreement and signed tender doc	<ol style="list-style-type: none"> <li>1. ANNEXURE B-Agreement on stamp paper worth Rs.200/-</li> <li>2. Signed and sealed tender document along with corrigendum</li> <li>3. Exemption document in case of EMD and Tender fee exemption /Proof of Online payment of EMD and Tender fees/In case of EMD paid as BG, Format Hto be submitted</li> </ol>
2	PQ Documents	<ol style="list-style-type: none"> <li>1. A Joint venture Agreement clearly mentioning the name of the lead bidder, in case the bid is submitted by an EPC contractor / vendor in Rs. 200 Stamp paper</li> <li>2. Copy of work order and corresponding completion certificate for meeting eligibility criteria (Document should be submitted as Work order along with its own completion certificate for each project)</li> </ol>
3	Technical Documents	<ol style="list-style-type: none"> <li>1. ANNEXURE G–Guaranteed Technical Parameters</li> <li>2. Bill of material</li> <li>3. Data sheet</li> <li>4. Test certificates</li> <li>5. ICRA Solar Grading Certificate</li> </ol>
4	Annexures and format	<ol style="list-style-type: none"> <li>1. Copy of Registration Certificate of firm 1</li> <li>2. In case of JV, Copy of Registration Certificate of firm 2</li> <li>3. Copy of GST Certificate of firm 1</li> <li>4. In case of JV, Copy of GST of firm 2</li> <li>5. Copy of PAN card of bidder/TAN of firm 1</li> <li>6. Copy of PAN card of bidder/TAN of firm 2</li> <li>7. Proof and declaration regarding manufacturing of solar panel</li> <li>8. Under taking by the manufacturer to supply DCR solar panel as per tender.</li> <li>9. Under taking by the bidder to supply indigenously manufactured solar on grid Inverter with IS certifications.</li> </ol>

File No	Name of the file	Documents to up uploaded
		10. ANNEXURE A- Summary of Bid Qualification Requirement. 11. ANNEXURE C- Declaration by the bidder 12. ANNEXURE D- Declaration on subsidy claim 13. ANNEXURE E-Declaration of relationship with ANERT employee 14. FORMAT A- Undertaking for no blacklisting and no banning (To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the same to be provided by Each Member of the Joint Venture shall submit the same) 15. FORMAT B - Power of attorney in favor of authorized signatory (In case bidder is JV). If it is not applicable, need to submit self-declaration on authorized signatory. 16. Undertaking by the agency regarding service centre to be provided on Rs.200 Non-Judicial Stamp paper else details of service center as per tender. 17. Any other document which is relevant to this tender shall be included here.

**Note: In case of JV, Firm 1 will be the lead member and Firm 2 will be the second partner. In case of the bidder being both EPC and Manufacturer, documents shall be submitted accordingly.**

3.1 (b) ~~The Second Stage (Financial Cover as per two cover system):~~

~~**Envelop -2:** shall contain 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.~~

3.2 The department doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

3.3 ~~The Bidder shall complete the Price bid as per format given for download along with this tender.~~

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

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

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

4.1 The Bidder shall pay, a Tender document fee of Rs.15,000/- and Earnest Money Deposit or Bid Security 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 can be paid in through e-Payment facility provided by the e-Procurement system. Bidders can make payment only via Internet banking facility. EMD is to be paid as FD/Bank Guarantee/Online Payment Mode.

#### **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 e Procurement System.

**Table 4.2**

<b>A) Internet Banking Options (Retail)</b>			
1	Allahabad Bank	32	Kotak Mahindra Bank
2	Axis Bank	33	Lakshmi Vilas Bank
3	Andhra Bank	34	Mehsana Urban Co-op Bank
4	Bandan Bank	35	NKGSB Co-operative Bank
5	Bank of Bahrain and Kuwait	36	Oriental Bank of Commerce
6	Bank of Baroda	37	Punjab and Maharashtra Cooperative Bank

7	Bank of India	38	Punjab National Bank
8	Bank of Maharashtra	39	Punjab and Sind Bank
9	Bassein Catholic Co-operative Bank	40	RBL Bank
10	BNP Paribas	41	Saraswat Cooperative Bank
11	Canara Bank	42	ShamraoVithal Cooperative Bank
12	Catholic Syrian Bank	43	South Indian Bank
13	Central Bank of India	44	Standard Chartered Bank
14	City Union Bank	45	State Bank of India
15	Corporation Bank	46	Syndicate Bank
16	Cosmos Bank	47	Tamilnad Mercantile Bank
17	DCB Bank	48	Tamilnadu Cooperative Bank
18	Dena Bank	49	The Kalyan Janata Sahakari Bank
19	Deutsche Bank	50	TJSB Bank
20	Dhanalaxmi Bank	51	UCO Bank
21	Federal Bank	52	Union Bank of India
22	HDFC Bank	53	United Bank of India
23	ICICI Bank	54	Vijaya Bank
24	IDBI Bank	55	YES Bank
25	Indian Bank		
26	Indian Overseas Bank		
27	IndusInd Bank		
28	Jammu & Kashmir Bank		
29	Janata Sahakari Bank		
30	Karnataka Bank		
31	Karur Vysya Bank		
<b>B) Internet Banking Options (Corporate)</b>			
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	ShamraoVitthal 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](http://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](http://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 6months from the date of opening of offers. The offers with lower validity period are liable for rejection.
- 6.2 Further, the tenderer may extend the validity of the Bids without altering the substance and prices of their Bid for further periods, if so required

## **7. DEVIATIONS**

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

## **8. BLACK LIST**

- 8.1 All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain



false particulars, they shall be black listed 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/go down with detailed postal address and pin code, telephone number and email id. etc. In their tenders to arrange inspection by ANERT, if considered necessary
- 9.2 All communication shall be made to the registered email of the bidder in the e-tendering systems and ANERT shall not be responsible for non-receipt or delay of any such communication.

## **BID QUALIFICATION REQUIREMENTS**

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### **10. BID QUALIFICATION REQUIREMENTS**

#### **10.1 General Requirements**

- 10.1.1 Every tenderer should submit along with his e-tender an Earnest Money Deposit (EMD). This may be done electronically from any of the Nationalized/Schedule Banks. The EMD of the disqualified tenderers will be returned automatically through e-procurement system. The EMD of the successful tenderers may be adjusted towards the security deposit. No interest shall be paid for the earnest money deposited.
- 10.1.2 An agreement in Rs.200/- Stamp Paper as per the format given in Annexure B must be submitted along with e-tender document.
- 10.1.3 As per the guidelines of PM-KUSUM, only Manufacturers of PV Modules OR Manufactures of Solar pumps OR a Joint Venture of an EPC with a Manufacturer of Solar Module are eligible to undertake works under the scheme.
- 10.1.4 The sole bidder or any member of the consortium/JV should have a Solar Grading certificate issued by M/s ICRA Analytics and this will be considered as Pre-Qualification criteria for the tender.
- 10.1.5 The bidder should have service centres/authorised service providers in all districts of Kerala. Detailed list with address, contact details and proof has to be submitted. If the bidder does not have such facility at the time of tendering, an undertaking should be submitted along with the tender on Stamp paper worth Rs. 200/-agreeing to set up such facility and intimate the same within 15 days of letter of intent. Urja Mithra service centres supported by ANERT can also be included as service centres provided the bidders make separate agreements with them.
- 10.1.6 ~~Price Bid in excel format, for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.~~

#### **10.2 Eligibility Requirement**

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

**Table 10.2**

S. No.	Criteria	Documents Required
1.1.	Bidder can be sole/ single bidder OR, Joint Venture (JV) of up to 2 (two) members, with one of the members as a Lead Member	In case of JV, Deed of Undertaking
1.2.	The Bidder should have any of the following legal status: a) Body incorporated in India under the Companies Act, 2013 including any amendment thereto; OR b) Body incorporated in India under the Limited Liability Partnership (LLP) Act, 2008 including any amendment thereto; OR c) Firm registered under Partnership Act, 1932 in India; OR d) Sole Proprietor In case of JV, all the members must fulfil this requirement and submit the documents as per the Tender Document.	a) In case of Company – Copy of Registration/Incorporation Certificate b) In case of LLP – Copy of Deed of Partnership c) In case of Partnership – Copy of Deed of Partnership d) In case of Sole Proprietor – Duly notarized Undertaking from Sole proprietor
1.3.	The Bidder must have the required GST Registration In case of JV, all the members must fulfil this requirement.	Copy of GST registration certificate with legible GSTIN.
1.4.	The Bidder must have valid PAN Number In case of JV, all the members must fulfil this requirement.	Copy of Pan Card
1.5.	The bidder must have completed solar installations of at least 3 MW in India to be eligible for projects above 10 KW. In case of JV, all the members jointly may fulfil this requirement and submit the documents as per the Tender document. The bidder must have completed solar installations of at least 1 MW in India to be eligible for projects up to 10 KW In case of JV, all the members jointly must fulfil this requirement and submit the documents	Statutory Documents substantiating this requirement along with Documents submitted in Clause 1.2 of this Table above.

	as per the Tender document. The works shall have been executed under SNA/Govt. Organization/ SECI/PSUs.	
1.6.	The bidder should be having unblemished record and must not be blacklisted or declared ineligible for corrupt & fraudulent practices by “any state/ central government” department/ company / entity” as on date of bid opening.  In case of JV, all the members must fulfil this requirement.	The bidder shall provide an Undertaking as per the format provided as Format A. In case of JV, all the members must submit the undertaking as per the format provided in Format A.
1.7.	The bidder must submit a Power of Attorney (POA) authorizing a person to sign the documents on behalf of the Bidder; submit technical, commercial information and attend meetings on behalf of the Bidder.	Sole Bidder to provide POA in the format as per the applicable Law. In case of JV, Agreement by JV as per the clause # 11.23. and POA as per the format provided in Format B.

## CONDITIONS OF CONTRACT

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### 11. GENERAL CONDITIONS

- 11.1 The tenders should be submitted online at [www.etenders.kerala.gov.in](http://www.etenders.kerala.gov.in)
- 11.2 The tenders should be as per the prescribed form which should be downloaded from the e-tender website. The cost of tender forms should be paid online, and once paid will not be refunded. Tender forms are not transferable. Tenders that are not in the prescribed form are liable to be rejected.
- 11.3 Intending tenderers should submit their tenders on or before the due date and time mentioned in the tender abstract. Late tender will not be accepted.
- 11.4 The rates quoted should be only in Indian currency. Tenders in any other currency are liable to rejection. The rates quoted should be for the unit specified in the schedule attached.
- 11.5 The tenderer shall submit a copy of PAN card of the authorised signatory along with tender.
- 11.6 Tenders subject to conditions will not be considered. They are liable to be rejected on that sole ground.
- 11.7 The tenders will be opened on the specified day and time in the office of the CEO, ANERT in the presence of such of those tenderer's representatives who may be present with proper authorisation issued by the tenderer.
- 11.8 Every tenderer should send along with his tender an Earnest Money Deposit. This may be paid online at the e-tenders website.
- 11.9 If any tenderer withdraws from his e-tender before the expiry of the period fixed for keeping the rates firm for acceptance, the earnest money if any, deposited by him, will be forfeited.
- 11.10 The final acceptance/rejection of the tenders rests entirely with CEO, ANERT who do not bind themselves to accept the lowest or any tender.
- 11.11 In the case of materials of technical nature, the successful tenderer should be prepared to guarantee satisfactory performance for a period of guarantee under a definite penalty. Communication of acceptance of the e-tender normally constitutes a concluded contract. Nevertheless, the successful tenderer shall also execute an agreement for the due fulfilment of the contract within the period to

be specified in the letter of acceptance. The contractor shall have to pay all stamp duty, Lawyer's charges and other expenses incidental to the execution of the agreement. Failure to execute the agreement within the period specified will entail the penalties set out below:

- a. The successful tenderer shall before sign the agreement and within the period specified in the letter of acceptance of his tender, deposit a sum equivalent to 3% of the value of the contract as security for the satisfactory fulfilment of the contract less the amount of money deposited by him along with his tender. Bidders having a MSME / NSIC / Udhdyog Aadhar registration are exempted from paying Tender Fee and requisite EMD. In case of joint venture, all the bidders should meet these criteria. The format of Bank Guarantee for EMD as mentioned in the tender document is attached as annexure – H. If the successful tenderer fails to deposit the security and execute the agreement as stated above, the earnest money deposited by him will be forfeited to ANERT and contract arranged elsewhere at the defaulter's risk and any loss incurred by ANERT on account of the purchase will be recovered from the defaulter who will however not be entitled to any gain accruing thereby.
- b. In cases where a successful tenderer, after having made partial supplies fails to fulfil the contracts in full, all or any of the materials not supplied may at the discretion of the Purchasing Officer be purchased by means of another tender/quotation or by negotiation or from the next higher tenderer who had offered to supply already, and the loss if any caused to ANERT shall thereby together with such sums as may be fixed by ANERT towards damages be recovered from the defaulting tenderer.
- c. If the contractor fails to deliver all or any of the stores or perform the service within the time/period(s) specified in the contract, the purchaser shall without prejudice to its other remedies under the contract, deduct from the contract prices, as liquidated damages, a sum equivalent to 0.5 % of the delivered price of the delayed stores or unperformed services for each week of delay until actual delivery or performance, up to a maximum deduction of 10% of the contract price of the delayed stores and services.

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

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

(a) All payments to the contractors will be made in due course via NEFT only

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

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

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

11.15 In case the contractor becomes insolvent or goes into liquidation, or makes or proposes to make any assignment for the benefit of his creditors or proposes any composition with his creditors for the settlement of his debts, carries on his business or the contract under inspection or behalf of or his creditors or in case any receiving order(s) for the administration of his estate are made against him or in case the contractor shall commit any act of insolvency or in case in which

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

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



- 11.17 Any sum of money due and payable to the contractor (including security deposit returnable to him) under this contract may be appropriated by the CEO or any other person authorised by ANERT and set off against any claim of ANERT for the payment of a sum of money arising out of or under any other contract made by the contractor with ANERT or any other person authorised by ANERT. Any sum of money due and payable to the successful tenderer or contractor from ANERT shall be adjusted against any sum of money due to ANERT from him under any other contracts.
- 11.18 Every notice hereby required or authorised to be given may be either given to the contractor personally or left at his residence or last known place of abode or business, or may be handed over to his agent personally, or may be addressed to the contractor by post at his usual or last known place of abode or business and if so addressed and posted, shall be deemed to have been served on the contractor on the date on which in the ordinary course of post, a letter so addressed and posted would reach his place of abode or business.
- 11.19 The tenderer shall undertake the installation and commissioning of the system according to the standards and specification.
- 11.20 No representation for enhancement of rate once accepted will be considered.
- 11.21 The prices quoted should be inclusive of GST and all other expenses which are or may become payable by the contractor under existing or future laws or rules of the country of origin/supply or delivery during execution of the contract.
- 11.22 Special conditions, if any, of the tenderers attached with the tenders will not be applicable to the contract unless they are expressly accepted in writing by the purchaser.
- 11.23 Bidders are requested to submit the JV agreement in Rs. 200 stamp paper, clearly mentioning the tender details and lead bidder. Tenders without the agreement in stamped paper will be rejected outright.
- 11.24 The documents such as Annexure B (Rs. 200/- stamp paper), undertaking of service centres (200/- stamp paper), JV agreement (in case of JV) (200/- stamp paper), Format-B-Power of Attorney in favour of authorised signatory (200/- stamp paper) and Format-A- Undertaking for No Blacklisting & No Banning (200/- stamp paper) need not be submitted for those who already submitted for

tender id vide.2022\_ANERT\_504042\_1. These documents must be clear and complete in all aspects, failing which the bid will be duly rejected.

- 11.25 All other documents other than listed in the clause 11.24 need to be submitted with valid date and signatures.
- 11.26 Conditions in the technical document, technical specifications and special conditions of this tender document would override these general conditions, wherever applicable.
- 11.27 ANERT, by notice sent to the supplier, may terminate the contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for ANERT's convenience, the extent to which performance of the Supplier under the contract is terminated, and the date upon which such termination becomes effective.
- 11.28 E-tender shall be opened at the time and date announced in the tender notice, and the ~~price bid~~ will be evaluated on the same day.
- 11.29 In case any difference or dispute arises in connection with the contract, all legal proceedings relating to the matter shall be instituted in the Court within whose jurisdiction the CEO, ANERT voluntarily resides.
- 11.30 The Courts situated at the place where the headquarters of ANERT is situated viz, Thiruvananthapuram alone will have jurisdiction to entertain civil suits and all other legal pertaining to this contract.

## 12. SPECIAL CONDITIONS

- 12.1 The entire quantity of 9,348Nos of systems in two groups as below: -

Group Number	PV capacity (kW)	Nos	Total quantity
1	2	5000*	9,248
	3	3000*	
	5	1000*	
	7	100*	
	10	148*	
2	30-150*		100

- The individual no of pumps may vary according to tge NABARD allocation and field survey

- 12.2 It is mandatory for all bidders to quote in both the groups
- 12.3 Each bidder should submit only one (1) bid. Any bidder who submits/participates in more than one bid for the work shall be disqualified.
- 12.4 ~~Price bid for the installation in SPV system inclusive of all requirements as per the document is to be quoted by the bidders~~ and for the Group 1, the L1 rate for each system (2-10kW) will be considered separately. In case of Group2, prices are to be quoted in terms of Rate/kW(rates for PV capacity 30-100 kW and capacity above 100 kW shall be quoted separately).**
- 12.5 For evaluating the L1 price, only the rates quoted by the bidder having ICRA Grading of 1A, 1B, 1C, 2A& 2B will be considered. Vendors having lower grade are also eligible for participation in the tender, whereas their rates will not be considered for L1 rate finalisation. The allotment of works will also be based on the ICRA grading mentioned in this document.
- 12.6 It will be mandatory to use indigenously manufactured solar panels with indigenous solar cells and modules. Further, inverters/controllers and the Balance of System should also be manufactured indigenously. The contractor must declare the list of imported components used in the solarisation system.**
- 12.7 If the bidder has NOT submitted the requisite EMD OR Agreement, ~~OR if the price bid is not submitted along with the tender,~~ such tenders will be summarily rejected.
- 12.8 During the tender evaluation, ANERT may seek more clarifications/details from any or all the tenderers, if felt necessary.
- 12.9 ~~The price bids of the tenderers, who are technically qualified, will be opened~~ and the L1 bidder as mentioned in clause #12.5 will be awarded the work of supply and installation of items after fulfilling all the requirements.
- 12.10 If found essential, ANERT reserves the right, in the interest of completion of work within the time limit, to award portion/portions of the work order to next higher bidders, called for negotiation in the increasing order of their price offers, if they agree to supply at the L1 price.
- 12.11 L1 bidder will get priority on allotting the work order.

- 12.12 The tenderer should use the PV modules available in the ALMM list issued by MNRE vide order No.F.No. 283/54/2018-GRID Solar – Part (1) dtd 29/09/2021(New one) or latest issued by MNRE as specifications.
- 12.13 The tenderer should provide inverters meeting all the specifications stipulated in this document.
- 12.14 The agency can take approval for the new components except PV modules by submitting a request with relevant certificates.
- 12.15 For the installations in Group 2 (Higher capacity pumps)- in case of installation of additional/new transformer is required, the bidder shall install through KSEBL at their expenses. The amount shall be recouped by ANERT afterwards upon submission of the proper documents.
- 12.16 The rate quoted should be all inclusive including delivery of materials at the locations to be specified including transportation, loading, unloading etc, and the cost of materials and labour for the civil works, installation and commissioning, Remote Monitoring System excluding the SIM cost, warranties, all fees for approval from KSEBL and Electrical Inspectorate, application fees, GST and all other expenses. *In case of installations under Group No.2 as per tender document, additional site-specific costs if any required for structure works, pathway, ladder for accessing PV modules etc will be considered separately.***
- 12.17 The price quotes should be inclusive of initial cost of supply, installation and commissioning and support during the warranty period of 7-years. The rates for the installation in Rooftop and Ground mounted system under Group 1 is to be quoted**
- 12.18 The additional costs required for cabling, structural works etc for any excess quantity other than the standard installation mentioned in the tender document is to be quoted separately in letter head and is to be uploaded in the provision provided for uploading PDF document in the finance cover, The additional rates for each capacity range are to be quoted as follows:
- i. Per meter cost for DC Cable for Installations under Group 1 & 2 category
  - ii. Per meter cost for AC Cabling for Installations under Group 1 category
  - iii. Per meter cost for AC Cabling for Installations under Group 2 category

- iv. Cost for additional Structure for increase in height of above 1m from the standard height / kW
- v. Cost for additional Structure for increase in height of above 2m from the standard height / kW
- vi. Cost for additional Structure for Rooftop installation in slanting GI or Aluminium sheet roof / kW

Any other component required in excess to be quoted in per unit cost of that component

12.19 The tender offer shall be kept valid for acceptance for a period of 12 months from the date of opening of bid. The offers with lower validity period are liable for rejection.

12.20 **Bidder should not apply directly to MNRE for claiming the subsidy/ incentive amount. ANERT will be responsible for claiming the subsidy/ incentive from MNRE for onward distribution to the agency once sanctioned from MNRE. Also, bidder should submit a separate declaration stating that they would not apply separately to MNRE for claiming the subsidy/ incentive for the project.**

12.21 ~~The evaluation of the price bid will be based on the grand total of all-inclusive amount quoted excluding GST.~~ However, the estimated cost mentioned in the Tender will be inclusive of GST.

### 13. SCHEDULE OF SUPPLY

13.1 The items should be delivered and installed for which work orders given as specified by ANERT, under prior intimation and supervision of ANERT for the solarisation of the existing Agricultural Pumps all over Kerala.

13.2 The Supply, Installation and Commissioning of each of the work allotted shall be completed within **2 months of the date of supply order**. This is the time period for handing over the system to ANERT and no time extension in this regard without valid reasons will be entertained.

13.3 The capacity of pumps to be solarised and the max allowed capacity of SPV power plant is as given below.

Pump Capacity	Capacity of PV Plant
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Pump Capacity	Capacity of PV Plant
below 2 HP	2kW
2-3 HP	2-3kW
>3-5HP	5kW
>5-7HP	7kW
>7-10HP	10kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

13.5 Supply of the main components such as SPV module, PCU and charge controller should be from the approved component list published by MNRE and ANERT websites.

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

#### 14. PAYMENT

14.1 No advance payment will be given. The payment will be released for each work order on completion of entire systems upon the report submitted by the respective District Engineer, ANERT.

14.2 The terms of payment shall be:

- a. 50% of the contract value shall be released upon the delivery of the major components at all the sites mentioned in the work order to be issued.
- b. 30% of the contract value shall be released on **commissioning** of installation on submitting documents such as completion reports to ANERT
- c. 20% of the contract value will be released as and when the funds for the project is received from MNRE for the particular installation. The Performance Bank Guarantee (PBG) will be 3% of the final project cost and the PBG shall be submitted on or before the final releasing of the payment. The validity of PBG shall be rolled over every year for first seven

years or till the warranty period of the last installation is completed. The rolling over or release of this PBG shall be based on the clearance of pending penalties/fines imposed by ANERT.

14.3 Income tax, contribution to workers' welfare fund which will be applicable to installations which involve civil construction work and other statutory deductions shall be made from the payment as per prevailing norms.

## **15. SERVICE AND MAINTENANCE**

15.1 Empanelled agency should have at least one service centre at each district where their system is installed. Also, there should be an additional service centre for each 500 installations per district.

15.2 The faulty system or components should be replaced/ repaired within 7 days of fault reporting.

15.3 Delay in servicing beyond 7 days of fault reporting would attract penalty at the rates decided by CEO, ANERT and further actions will be initiated against the agency.

15.4 The service personnel should visit the installations at least once in 3 months for preventive maintenance even if no faults are reported. **Reports of these preventive maintenance visits and generation data should be submitted to the concerned ANERT District Offices on a quarterly basis.** The delay beyond a period of 15 days may lead to penalty as decided by CEO ANERT.

15.5 A designated Helpline (in Malayalam language) address should be indicated on the inverter/controller at suitable location easily visible to the user for reporting faults during the warranty period.

## TECHNICAL SPECIFICATIONS

### 16. SCOPE OF THE WORK

The scope covers the Solarisation of existing Agricultural Pumps in the State under Component C of the Pradhan Mantri Kisan Urja Suraksha evamUtthaanMahabhiyaan (PM KUSUM) scheme. This includes the Supply, Installation and Commissioning of **SPV Power Plants with Grid connectivity for solarising the following capacity of Agricultural pumps:**

PumpCapacity	Capacity of PV Plant
below 2 HP	2kW
2-3 Hp	2-3kW
>3-5HP	5kW
10HP	10 kW
20 HP	30 kW
30 HP	50 kW
50 HP	75 kW
100 HP	150 kW

All the necessary approvals from KSEBL(Electrical Utility)/Electrical Inspectorate, feasibility study, necessary civil work, Mounting of Module Structures, PV Module Installation, Inverter Installation, DC/AC Cabling and interconnections, Installation of Lightning Arresters and Earthing System as per the standards, Net Metering, arranging all the necessary inspections from KSEBL/Electrical Inspectorate/ ANERT District Office as part of Pre-Commissioning, if any, Commissioning of the PV Power Plant, are coming under the scope of the bidder.

#### i. Location

The proposed location for installation of the SPV modules will be on the Roof top of existing building rooftop / vacant land available with Farmers/WUAs (Water User Association) spread across the 14 Districts in the State of Kerala. Majority of the installations under Group 1 will be concentrated on 5 districts of Kerala ie. Thrissur, Kasaragod, Malappuram, Palakkad& Ernakulum. In the case of Group 2, the installations will be on the agricultural fields (mostly paddy) in the kole wet lands of Thrissur and Ponnani.



Individual Krishibhavan/part will be provided to vendors for conducting site study and feasible site will be allotted as project for issuing work order throughBuyMySun.com

## **17. DEFINITION**

17.1 Solar Plant systems tendered through this document includes installation as follows

- a. For GROUP 1, it shall include installations of Roof Top as well as Ground mount SPV Power plants with based on site survey.
- b. For GROUP 2, the Ground mount structures are preferred to install.

17.2 Solar PV power plant system comprises of C-Si (Crystalline Silicon)/ Thin Film Solar PV modules with intelligent Inverter having MPPT technology and Anti-Islanding feature and associated power electronics, which feeds generated AC power to the Grid. Other than PV Modules and Inverter/Inverters, the system consists of Module Mounting Structures, appropriate DC and AC Cables, Array Junction Boxes (AJB) / String Combiner Boxes (SCB), AC and DC Distribution Box, Lightning Arrester, Earthing Systems, Net meter, etc.

17.3 The system should be capable for exporting the generated AC power to the Grid, whenever the Grid is available with all System Protection facilities.

## **18. STANDARDS AND REGULATIONS TO BE COMPLIED**

18.1 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources, Regulation, 2013) and its amendments thereof

18.2 KSERC (Grid interactive Distributed Solar Energy Systems) Regulations, 2014 and its amendments thereof

18.3 KSERC (Renewable Energy and Net Metering) Regulations, 2020 and its amendments thereof

18.4 CEA Regulation 2010 has to be followed safety and Electricity supply.

18.5 Metering should be as per CEA regulation 2006.

18.6 Any amendments thereof will also be applicable.

## 19. SYSTEM COMPONENTS- TECHNICAL COMPLIANCE FOR SYSTEM COMPONENTS

S/N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the requirement	IS 14286 -Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules IEC/IS61730: Part I & II; IS 16170: Part I IS/IEC 61701-Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
2.	Grid Tied Inverter	As per the rating system selected	IS 16221: Part 1 &2- Safety of Power Converters for use in Photovoltaic Power Systems IS 16169 - Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters
3.	Cables	Max 15m in AC side and DC side as 25m.	IEC 60227 / IS 694 IEC 60502 / IS 1554 (Pt. I & II)
4.	Switches/ Circuit Breakers/ Connectors	As required	IEC 60947 part I, II, III / IS 60947 Part I, II, III EN 50521
5.	Junction Boxes/Enclosures for Inverters and meters/ Charge Controllers	As required	IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529
6.	Energy Meter for Recording Solar Electricity Generated		As per CEA regulations
7.	Two-way meter for Distribution Licensee grid connection		As per CEA regulations
8.	Electrical Grounding (Earthing)	As required	As per IS 3043
9.	Remote Monitoring System(RMS)	As required	As per MNRE requirements.

## 20. SPV MODULES

- 20.1 Only crystalline silicon cell PV modules of 335W<sub>p</sub> or higher capacity should be used in the power plant. It is necessary to use SPV modules with indigenously manufactured solar cells (DCR Content) and shall be listed under the approved list of ALMM issued by MNRE from time to time.
- 20.2 Shading correction/ bypass for optimizing array out to be incorporated in each solar module or panel level and shading optimization to be provided.
- 20.3 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.
- i. Name of the manufacturer of PV Module
  - ii. Name of the manufacturer of Solar cells
  - iii. Month and year of the manufacture (separately for solar cells and module)
  - iv. Country of origin (separately for solar cell and module)
  - v. I-V curve for the module
  - vi. Peak Wattage,  $I_m$ ,  $V_m$  and FF for the module
  - vii. Unique Serial No. and Model No. of the module
  - viii. Date and year of obtaining IEC PV module qualification certificate
  - ix. Name of the test lab issuing IEC certificate
  - x. Other relevant information on traceability of solar cells and module as per ISO 9000 series
- 20.4 The following details should be provided on the module
- i. Name of the manufacturer
  - ii. Month and year of manufacture
  - iii. Rated Power at STC
  - iv.  $V_{mp}$ ,  $I_{mp}$ ,  $V_{oc}$ ,  $I_{sc}$
- 20.5 The PV modules must qualify (enclose Test Reports/Certificates from IEC/NABL accredited laboratory) as per relevant IEC standard. The Performance of PV Modules at STC conditions must be tested and approved by one of the IEC/NABL Accredited Testing Laboratories.

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

## 21. POWER CONDITIONING UNIT (PCU)

Technical data sheet of the inverter proposed or the project indicating operating modes, protection, efficiency etc. should be provided by the bidder.

### **Common Technical Specification:**

Output voltage	1 phase, 240 VAC; 3 phase, 415 VAC Inverter/ PCU should be capable of synchronise with grid voltage between 110% and 80% of the rated output. Beyond this system has to stop generating.
Over Voltage / Under Voltage trip	When Voltages reaches above 110% or below 80% respectively, with clearing time up to two seconds for reconnection.
Frequency	50 Hz. Inverter/ PCU should be capable to synchronise with grid for a variation of frequency between 50.5 Hz and 47.5 Hz. Beyond this system has to stop generating.
Over and Under frequency Trip	High frequency at 50.5 Hz and low frequency at 47.5 Hz clearing time up to 0.2 seconds.
Continuous rating	Rated capacity of the configuration.
Nominal Power	Rated power should not be less than the rated capacity of the SPV array at STC.
Communication capability	Should have RS 485 Communication mode so as to integrate with Remote Monitoring System.
Standard conformation	IS16221(Part 1,2) IS16169:2014 (Procedure for Islanding prevention measures for Utility Connected PV Inverters)
Total Harmonic Distortion	Less than 5%
Operating temperature Range	-50 to 600 C
Housing cabinet	PCU to be housed in suitable switch cabinet, Within IP 21 (Indoor)/ IP 54 (Outdoor)
PCU efficiency	95% and above at full load.
Power Control	MPPT
Harmonic Current Injections	Shall not exceed the limits specified in IEEE519
Direct Current Injection	Less than 0.5 % of the full rated output at the interconnection point.
Flicker	Should be within the limits specified in IEC 61000
Synchronisation	Automatic (Built into the inverter)

Hysteresis required for reenergizing	Sixty seconds at stabilized condition.
Power Factor	The PCU power factor at the point of distribution Licensee service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output.
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

- 21.1 The PCU shall not produce Electromagnetic interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.
- 21.2 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. Each of these measurement displays shall have an accuracy of 1 percent of full scale or better. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and AC and DC disconnect switch positions shall also be communicated by appropriate messages or indicator lights on the front of the PCU enclosure.
- 21.3 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.
- 21.4 The PCU shall include ground lugs for equipment and PV array grounding.
- 21.5 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 30 years' design life of the unit.
- 21.6 The PCU enclosure shall be weather proof and capable of surviving climatic changes and should keep the PCU intact under all conditions in the room where it will be housed. The inverter shall be located indoor and should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the PCC enclosure.
- 21.7 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

21.8 Maximum Power Point Tracker (MPPT) - MPPT shall be integrated in the PCU to maximize the energy drawn from the array. The MPPT should be microprocessor based to minimize the power losses.

## **22. ELECTRICAL SAFETY, EARTHING AND PROTECTION**

22.1 Internal Faults: In built protection for internal faults including excess temperature, commutation failure, over load and cooling fan failure (if fitted) is obligatory.

22.2 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.

22.3 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.

## **23. CABLING PRACTICE**

23.1 Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.

## **24. FACTORY TESTING**

24.1 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.

24.2 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.

## **25. PLANT METERING/ DATA LOGGING**

- 25.1 Net meter as per CEA standards approved by the utility as per accuracy class has to be supplied and installed.
- 25.2 A separate Energy Meter shall be provided at the output of PCU to record the energy generation from the solar system. (This energy meter should not be integrated with PCU). This has to calibrate and installed nearer to the Consumer meter board so that meter reader from Electrical utility could access while.
- 25.3 All major parameters should be available on the digital bus and logging facility for energy auditing through the internal microprocessor and can be read on the digital front panel at any time the current values, previous values for up to a month and the average values.

## **26. REMOTE MONITORING SYSTEM**

Remote Monitoring System (RMS) should have provision to monitor and upload all parameters required by MNRE under PM KUSUM Scheme to a specified server including:

- a) Solar System Performance: DC Voltage, DC current, AC output Current, Power, Drive frequency, Energy, etc.
- b) RMS Performance: Device Connectivity, Data Availability, etc.
- c) Geo Location: Real time latitude and longitude should be captured. This is required to ensure that system is not moved from its original location.
- d) Events and Notifications: Faults related to Pump Operation, Solar generation, Controller/Drive faults like overload, dry run, short circuit, etc.
- e) Consumer Management: Name, Agriculture details, Service No. Contact Details, etc.
- f) Asset Management: Ratings, Serial Number, Make, Model Number of Pump, Panel and Controller, Geo Location, IMEI number (of communication module) and ICCID (of SIM).
- g) Complaint and Ticket Management: Complaint management system is a part of centralized monitoring software platform – State Level Solar Energy Management Platform to be operated and maintained by the State implementing agency (SIA).
- h) Consumer Mobile Application: Generation, Complaint logging, etc.

The RMS will be provided access to the interface with State Level Solar Energy Data Management platform i.e., ANERT will provide server infrastructure and shall maintain the same in the State Data Centre. The ANERT shall provide SIM card of suitable ISP having maximum Signal Strength in the respective locations. The bidder should ensure connectivity as well as pushing of data to centralized platform as mentioned in specifications.

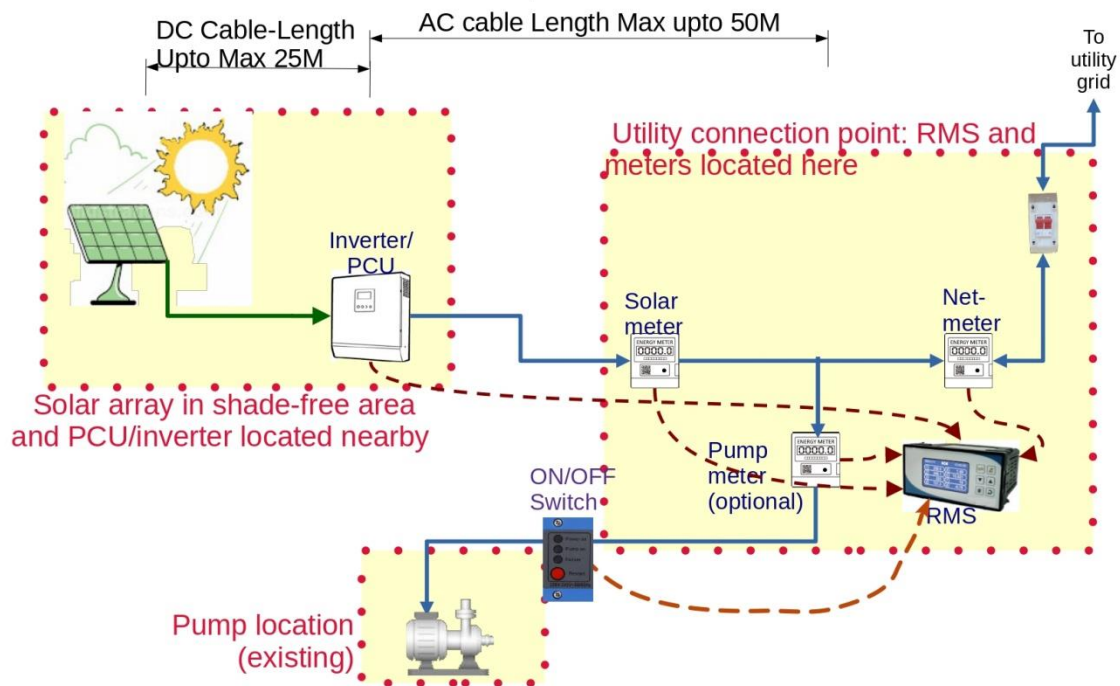
Communication architecture should be as per following:

a) Communication Connectivity:

i. Remote monitoring system installed along with the system should be compatible with the connectivity to PCU, Controllers and meters of the system.

The proposed connectivity diagram is as follows.

**SUGGESTED LAYOUT for PM-KUSUM Component-C**



ii. RMS should have provision to give remote On/Off command to pump through farmer mobile app. to save ground water.

b) Communication Modes:



- i. Push Data on Event/Notification: such as pump on, pump off, protection operated, etc.
  - ii. Push Data Periodically: important parameters of solar pump (as mentioned above) should be pushed to central server on configurable interval. Interval should be configurable for 15 mins. However, if required, it should be possible to configure the periodic interval in multiple of 1 minute starting from 1 minute and up to 15 minutes. Further, in case of any abnormalities or event, RMS should push on event immediately.
  - iii. Command on Demand: It should be possible to send commands via GSM or GPRS to RMS either to control pump operations or to update configuration
- c) Communication Protocol: RMS should provide data on MQTT protocol to establish communication with thousands of systems. The message formats and details shall be as per the MNRE requirement.
- d) Security:
- i. Communication between RMS and Server should be secured and encrypted using TLS/SSL certificate etc.
  - ii. As a part of IoT protocol, Authentication and Authorization should be implemented using token/password mechanism
- e) Message Format: RMS should provide data in a JSON message format as required by MNRE /ANERT.
- f) Data Storage: In case of unavailability of cellular network, RMS should store data locally and on availability of network it should push data to central Server. Local data storage should be possible for at least one year in case of unavailability of cellular network.

Configuration update over the Air of multiple parameters such as IP, APN, Data logging Interval, Set Points etc. is essential. Software updating should be possible with 2G and even without the presence of SD card. Software updating process and/or failure to update software shouldn't disrupt pumping operations

## **27. Remote ON/OFF feature**

- 27.1 The successful bidders shall arrange for the provision of remotely turning ON/OFF Feature and this must be integrated with system.

- 27.2 Necessary switch gear as well as communication structures should be done by the bidder so as the user can switch off/on the pump remotely.
- 27.3 The remote working system should be integrated with RMS.

## **28. ARRAY SUPPORT STRUCTURE.**

- 28.1 Specification of module mounting structure shall be in line with specifications for SPV water pumping systems of MNRE vide Circular No. F. No. 41/3/2018-SPV Division dated 17.7.2019 enclosed and any further amendment(s) issued by MNRE. However, considering the flooded scenario in Kerala the minimum height required under Group 1 category will be 50 cm for rooftop installations and 100 cm for ground mount installations and that of Group 2 will be 150cm.
- 28.2 Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the Contractor.
- 28.3 The PV modules shall be mounted on fixed metallic structures having adequate strength and appropriate design, which can withstand the load of the modules and high wind velocities as per the wind zone and IS of the location of installation.
- 28.4 The MMS shall be designed and constructed such that it complies with the necessary mounting requirements of PV modules in order to maintain the PV module's warranty.
- 28.5 MMS and its foundation shall be designed considering life span of 25 years and withstand wind speeds of 150 kmph.
- 28.6 Design of the MMS shall take into consideration site conditions, soil report, loading data, wind data and design standards as per latest applicable IS standard.
- 28.7 The structure shall be designed for simple mechanical and electrical installation. It shall support SPV modules at a given orientation and tilt, absorb and transfer the mechanical loads to the ground properly.

- 28.8 The Contractor shall be fully responsible for any damages caused by high wind velocity within guarantee period. The parameters of prevailing wind speed, soil conditions, load, and upward lift shall be taken care of while preparing the design and the same is required to be mentioned on design.
- 28.9 MMS shall be made of hot dip Galvanized steel per ASTM A123/ IS4759. Minimum thickness of HDGI zinc coating shall be 80 microns at any point when measured. No averaging is allowed in the measurement of coating thickness. Necessary testing provision for MMS to be made available by Contractor at site.
- 28.10 All bolts, nuts, panel mounting clamps fasteners shall be of stainless steel of grade SS304/ 8.8 grade HDG and must sustain the adverse climatic conditions.
- 28.11 MMS shall be designed and positioned such that the PV modules are completely shadow-free solar during generation hours.
- 28.12 All solar panels shall be easily accessible for cleaning and the beneficiaries shall not be inclined to climb on the MMS or PV modules for cleaning the PV modules.
- 28.13 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.
- 28.14 Civil foundation design for MMS shall be made in accordance with the IS and prevailing soil conditions with the help of Chartered Structural Designer having substantial experience in similar work.
- 28.15 All the cables shall be aesthetically tied to module mounting structure.
- 28.16 Cutting, Welding, drilling etc. at site is not allowed for MMS. Contractor shall carry out all correction in structure (if required) at his works. If any cutting, welding, drilling is required to be done after material arrived at site then material shall be again sent for hot dip galvanization. No zinc spray shall be allowed on the MMS.
- 28.17 Contractor shall submit all the quality test documents and test certificates complying with the requirement of the structure.
- 28.18 Contractor shall submit detailed drawings of the MMS and its civil foundations, results of design computations and stability calculations for

foundations, and structural fitness of PV module mounting structures as per STADD Pro analysis. Such details shall include, but not limited to, the following;

- a) Determination of true south at the site
- b) Array tilt angle to the horizontal, with permitted tolerance
- c) Details with drawings for fixing the modules
- d) Details with drawings for fixing the junction/ terminal boxes
- e) Interconnection details inside the junction/ terminal boxes
- f) Structure installation details and drawings
- g) Electrical grounding (earthing as per BIS specifications) and surge Protections.
- h) Inter-panel/ inter-row distances with allowed tolerances; and
- i) Lightning protection for PV array.
- j) Safety precautions to be taken

28.19 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.

28.20 It is necessary to use anti-theft bolts in Ground mounted installations, whereas the same need not be provided for rooftop installations, in which case easy replacement of modules are necessary.

28.21 Each structure shall have a provision to adjust its angle of inclination to the horizontal as per the site conditions. Solar module should be inclined towards south direction and installed at an angle of 10° to 15° from the horizontal.

## **29. SURGE PROTECTION AND EARTHING**

29.1 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.

#### 29.2 Earthing for PV Array:

- The PV module, BOS and other components of power plants require adequate Earthing for protecting against any serious fault.
- The Earthing for array and LT power shall be made as per the provisions of IS:3043.
- Necessary provision shall be made for bolted isolating joints of each Earthing pit for periodic checking of earth resistance.
- Each String/Array and MMS of the plant shall be grounded properly. The array structure has to be connected to earth pit as per IS standards. Necessary provisions shall be made for bolted isolating joints of each earthing pit for periodic checking or earth resistance.
- The complete earthing system shall be mechanically & electrically connected to provide independent return to earth.
- For each earth pit, a necessary test point shall be provided.
- The bidder shall submit the detailed specification for the Earthing arrangements.

### **30. LIGHTNING PROTECTION FOR PV ARRAY**

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.

30.1 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.

30.2 Lightning system shall comprise of air terminations, down conductors, test links, earth electrode etc. as per approved drawings.

- 30.3 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.
- 30.4 The EPC Contractor / Company shall submit the drawings and detailed specifications of the PV array lightning protection equipment to Employer for approval before installation of system.

### **31. AC DISTRIBUTION PANEL BOARD**

- 31.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter and should have necessary surge arrestors.
- 31.2 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.
- 31.3 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.
- 31.4 The ACDB incomer shall be four (4) pole MCCB with thermal over current and earth fault releases. The incomer shall be selected at required rating.

### **32. DC DISTRIBUTION BOARD**

- 32.1 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.
- 32.2 DC panel should be equipped with an adequate capacity indoor DC circuit breaker along with control circuit, protection relays, fuses, annunciations etc.
- 32.3 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.

### **33. SWITCHES AND GENERAL REQUIREMENTS**

- 33.1 Switches/ circuit breakers/ connectors meeting general requirements and safety measurements as per IS 60947 Part I, II, III and EN 50521 for AC/DC.

33.2 Junction boxes, enclosures for inverters/ charge controllers and meters shall meet IP 54 (for outdoor)/ IP 21 (for indoor) as per IEC 529.

#### **34. AC/DC WIRING**

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.

- 34.1 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
- 34.2 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%).
- 34.3 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.
- 34.4 For the AC cabling, PVC or XLPE insulated and PVC sheathed single or, multi-core flexible copper cables shall be used. However, for above 25kWp 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.
- 34.5 All LT XLPE cables shall conform to IS:7098 part I&II.
- 34.6 The total voltage drop on the cable segments from the solar PV modules to the solar grid inverter shall not exceed 2.0%
- 34.7 The total voltage drop on the cable segments from the solar grid inverter to the building distribution board shall not exceed 2.0%
- 34.8 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

- 34.9 Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers
- 34.10 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 4.0mm<sup>2</sup> copper; the minimum AC cable size shall be 4.0mm<sup>2</sup> copper. In three phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
- 34.11 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
- 34.12 Cables and conduits that have to pass through walls or ceilings shall be taken through PVC pipe sleeve.
- 34.13 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.
- 34.14 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.
- 34.15 Bending radii for cables shall be as per manufactures recommendations and IS: 1255.
- 34.16 For laying/termination of cables latest BIS/IEC Codes/ standards shall be followed.



### **35. NET METERING AND UTILITY INTERCONNECTION**

- 35.1 Net metering equipment (an Import-Export Energy Meter) approved and tested by the electrical utility based on the accuracy class required for the proposed capacity of the system must be provided with the necessary data cables if required.
- 35.2 Net Metering and Utility Interconnection should be accomplished according to the Kerala State Electricity Regulatory Commission (Grid Interactive Distributed Solar Energy Systems) Regulations 2014 Clauses (8) & (9) (Notification No. 2096/KSERC/CT/2014 dt. 10<sup>th</sup> June 2014) as well as approved by the DISCOM (KSEBL).
- 35.3 Meters shall be microprocessor based conforming IEC 60687 / IEC 6205211 / IEC 62053-22 / IS 14697 and solar energy meter or its display shall be placed adjacent to net energy meter.
- 35.4 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 & other parameters through push-button). The solar energy meters and net energy meters should be DLMS compliant and AMR compatible.
- 35.5 The solar energy meters shall be provided with two ports for communication of the measured / collected data. The provided both meters shall provide an optical port for DLMS communication to RMS using separate Optical (IR) to RS 232 converter complying with hardware specifications detailed in IEC 62056-21.
- 35.6 The provision of the Optical (IR) to RS 232 convertor shall be the part of the SPV system and should be provided by the bidder.
- 35.7 The bidders shall imply Virtual/Group metering facility with KSEBL as if it is found more suitable as per the site.

### **36. INTER CONNECTION OF INVERTER OUTPUT WITH UTILITY GRID**

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

- 36.2 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.
- 36.3 Licensed 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.
- 36.4 The panel board and distribution board required for AC interconnection should be done as per specification/ instruction given appropriate Engineering Authority.
- 36.5 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.
- 36.6 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.
- 36.7 Net 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.
- 36.8 The accuracy class of the Net 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.
- 36.9 Net Metering Equipment shall be microprocessor-based conforming to the relevant IEC standards with Advanced Metering Infrastructure (AMI) with RS232 cable facility.
- 36.10 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 KVA<sub>r</sub>, 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.

36.11 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)

### **37. PERMISSION FROM KSELB/ELECTRICAL INSPECTORATE BY BIDDER**

- 37.1 The plan scheme and drawing related to interconnection details should be submitted to Kerala State Electricity Licensing Board through a licensed Electrical Contractor with the guidance of PWD Electrical wing/A.E, L.S.G.D/appropriate Engineering Authority.
- 37.2 The panel board and distribution board required for AC interconnection should be done as per specification/instruction given by PWD Electrical wing/Electrical Inspectorate Authorities /A.E, L.S.G.D. /appropriate Engineering Authorities
- 37.3 The fee for utility feasibility, plant registration fee etc if any is to be borne by the successful bidder. Also, the application and charges for Electrical Inspectorate are also under the scope of the bidder.
- 37.4 If additional wiring is required for segregating the load, then that work should also be done as a part of this project implementation.
- 37.5 It is mandatory to obtain Energisation certificate by bidder from Electrical Inspectorate for the installations of capacity above and including 10 kW.
- 37.6 It is mandatory to obtain pre scheme approval from Electrical inspectorate for the installations in Group 2.

### **38. WARRANTY**

- 38.1 7years' warranty should be provided by the supplier for the system and components or part of the system must be provided as per the special conditions of the contract.
- 38.2 PV modules used in solar power plants/ systems must be warranted for their output peak watt capacity, which should not be less than 90 % at the end of 10 years and 80% at the end of 25 years
- 38.3 The Warranty Card to be supplied with the system must contain the details of all the components supplied.

### 39. OPERATION MANUAL

39.1 An Operation, Instruction and Maintenance Manual, in English and Malayalam should be provided with the system.

39.2 The following minimum details must be provided in the manual:

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

### 40. BILL OF MATERIAL

40.1 The bidder should provide the bill of material mentioning the quantity of each of the item consisting in the system, along with the offer.

**Table 40.1**

Sl. No.	Item	Make (if any)	Model & Individual Capacity (If any)	Qty (Nos)	Rating / Capacity
1.	PV Module				
2.	PCU/Inverter				
3.	Remote Monitoring Unit				
4.	DC Cables				
5.	AC Cables				
6.	AJB/SCB				
7.	Module Mounting Structure (MMS)				
8.	ACDB				
9.	Lightning Arrester				
10.	Earthing System				

	Details and No. of Earth pits				
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#### 41. DISPLAY BOARD

41.1 The logo of ANERT and details of the scheme as specified in the work order.

#### 42. INSURANCE

42.1 The power plant must be insured at every stage of operation – from Material dispatch, storage, completion of installation and till 7 years after commissioning.

42.2 The insurance coverage on handing over of the system must include all conditions of **Standard Fire and Special Perils as well as burglary and house break Policy (Material Damage as well as theft)**. The insurance premium for the 7years of warranty is to be paid by the bidder. On handing over of the system, the original insurance policy is to be handed over to the authorised person at the site of installation and a copy to ANERT District Office. The annual premium payment receipt must be handed to the authorised person at the site of installation.

#### 43. ENGINEERING DRAWINGS

43.1 The bidder should submit and get the necessary approval of the following detailed Engineering Drawings as per the system described in 17.1 (a)&(b) of this document before execution of the project:

- a. Schematic drawing showing the PV panels, Power conditioning Unit(s)/Inverter, Array Junction Boxes (AJBs)/String Combiner Boxes (SJB), AC and DC Distribution Box, Net meters, MSB etc.
- b. Foundation ad structural diagram shall be approved by any of the IITs, NITs or other government universities.
- c. Layout of solar PV Array
- d. Single Line Diagram (SLD) with specification of all components.

- e. Design document for Module Mounting Structure (MMS) including certificate showing wind speed withstanding capacity of the structure (STAAD/Equivalent).
- f. Module Mounting Structure (MMS) drawing along with foundation details for the structure.
- g. Sizes and specification of cables for PV Module interconnections, PV Array to Array Junction Boxes, Array Junction Boxes to Inverter, Inverter to ACDB/ Grid Connection point etc. shall be furnished.

#### **44. SELECTION PROCEDURE**

The Lead bidders need to get themselves graded

- i. The eligibility of capacity for installation of single plant and total allocation per batch (allotment) will be based on the grading provided by the grading agency appointed by ANERT.
- ii. The grading agency selected for this purpose is “ICRA Analytics Limited” Securities and Exchange Board of India (SEBI) approved Agency for “Assessing and Grading of Manufacturers / Contractors / Joint Venture of Manufacturers & integrators for submitting bids under PM KUSUM scheme – Component C Programme implemented in the state of Kerala. The grading is to be done with the same criteria set by ANERT for the Vendor Registration process.
- iii. The grading will be done by M/s ICRA Analytics Ltd at the rates finalised by ANERT as below:

#	Rate For Undertaking Grading Services	AMOUNT (incl GST)
1	Initial Grading	23,600/-
2	Renewal of Grading post one year	9,440/-

The contact details of the ICRA Analytics Limited mentioned below and personnel dedicated for ANERT functionalities are as below:

**ICRA Analytics Ltd**  
**Infinity Benchmark, 17th Floor, Plot – G-1,**  
**Block GP, Sector V, Salt Lake, Kolkata – 700091**

Name	Contact Details	Email id
Mr. Mamun	+91 7304036988	anert.grading@icraanalytics.com
Mr. Indranil Chakraborty	+91 99033 77455	

The grading certificate issued only after 20/09/2022 will be considered under the tender. The EPC / System Integrators are to be graded in the same pattern for Registration of Vendors for Solar Program by M/s ICRA. **This grading shall be submitted at the time of tender submission and failure on submission will lead to rejection of the bid.** The same will be called for once the tender is opened and finalised during project implementation stage. Once the bids are opened, ANERT will evaluate all the proposals to determine whether these are complete in all respects as specified in the tender document. Evaluation of the proposals shall be done in three stages as:

**i. Level - I (Technical Evaluation):**

ANERT shall evaluate the technical bid(s) to determine whether these qualify the essential eligibility criteria, whether the bidder has submitted the EMD whether any computational errors have been made, whether all the documents have been properly signed & stamped, whether all the documents as mentioned / or required to submitted with technical bid are submitted and whether bids are completed and generally in order.

After evaluation of technical bid(s), a list of the qualifying bidder(s) shall be made. Short-listed bidder(s) shall be informed of the date, time and place of opening of ~~financial bid(s)~~ (online).

**ii. Level - II (Ranking of qualified Bidders & elimination):**

The ~~financial bid(s)~~ of Technically Qualified Bids shall be ranked in the ascending order of their respective financial bids (L1, L2, ..,Ln). The bids which have quoted the same amount shall be assigned the same rank.

If there are more than one L1 bidders quoting the same cost in Rs, tie breaking is based on the time of submission of the bid as recorded in the e-tender site. The bidder who has submitted the bid first will be the lowest bidder (L1 Bidder) and the other bidders who have quoted the L1 rates will be ranked based on the time of submission of

bids as L2 bidder, L3 bidder etc. After ranking bidders who have offered L1 rates, the next lowest bidders are assigned subsequent ranks based on the same criteria.

**iii. Level - III (L1 Matching)**

~~Under this process, all bidders other than L1 bidder/(s) within the price bracket (L1+25% of L1) will be asked to match the L1 rate discovered. Only those bidders within the above price bracket are considered for matching with L-1 rate, and if they match with L-1 rate, then they will be selected. If total no. of bidders within the above price bracket is less than 5, then those bidders who fall in (L1 + 30 % of L1) will also be considered for matching with the Lowest discovered rate (“L-1 Matching”). If they match, they will also be selected.~~

Rate arrived as per the Rate Contract Order No. 46/2023/ANERT dtd. 28/02/2023 is as given below.

Rate of power plants as arrived by tender		
Plant Capacity (kWp)	Ground Mounted (in Rs.)	Roof Top (in Rs.)
2	2,48,190	2,29,982
3	2,98,195	2,79,413
5	4,61,894	4,31,930
7	5,93,004	5,47,137
10	7,68,873	7,13,457
30	21,50,820	21,40,290
50	35,84,700	35,67,150
75	53,77,050	53,50,725
150	1,09,24,800	1,05,39,900

**iv. Level - IV (Allocation of works)**



- i. ANERT will issue an order regarding the selection of bidders for each capacity and the total volume allotted to them based on the grading provided to the bidder by M/s ICRA. The rates including taxes will be included in the order and no requests for enhancement will be entertained.
- ii. The L1 matched bidders are required to enter into an agreement with ANERT within 7 days from the date of issue of order.
- iii. The capacity of Solar Power Plant that can be allotted to a particular vendor depends on their grading issued by M/s ICRA Analytics Limited, which is determined using the experience and financial strength of the vendor. Based on the grading, the vendors will be listed in certain categories as below:

Grading Scale		Financial Strength				
		Strong	Above Average	Average	Below Average	Weak
Performance capability	Strong	1A	1B	1C	1D	1E
	Above Average	2A	2B	2C	2D	2E
	Average	3A	3B	3C	3D	3E
	Below Average	4A	4B	4C	4D	4E
	Weak	5A	5B	5C	5D	5E

- iv. **Only agencies obtaining grades 3C and above are eligible for listing**
- v. With reference to the grading allotted, the single plant capacity and the total volume of works that can be allotted at a time is

Grade Allotted	Total Volume in kW in Batch
1A	5000
1B	3500
1C	1000
1D	500
1E	100
2A	2500
2B	2000
2C	1000
2D	200
2E	100

Grade Allotted	Total Volume in kW in Batch
3A	1000
3B	500
3C	300
3D	50
3E	50
4A	100
4B	100
4C	50
4D	25
4E	25
5A	25
5B	15
5C	10

#### 45. CHANGE IN LAW

- i. If as a result of Change in Law, the Successful bidder suffers any additional costs in the execution of the Works or in relation to the performance of its other obligations under this Agreement, the Successful bidder shall, within 15 (fifteen) days from the date it becomes reasonably aware of such addition in cost, notify ANERT with a copy to ANERT's Engineer of such additional cost due to Change in Law.
- ii. If as a result of Change in Law, the Successful bidder benefits from any reduction in costs for the execution of this Agreement or in accordance with the provisions of this Agreement, either Party shall, within 15 (fifteen) days from the date it becomes reasonably aware of such reduction in cost, notify the other Party with a copy to the Authority's Engineer of such reduction in cost due to Change in Law.
- iii. ANERT's Engineer shall, within 15 (fifteen) days from the date of receipt of the notice from the Successful bidder or ANERT, determine any addition or reduction to the Contract Price, as the case may be, due to the Change in Law.

#### **46. FORCE MAJEURE**

- i. Notwithstanding the provisions of clauses contained in the tender document; the work awarded agency shall not be liable to forfeit
  - a. Security deposit for delay and
  - b. termination of contract; if he is unable to fulfill his obligation under this contract due to force majeure conditions.
- ii. For purpose of this clause, "Force Majeure" means an event beyond the control of the work awarded agency and not involving the work awarded agency'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 work awarded agency and all other concerned.
- iii. In the event that the work awarded agency 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.
- iv. If a force majeure situation arises, the work awarded agency shall notify ANERT in writing promptly, not later than 14 days from the date such situation arises. The work awarded agency 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.

#### **47. Limitation of Liability**

Except in cases of criminal negligence or wilful misconduct,

- a. The Successful bidder shall not be liable to the ANERT, whether incontract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Successful bidder to pay liquidated damages to the  
ANERT

- b. The aggregate liability of the Successful bidder to the ANERT, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Successful bidder to indemnify the ANERT with respect to patent infringement

## ANNEXURE A – SUMMARY OF BID QUALIFICATION REQUIREMENTS

(To be filled in by the bidder)

1.	Name of the Applicant/Bidder						
2.	Address in full						
3.	Contact Details  Mobile Land Phone Email						
4.	Name and Designation of the authorised signatory						
5.	GST Registration No.						
6.	Total number and Aggregate capacity of solar power plants installed for the last 5 Years (Off-Grid/On-Grid) <i>(proof to be enclosed, and flagged as Annexure)</i>		2017	2018	2019	2020	2021
		Number of systems:					
		Total capacity					
7.	Highest Capacity of individual PV Power Plant installed so far (With the details of Beneficiary/Institution name, Phone No, Email ID, Grama Panchayat, District, State etc.						
8.	Annual turnover of the firm during last three years (Rs.)						

9.	No. of service centres/Authorised service providers in Kerala	<i>(Proof or undertaking to be enclosed as Annexure)</i>
10.	Whether Bidder was/is debarred by ANERT/Other State Nodal Agencies /MNRE/DISCOMs (Yes/No)?	
11.	Agreement submitted (Yes/No)?	

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

Signature of authorised signatory

Name

Designation

Date:

(office seal)

## ANNEXURE B-AGREEMENT

---

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 ***EoI for additional  
Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos  
Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-  
KUSUM scheme (Component-C) in the State of Kerala*** specified therein subject to the  
terms and conditions contained in the said e-tender.

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

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

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

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

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

In witness whereof Sri ..... (Name and Designation)  
for and on behalf of the Agency for Non-conventional Energy and Rural 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 C –DECLARATION BY THE BIDDER

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e-Tender Notification No: ....., dtd ..... for EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO  
ANERT

We, the undersigned, declare that:

1. We have examined and have no reservations to the Bidding Document, including Addenda No.: ..... (if any)
2. We offer to supply in conformity with the Bidding Document and in accordance with the delivery schedule
3. Our Bid shall be valid for a period of 12 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 3 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 D– DECLARATION ON SUBSIDY CLAIM**

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

Tender Notification No.: .....

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To  
The CEO  
ANERT

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

Signature of Bidder:

Name :

Date:

Office Seal

**ANNEXURE E – DECLARATION OF RELATIONSHIP WITH ANERT EMPLOYEE**

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

Tender Notification No.: .....

EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

To

The CEO  
ANERT

Name of the ANERT employee with Designation:

Name of the bidder related to the employee:

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

Signature

Name

Date

## ANNEXURE F –SERVICE REPORT

*(Format of Service Report to be submitted on Quarterly basis to respective District Offices)*

### **SERVICE REPORT**

Fault/ Quarterly Service

(Put ✓ on the number of Periodic service & Month from the date of commissioning)

Periodic Service				Months after commissioning			
1	2	3	4	3	6	9	12
8	7	6	5	15	18	21	24
9	10	11	12	27	30	33	36
16	15	14	13	39	42	45	48
17	18	19	20	51	54	57	60
21	22	23	24	63	66	69	72
25	26	27	28	75	78	81	84

### GENERAL INFORMATION

Installation Site			
Address			
LSG			
Assembly Constituency			
District			
Service Executive Name & Contact :		Inspection Date & Time	

### VISUAL INSPECTION DATA

<b>SOLAR MODULE</b>		
Total capacity Solar Array (kW):		
Solar Module size (Watt peak per module) Wp		
Brand of solar module :		
Model of solar module :		
Cracked glass of PV panel	<input type="checkbox"/> Yes	<input type="checkbox"/> No
White or Brown spot, bubble of air, moisture behind the glass	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Junction boxes at backside loose or without cover?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Physical damage to any PV module	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check for loose cable terminations between PV modules	<input type="checkbox"/> Yes	<input type="checkbox"/> No
PV modules are properly grounded with lugs on each module	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>STRUCTURAL AND ROOF</b>		
Are the modules mounted securely, and level?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Results of module hand lift test?	<input type="checkbox"/> Secure	<input type="checkbox"/> Not Secure
Are Conductors loose, touching roof surface or in contact with sharp or abrasive surfaces?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Conductor plug-and-receptacle connectors are fully engaged between junction boxes ?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Are any dissimilar metals being combined?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
corrosion/evidence of rust, when encountered apply the cold galvanization spray	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check for proper earthing of structures	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check for physical damage of structures	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>INVERTER</b>		
Inverter Make & Model		
Power output (kW / kVA) :		

Is the inverter located in an area which is exposed to direct sun?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Proper wire sizes ?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check all meters and control wiring connected as per drawing	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Enclosure cleaned and vacuumed out	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Display and indications are working	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check for Noise levels of inverter	<input type="checkbox"/> Normal	<input type="checkbox"/> High
Check for ventilation condition (Exhaust fan is working properly or not)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Grounded ?	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>JUNCTION BOXES</b>		
Check for tightness of clamps, supports, Nut- bolts used for combiner box	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check cables are secured from sharp edges	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check proper conduit fittings used and adequately tightened	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Array box is Vermin and dust proof	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>MAIN ELECTRICAL DISTRIBUTION PANEL</b>		
Electrical Concerns or Code Violations	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check cable terminals for burnt marks, hot spot or loose connection	<input type="checkbox"/> Yes	<input type="checkbox"/> No
Check for physical damage	<input type="checkbox"/> Yes	<input type="checkbox"/> No
<b>REMOTE MONITORING SYSTEM</b>		
Check whether RMS unit is functioning	<input type="checkbox"/> Yes	<input type="checkbox"/> No

### SPV POWER PLANT MONITORING SHEET

Parameters under Measurement	Data	Remarks if any
------------------------------	------	----------------

<b>GENERATION</b>		
Current Energy Meter Reading (C)		
Previous Energy Meter Reading (P)		
Quarterly Generation (C - P) kWh		
Inverter Cumulative Generation (kWh)		
Number of days without generation ( <i>in case of fault</i> )		
<b>PV MODULES (AJB Reading using Multimeter)</b>		
i. Watt Peak (Wp)		
ii. Voltage (V)		
iii. Current (A)		
iv. Number of Series		
v. Number of Parallel		
<b>POWER CONDITIONING UNIT (PCU)</b>		
i. PV Voltage (V)		
ii. PV Current (A)		
iii. PV Power (kW)		
iv. AC Voltage (R Phase)		
v. AC Voltage (Y Phase)		
vi. AC Voltage (B Phase)		
vii. Frequency (Hz)		
viii. Error log/Warning log Details		

Special Remarks (if any) Customer / Service Executive:

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The above generation data are verified and the power plant is working satisfactorily. The periodic maintenance is regular and no default in inspection is noticed.

Signature with Seal

Authorised Representative of LSG

Name:

Designation:

Signature with Seal

Service Executive

Installed Agency

*To be issued in Triplicate: Original to ANERT DO, copy to beneficiary & One for the installed agency*



## ANNEXURE G – GUARANTEED TECHNICAL PARAMETERS

<b>PV Module</b>			
#	Particulars	Required	Offered
1	PV Module Manufacture Name & Country of origin	manufacture name to be specified)	
2	PV Module type	Poly/Mono Crystalline, Mono/Poly PERC	
3	Product Code		
4	No. of PV cells per Module		
5	Total number of PV modules		
6	Max.Power, Pmp @STC	335 Wp or above	
7	Max. power tolerance (%)	Not more than 3%	
8	Max. Power voltage (Vmp)@STC	To be specified	
9	Max. Power current (Imp) @STC	To be specified	
10	Open circuit voltage, Voc@STC	To be specified	
11	Short circuit current, Isc@STC	To be specified	
12	Nominal voltage	To be specified	
13	Nominal Wattage	To be specified	
14	Fill Factor	Not less than 0.7	
15	Temp. coefficient of Voc (%/C)		
16	Temp. coefficient of Pmp (%/C)		
17	Temperature Co-efficient of Isc (%/°C)		
18	Normal Operating Cell		

PV Module			
#	Particulars	Required	Offered
	Temperature (NOCT) (°C)		
19	Operating Temperature (°C)		
20	Max Temperature rise of solar cells under severe working conditions over Max. Ambient Temp.	To be specified	
21	Module is suitable to operate at 500 ambient	Yes/No	
22	Cell efficiency	%	
23	Module efficiency	>=17% (Document to prove efficiency shall be furnished with the offer)	
24	Maximum System Voltage		
25	No. of By-pass Diodes		
26	Mounting arrangement for Solar Module	Fixed Arrangement	
27	Solar Module frame material	Anodized Aluminum	
28	Finish		
29	Types of Sections used		
30	Module dimensions cms (LxWxH)	To be specified	
31	PV panel Weight (kg)	To be specified	
32	Module Life (minimum)	25 years	

<b>PV Module</b>			
<b>#</b>	<b>Particulars</b>	<b>Required</b>	<b>Offered</b>
33	PV array area(sqm)		
34	Standards/Approvals from International Agencies	IEC 61215/IEC 61730/ IEC 61701	
35	Guaranteed output confirm	Yes	
36	Output Cables	Polarized, UV protected & Weather Proof DC rated multi-contact connector	
37	Output Terminal	PV Connectors	
38	Junction Box	Weather resistant HDPE (IP65)	
39	Construction Front, Back	High transmittance glass. Polyester Ethyl Vinyl Acetate (EVA) encapsulate	
40	Glass	Low iron tempered	
43	Copies of test certificates	IS 14286/IEC 61215,61730 part 1&2, IEC 61701	

<b>INVERTER (To be provided for each capacity)</b>			
<b>#</b>	<b>Particulars</b>	<b>Required</b>	<b>Offered</b>
1	Manufacturer		
2	Model name/No.		
3	Number of units		
5	Nominal AC power		
6	Nominal AC voltage		

**INVERTER (To be provided for each capacity)**

#	Particulars	Required	Offered
7	Nominal AC Current		
8	AC grid Frequency range	50Hz ± 0.5%	
9	AC grid voltage range		
10	Power Factor (+ and -)		
11	Total Harmonic Distortion	As per IEEE-519 2014	
12	AC over / under voltage over / under frequency protection		
13	Max PV input power		
14	Maximum DC voltage	Less than 1000 V	
15	MPPT voltage range		
16	Maximum DC current		
17	No. of DC input ports		
18	Maximum Efficiency	as per IEC61683	
19	DC voltage ripple		
20	Ambient temperature range		
21	Humidity (non- condensing)	95%, non-condensing	
22	Degree of protection		
23	Dimensions approx. (HxWxD)		
24	Weight		
25	Protective functions  AC over/under voltage, AC over/under frequency,		

**INVERTER (To be provided for each capacity)**

#	Particulars	Required	Offered
	overtemperature, AC and DC overcurrent, DC over-voltage, against Islanding		
26	Communication Interface	RS485. MPI Profi Bus/Telephone Modem/WiFi	
27	User-display standard	LCD panel with membrane Keypad	
28	Enclosure environment rating		
29	Safety and EMC		
30	Anti-islanding feature	IEEE1547/UL1741/IEC62116	

**Others**

#	Particulars	Required	Offered	
1	Remote Monitoring Unit	IIOT-Compatible	<input type="checkbox"/> Yes	<input type="checkbox"/> No
2	Cables	UV Rated	<input type="checkbox"/> Yes	<input type="checkbox"/> No
3	Junction Boxes	IP 54 or IP 65 Rated	<input type="checkbox"/> Yes	<input type="checkbox"/> No

## ANNEXURE H – BID SECURITY BANK GUARANTEE

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### BID SECURITY BANK GUARANTEE

BG No. :  
Amount :  
Date :  
Valid up to :

This guarantee is made on this ..... day of ..... 20.... by ..... (Complete postal address of the bank) hereinafter called 'the **Bank**', which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns.

WHEREAS the **ANERT**, having its registered office at PMG-Law College Rd, Vikas Bhavan PO, Thiruvananthapuram, Kerala, PIN – 695 033, hereinafter called as **ANERT**, which expression shall unless repugnant to the context or meaning thereof shall include its successors and assigns in having agreed to exempt .....(hereinafter called “**contractor(s)**” which expression unless repugnant to the context and meaning thereof shall include its successors and assigns) from depositing with **ANERT**, a sum of Rs. .... towards Security Deposit in lieu of the said **contractor(s)** having agreed to furnish a bank guarantee for the said sum of Rs. .... as required under the terms and conditions of Tender No. .... dated ..... (hereinafter referred as the 'bid') placed by the **ANERT**., on the said **contractor(s)** and on specific request on the part of the said **Contractor(s)**, we the **Bank** hereby unconditionally and irrevocably affirm and undertake-

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 ..... 2021

SIGNATURE OF THE BANK \_\_\_\_\_

SEAL OF THE BANK \_\_\_\_\_

SIGNATURE OF THE WITNESS \_\_\_\_\_

Name and Address of the Witness \_\_\_\_\_

*The bank guarantee shall be issued by a bank (Nationalized/Scheduled) located in India*

## ANNEXURE I – RATE CONTRACT ORDER

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**FORMAT A –UNDERTAKING FOR NO BLACKLISTING & NO BANNING**

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*(To be provided on Rs.200 Non-Judicial Stamp paper. In Case of JV the following format is to be provided by Each Member of the Joint Venturerespectevly)*

**Undertaking for No Blacklisting & No Banning**

To

The CEO  
ANERT

**Sub:** EoI for additional Empanelment of vendors under the Rate Contract for the Solarisation of 9,348 Nos Grid Connected Agricultural Pumps ranging from 2kW - 150 kW under the PM-KUSUM scheme (Component-C) in the State of Kerala

I / We hereby declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is having unblemished record and is not declared ineligible for corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

I / We further declare that presently our Company/Limited Liability Partnership/ Partnership Firm/ Sole Proprietorship is not blacklisted and not declared ineligible for reasons other than corrupt/fraudulent practices by any State/Central Government/PSU on the date of Bid Submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

**(Signature & Seal of Authorized Signatory for which POA attached)**

**Name of Authorized Signatory:**

**Designation:**

**Date:**

**Place:**

**FORMAT B –POWER OF ATTORNEY IN FAVOUR OF AUTHORIZED SIGNATORY (IN CASE  
BIDDER IS JOINT VENTURE)**

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*(On Non-Judicial Stamp Paper of Rs. 200/- attested by Notary Public / First Class  
Magistrate)*

**Power of Attorney in favour of Authorized Signatory**

KNOW ALL MEN BY THESE PRESENTS THAT WE, the Partners whose details are given hereunder ..... have formed a Joint Venture under the laws of ..... and having our Registered Office(s)/Head Office(s) at ..... (hereinafter called the 'Joint Venture' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) acting through M/s ..... being the Partner in-charge do hereby constitute, nominate and appoint M/s..... a Company incorporated under the laws of ..... and having its Registered/Head Office at ..... as our duly constituted lawful Attorney (hereinafter called "Attorney" or "Authorised Representative" or "Partner In-charge") to exercise all or any of the powers for and on behalf of the Joint Venture in regard to "Bid Specification" for the Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9348 nos. under the PM-KUSUM scheme (Component-C) in the State of Kerala", under NIT No: ANERT-TECH/45/2020-PE1(RTS) for which bids have been invited by ANERT undertake the following acts:

- i. To submit proposal and participate in the aforesaid Bid Specification of ANERT on behalf of the "Joint Venture".
- ii. To negotiate with ANERT the terms and conditions for award of the Contract pursuant to the aforesaid Bid and to sign the Contract with the ANERT for and on behalf of the "Joint Venture".
- iii. To do any other act or submit any document related to the above.
- iv. To receive, accept and execute the Contract for and on behalf of the "Joint Venture".

It is clearly understood that the Partner In-charge (Lead Partner) shall ensure performance of the Contract(s) and if one or more Partner fail to perform their

respective portions of the Contract(s), the same shall be deemed to be a default by all the Partners.

It is expressly understood that this Power of Attorney shall remain valid binding and irrevocable till completion of the period to complete all the Scope of Work awarded under the terms of Bid Specification/ Contract.

The Joint Venture hereby agrees and undertakes to ratify and confirm all the whatsoever the said Attorney/Authorised Representatives/Partner in-charge quotes in the bid and negotiates with ANERT and signs the Contract with ANERT and/or proposes to act on behalf of the Joint Venture by virtue of this Power of Attorney and the same shall bind the Joint Venture as if done by itself.

IN WITNESS THEREOF the Partners Constituting the Joint Venture as aforesaid have executed these presents on this ..... day of ..... under the Common Seal(s) of their Companies.

For and on behalf of the partners of Joint Venture

.....  
.....

The Common Seal of the above Partners of the Joint Venture:

The Common Seal has been affixed there unto in the presence of:

WITNESS

1. Signature.....  
Name .....  
Designation .....  
Occupation .....
2. Signature.....  
Name .....  
Designation .....  
Occupation .....

**Note:**

1. For the purpose of executing the Agreement, the non-judicial stamp papers of appropriate value shall be purchased in the name of Joint Venture.
2. The Agreement shall be signed on all the pages by the authorised representatives of each of the partners and shall invariably be witnessed.



**FORMAT D –CHECKLIST TO BE SUBMITTED ALONG WITH COVERING LETTER**

***Checklist to be submitted along with Covering letter***

<b>Tender ID:</b>		<b>Date:</b>			
<b>Tender name: -Rate Contract for the Solarisation of Grid Connected Agricultural Pumps of cumulative capacity of 9,348 Nos ranging from 2kW- 150kW under the PM-KUSUM scheme (Component-C) in the State of Kerala</b>					
Name of Sole/ Lead Bidder					
Name of JV Partner					
SI No	Particular	Sole/Lead bidder		Partner in JV	
		Pg No	File Name	Pg No	File Name
1	Proof for Tender fee Exemption, if any				
2	Proof for EMD fee Exemption, if any				
3	In case of JV, provide JV agreement defining lead member				
4	Copy of Registration/Incorporation Certificate				
5	Copy of GST Registration certificate				
6	Copy of Pan Card				
7	Power of Attorney in favour of authorized signatory in Rs 200 Stamp paper				
8	If Power of Attorney in favour of authorized signatory not applicable - need to submit self-declaration on authorized signatory				
9	Declaration by JV partner /Sole bidder on Manufacturing of Solar Panels				
10	Work orders as proof of Experience				
11	Completion certificate for the work orders				
12	Undertaking for Non-Black Listing in 200 Rs Stamp Paper				
13	Scanned copy of Tender Document Signed and Sealed				
14	Agreement in the Prescribed format Annexure B in 200Rs stamp paper				
15	Declaration by manufacturer to provide PV module from ALMM List & with DCR content				

16	Declaration from lead bidder to provide Inverter with IS1621, IS16169 certification				
17	Summary of Bid Qualification Requirement				
18	Bill of Material				
19	Guaranteed Technical Parameters				
20	Test Certificates as per GTP				
21	Datasheet as per GTP				
22	Declaration by the bidder				
23	Declaration on subsidy claim				
24	Declaration of relationship with ANERT Employee				
25	List of Service centres /Declaration to provide service centre in 200Rs Stamp Paper				
26	ICRA Grading Certificate				