

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)

*Notification No. 129/NSM/SRTP/EA/01
Dated 5th September 2016*

PART-I

Submitted by _____ :
(name and address of bidder)



Agency for Non-conventional Energy & Rural Technology

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Dated	

Format for Covering Letter

Sir,

I/We hereby express my/our interest to be included as an Empanelled Agency for the installation Solar Rooftop Power Plants(Off Grid & Grid Connected) in Kerala, as per the terms and conditions and the technical specifications, decided by Agency for Non-conventional Energy and Rural Technology (ANERT) and Ministry of New and Renewable Energy (MNRE). The work allotted to me/us will be completed within the time frame as per the work order from the beneficiary/ Government/any other agency.

I am/we are remitting herewith the required amount of Rs. 50000/- as application fee as DD No. Dateddrawn on bank in favour of Director , ANERT payable at Thiruvananthapuram.

Yours faithfully

Place:

Signature

Date:

Name

Designation

(Office Seal)

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

I.A – Notice

Notification No.. 129/JNNSM/SRTP/EA/01 Dated 5TH September 2016

As per Letter No.JS(NSM)/MNRE/2015 dated 23rd December 2015,Ministry of New and Renewable Energy (MNRE), Government of India, requested the State Nodal Agencies(SNAs) to empanel channel partners of MNRE for the implementation of Solar Rooftop Power Plant Programme for their states.

Hence expression of Interest in accordance with the attached Pre-qualification criteria, technical specification and financial terms and conditions are invited from reputed & experienced Channel Partners of MNRE, Govt. of India, with valid accreditation as on date of submission of offers. Reputed Public sector undertakings having listed by MNRE as channel partners are also eligible to apply for empanelment.

The EoI include three parts.

1. Empanelment of agencies for the implementation of Grid connected (1kW to 500kW) and Off Grid Solar (1kW to 100kW) rooftop power plants in Kerala.
2. Listing of agencies for the implementation of Grid connected Solar power plant programme of capacity 2kW,3kW,5kW,10kW,15kW,20kW,25kW,30kW,40kW, 50kW,60kW, 70kW,80kW,90kW & 100kW under ANERT programme.
3. Listing of agencies for the implementation of Off Grid Solar power plant programme of capacity 1kW, 2kW, 3kW & 5kW under ANERT programme.

The offers has to be filed based on the qualification criteria and as per the bid submission guidelines , separately for Solar Off Grid and Grid Connected Programme. This list will be valid for all programmes implemented in Kerala with Central or State financial assistance in Kerala.

Price offers has to be submitted for the programmes proposed to be implemented by ANERT for 2kW to 100kW grid connected solar rooftop power plants for a cumulative capacity of 19 MW.

Price offers are also invited for Solar off Grid Solar Power plant programme of capacity 1kW, 2kW, 3kW and 5kW, for which MNRE had given sanction for a cumulative capacity of 10MW.

The guidelines and documents for Expression of Interest can be downloaded from the website (www.anert.gov.in) of ANERT. The application received on or before 12 noon, 30th of September 2016 at the office of Director, ANERT, Vikas Bhavan (PO), Thiruvananthapuram, 695 033 by post or by hand, along with application fee of Rs.50000/- as DD in favour of Director, ANERT, Thiruvananthapuram will be evaluated and qualified bidders shall be included in the empanel list. ANERT will not be responsible for any postal delays. The validity of the list will be for two years. This list will be updated as and when required.

Thiruvananthapuram
05.09.2016

Sd/-
Director

I.B – Abstract

Notification No.	<i>Notification No. 129/NSM/SRTP/EA/01</i> Dated 31 August 2016
Superscription	<i>Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid).</i>
Date of release of Invitation	05.09.2016
Date , time & place of pre bid meeting	23 rd September 2016 , 11am at seminar hall ANERT Headquarters.
Last date of submission EOI by the agencies	12:00 noon, 30 th September 2016
Date & time of opening bids	3 pm on 30 th September 2016
Place of opening Submission by Agencies	Office of the Director, ANERT, Vikas Bhavan. PO, Thiruvananthapuram – 695 033, Kerala
Application fee	Rs.50,000/-
How to obtain the application form for submitting Eoi	To be downloaded from the website of ANERT www.anert.gov.in
Thiruvananthapuram 05.09.2016	Sd/- Director

I.C –Implementation plan

1. General

- 1.1 The Expression of Interest for preparing the list of Empanelled Agencies for installation of Solar Rooftop Power Plants in Kerala will be invited. The agencies listed by this process only will be eligible for the implementation of projects with State and Central Financial Assistance/ fund .The validity of list will be for two years. The list will be published for the information of proponents for installation of Solar Rooftop Power Plants. The status of empanelment shall be terminated without notice, in the case of nonexistence/removal of agency in the channel partner list of MNRE.
- 1.2 The beneficiary /Government/any other proponent have the freedom to select an agency of their choice from the list published for installation of the solar power plants. This list will be the base list for the implementation of Solar Rooftop Power Plants in Kerala. For government funded programmes necessary formalities may be observed based on store purchase rules / any other relevant guidelines in force.
- 1.3 The installation should be as per the technical compliance and installation practices of MNRE, ANERT, CEA and all other statutory regulations specified. Any amendments/ modification issued time to time will be incorporated.
- 1.4 Beneficiary intend to install a Solar Rooftop Power Plant, should submit the project proposal/application to ANERT and get approval for installation. Beneficiary may select any one of the empanelled agency of his choice for installation. Project proposal/ Feasibility report has to be prepared and submitted to ANERT for approval.
- 1.5 On getting approval the beneficiary / agency has to complete the installation and submit the project completion report to ANERT for processing Central/State financial assistance/ incentive within the time frame.
- 1.6 ANERT will conduct site inspection for the compliance and will process the submission received from the beneficiary/agency for the release of subsidy /fund.
- 1.7 The Central & State Financial Assistance will be as per the guidelines of MNRE, ANERT and its amendments from time to time.

2. ANERT programmes

- 2.1 Price offers will also be invited wherever applicable from the agencies. Based on the price offered the eligibility of technically qualified agency will be finalised.
- 2.2 Beneficiary has to apply for eligibility of subsidy for the installation of the system. The beneficiary will be provided with the list empanelled agencies and vice- versa.
- 2.3 The Agency selected by the beneficiary should conduct the site visit and submit the feasibility report/ project proposal to ANERT in the format prescribed by ANERT.

- 2.4 On receiving the feasibility report/ project proposal, sanction will be accorded for installation of power plant. A registration number will be allotted to the beneficiary on sanctioning the project.
- 2.5 The validity of registration Number will be intimated to the beneficiary and this will be published in ANERT website.
- 2.6 Beneficiary share shall be collected by the empanelled agency as per mutually agreed terms and condition. The payment shall be in the mode of account payee cheque/ DD in favour of the empanelled agency. No other mode of payment in favour of dealer or any other name is allowed.
- 2.7 Within the validity of registration number the installation of plant has to be completed and completion report has to be filed to ANERT for processing subsidy release.
- 2.8 Making available energy meters of required standards through the Distribution Licensee or procurement and testing shall be the responsibility of beneficiary. Agency may co-ordinate the purchase and testing of Energy meters for avoiding time delay in this regard.
- 2.9 In the case of Grid connected system the beneficiary has to obtain scheme approval and energisation approval from Electrical inspector having jurisdiction over the area for commissioning the solar Energy System.
- 2.10 Pre- commissioning testing shall be the responsibility of selected empanelled agency. The installation shall be considered as completed only after testing and commissioning of the system.
- 2.11 The installation will be verified for compliance by ANERT. Electrical inspectorate and Distribution Licensee will provide energisation approval and connectivity . Subsidy due to the beneficiary will be released by ANERT on receiving commissioning report and verification certificate. In the case of Off Grid systems ANERT will be the inspecting authority. ANERT shall complete the inspection and release of subsidy within a period of one months from the date of submission of commissioning report with all necessary documents to the concerned ANERT District office. Subsidy normally due to the beneficiary will be released to the Empanelled Agency that installed the system, based on the authorisation letter from the beneficiary. The beneficiary share of the cost of the system (over and above the subsidy) will be directly paid by the beneficiary to the Empanelled Agency.

3.Scope of Work

- 3.1 On empanelment, the Empanelled Agency has to provide wide publicity and awareness to the public throughout Kerala regarding the programme.

- 3.2 The agency has to submit the application for target allocation for the first term of empanelment. (Each term is of duration of six months).on evaluation of the performance of each term only, the allocation of next term will be sanctioned.
- 3.3 On receiving enquiry from beneficiary, the Empanelled Agency has to visit the site and do a feasibility assessment. The beneficiary has to obtain the clearance for connectivity from the Distribution Licensee. Feasibility report and approval for connectivity has to be submitted to ANERT for getting approval for installation.
- 3.4 The installation of plant has to be completed and commissioning report has to be submitted within six month after getting the registration number.
- 3.5 Providing Energy meters for recording solar energy generated and net metering, testing /calibration of meters are not coming under the scope of EoI. This has to be co-ordinated by agency with the beneficiary and Distribution Licensee. However pre commissioning testing comes under the scope of EoI and it has to be done by the empanelled agency
- 3.6 The specifications and conditions of installation /warranty has to be complied with.
- 3.7 Agency should have at least one service centres for two adjacent districts of Kerala. A service agreement in the given format along with copy of MoU / Agreement with the service centres has to be submitted. Failure to fulfil this will make them ineligible from getting included in the list of Empanelled Agencies.
- 3.8 Any complaint or service call from the beneficiary has to be attended within 48 hours and problems has to be rectified within 7 days.

4.Role of ANERT

- 4.1 Empanelment of agencies for Solar off Grid and Grid Connected Rooftop Programme in Kerala.
- 4.2 Listing of components to be used for installation, based on the Technical compliance and service facility.
- 4.3 Listing of agencies with price for the programme as per requirement.
- 4.4 Registration of beneficiary for allotment of central and state financial assistance
- 4.5 Monitoring the performance of agencies.
- 4.6 Co-ordinating with Agency and Distribution Licensee, Electrical inspectorate and Beneficiary for smooth and speedy implementation of the programme.
- 4.7 Monitoring, inspection/ verification of the system installed
- 4.8 Co-ordinating with MNRE and State government for the implementation of the programme.
- 4.9 Release of central and state financial assistance and incentives.

I.D – Bidding Procedure

5. Bid document

- 5.1 Bid documents can be downloaded from the website of ANERT (www.anert.gov.in). The bid document is in 3 parts, and has to be submitted in 3 separate envelopes as specified herein. .

6. Pre-Bid Meeting

- 6.1 A pre-bid meeting will be organised at **11 am on 23rd September 2016 at Seminar hall at ANERT Headquarters**. The pre-bid meeting can be attended by all channel partners of MNRE for Solar Rooftop Power plant programme. The agencies debarred from ANERT programme or restricted to participate in this EoI based on the poor performance of any of the programme implemented by ANERT/Agencies black listed by MNRE are not eligible for participation. Maximum of two representatives from an eligible agency could attend the meeting with authorisation on the firm's official letterhead along with proof for being approved Channel Partner of MNRE for Solar photovoltaic programme with valid accreditation. The request for participation has to be received at least by previous day (22nd September 2016) by email to rooftopsolar@anert.in . The EoI documents will be finalised by including the modification decided if any after pre-bid meeting. Addendum will be published if required.
- 6.2 Queries for the pre-bid meeting should be submitted by email to ANERT at the address rooftopsolar@anert.in at least by 22nd September 2016 in the format enclosed as Annexure I-F. The clarifications and decisions regarding the pre-bid queries would be published on ANERT website latest by 24th September 2016, and will become an addendum to this document.

7. Bid submission

- 7.1 Bids shall be submitted in three envelopes named:
- i) Envelope A - Pre-qualification
 - ii) Envelope B - Technical Bid
Envelope B may consists of
 - a. Envelope-B1 – Technical bid for Grid Connected Rooftop Solar Power Plant Programme.
 - b. Envelope-B2 – Technical bid for Off Grid Rooftop Solar Power Plant Programme.
 - iii) Envelope C- Financial offer

Envelope –C may contain,

- a. Envelope-C1 -Financial offer for Grid Connected Rooftop Solar Power Plant Programme implemented by ANERT
- b. Envelope-C2 -Financial offer for Off Grid Rooftop Solar Power Plant Programme implemented by ANERT

- 7.2 If the bid does not contain the offer in 2 separate sealed envelopes Envelope - A, Envelope-B , the bid will be summarily rejected. In the case of agencies participating in ANERT programmes has to submit Envelope-3
- 7.3 Wherever necessary, the formats given may be prepared in separate sheets and attached with the submission. These attachments should be clearly indicated (with flags) in the main document (downloaded form).
- 7.4 Envelope –A (Pre-qualification), Envelope-B (Technical bid) , Envelope-C (Financial Offer) should be submitted separately in respective covers , serially numbered and tagged or filed as a bundle with Index and flagged in order.

8.Pre-qualification Criteria

- 8.1 For participating in Solar Off Grid Programme the agency should be an approved channel partner of MNRE for Off Grid Solar Photovoltaic applications with valid accreditation as on date of submission of EoI – *Attested copy certificate has to be submitted*
- 8.2 For participating in Solar Grid connected Programme the agency should be an approved Channel Partner of MNRE for Grid connected Solar Photovoltaic applications with valid accreditation as on last date of submission of this EoI -*Attested copy of Certificate from MNRE has to be submitted. In the case of Channel partner (New Entrepreneur) category the bidder has to submit the audited statement of accounts for Last three years. The agencies not having 3 years standing will not be eligible for empanelment.*
- 8.3 *Agencies having chanel partnership under the category “Government agencies” need not submit Certificate of credit rating for qualifying for the EoI.*
- 8.4 The Agency should have a **valid CST/VAT/TIN registration certificate in Kerala** - *Attested Copy has to be enclosed.*

- 8.5 Power of attorney for the authorised signatory to sign the tender document and future documentation during implementation process has to be submitted. The documents signed by this authority only will be accepted for Expression of Interest and other documents submitted under this project. If the agency desire to change this authority fresh Power attorney has to be submitted. The scanned copy signature of authorised signing authority will be published in ANERT website for the reference of the beneficiaries.
- 8.6 Registration certificate of the firm which is issued by registrar of companies or other competent authority under which firm is registered has to be submitted. The details of the bidder should match with registration certificate. *Copy this certificate has to be submitted*
- 8.7 The Agency should submit the application fee of Rs.50000/- (Rupees Fifty Thousand only) as DD in favour of Director ANERT payable at Thiruvananthapuram.
- 8.8 The experience and financial criteria for each group (Capacity wise) are listed below for Grid connected and Off Grid programmes.
- 8.9 Only offers that meet the above criteria shall be considered for technical evaluation.

9. Experience and Financial Criteria

Grid Connected Solar Rooftop Power Plant Programme

Sl.No	Capacity of the System	Experience in Solar grid connected and off grid projects	Crediting rating of the agency issued by an approved agency	Availability of service facility	For Channel Partner(New entrepreneur)	Category
1	Up to 5kW	Total 5 kW out of which at least one plant should be 2 kW Grid connected or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	Must have audited statement of accounts for last three years	E
2	Up to 10kW	Total 10 kW out of which at least one plant should be 5 kW Grid connected or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	Must have audited statement of accounts for last three years	D
3	Up to 25kW	Total 25 kW out of which at least one plant should be 10 kW grid	3C and above and all Govt. agencies	Should have at least one service	Must have audited statement of accounts for	C

Sl.No	Capacity of the System	Experience in Solar grid connected and off grid projects	Crediting rating of the agency issued by an approved agency	Availability of service facility	For Channel Partner(New entrepreneur)	Category
		connected or above	empanelled for the programme	centres for two districts	last three years	
4	Up to 100 kW	Total 100 kW out of which at least one plant should be 20 kW grid connected or above or above	2C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	Must have audited statement of accounts for last three years	B
5	Up to 500kW	Total 500 kW out of which at least one plant should be 100 kW grid connected or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	Must have audited statement of accounts for last three years	A

Table 9-1

Off Grid Solar Rooftop Power Plant Programme

Sl.No	Capacity of the System	Experience in off grid and Grid connected projects	Crediting rating of the agency issued by an approved agency	Availability of service facility	Category
1	Up to 5kW	Total 5 kW out of which at least one plant should be 2 kW off grid or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	E
2	Up to 10kW	Total 10 kW out of which at least one plant should be 5 kW off grid or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	D
3	Up to 25kW	Total 25 kW out of which at least one plant should be 5 kW off grid or above	3C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	C
4	Up to 50 kW	Total 50 kW out of which at least one plant should be 10 kW off grid or above	2C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	B
5	Up to 100kW	Total 100 kW out of which at least one plant should be 20 kW off grid or above	1C and above and all Govt. agencies empanelled for the programme	Should have at least one service centres for two districts	A

Table 9-2

10. Technical Qualification Criteria for Grid Connected Solar Rooftop Programme

- 10.1 The system installed should conform to the minimum technical requirements by MNRE, CEA ,KSERC and ANERT (undertaking by the agency to be submitted as per Annexure II-C.
- 10.2 All the components of the system should comply with the minimum technical requirements of the Grid connected Rooftop solar photovoltaic power plant scheme of MNRE and CEA regulations. Technical compliance certificate/ Test report from the approved laboratory of MNRE, NABL,IEC accredited has to be submitted for the main system components (solar PV module, Power conditioning unit) of all the models and brands proposed. The certificate should be valid as on the date of submission.
- 10.3 The Agency should have completed the installation of at least an aggregated minimum capacity as per the experience criteria (Table 9-1) for each category of empanelment. The list of installed systems should be provided in the enclosed format (Annexure II-A& II B) along with certificate of satisfactory performance issued by the user.

11. Technical Qualification Criteria for Off Grid Solar Power Plant Programme

- 11.1 The system installed should conform to the minimum technical requirements by MNRE and ANERT (undertaking by the agency to be submitted as per Annexure II-C
- 11.2 All the components of the system should comply with the minimum technical requirements of the Off Grid Rooftop Solar Photovoltaic Power Plant programme of MNRE and ANERT. Technical compliance certificate/Test report from the approved laboratory of MNRE/ NABL /IEC accredited Lab has to be submitted for the main system components (solar PV module, Power conditioning unit and battery) of all the models and brands proposed. The certificate should be valid as on the date of submission and as on date of supply of materials to the beneficiary.
- 11.3 The Agency should have completed at least installations of an aggregated minimum capacity as per the experience criteria (Table 9-2) for each category of empanelment. The list of installed systems should be provided in the enclosed format (Annexure II-A & IIB) along with certificate of satisfactory performance issued by the user

12. Financial Criteria

- 12.1 For projects implemented through ANERT, Financial offers has to be submitted by the agency in separate envelop for Off Grid and Grid Connected programmes. If the agency is not interested in programmes implemented by ANERT, there is no need to submit the price offer.

- 12.2 The system installed should be insured against possible damages due to natural calamities, theft, burglary, electrical and mechanical breakdown etc. during the warrantee period and the cost for the same has to be included in the financial bid of the agency. The documentation in this regard has to be done by the agency.
- 12.3 The price quoted by the bidder for each configuration shall be all inclusive of taxes and duties, and shall cover the pre-installation survey report, transportation, handling charges, supply and commissioning of a standard installation, cost of insurance as per clause 12.2. Cabling of 15 meters length for both AC and DC side shall be included in the costing. If the structure requires additional customisation for installation on a roof other than a flat roof, or the cabling exceeds 15 metre each for the DC side (not considering the module interconnection cables) and AC side, up to the existing AC distribution board, the expense may be charged from the beneficiary.
- 12.4 Empanelment of agencies will be made for each configurations separately. For a particular configuration, the agencies who quoted the lowest 20 rates will be shortlisted for empanelment.
- 12.5 The Agencies shortlisted as above, will be given a chance to offer a reduced price to arrive at a single price L1 or a price range L1 to L20, where L20 is the highest qualified price.
- 12.6 For other works executed by ANERT, separate price offers will be invited based on the site specific requirements. The list finalised by this empanelment process based on the technical qualification will be the base list for this process.
- 12.7 The collection of the beneficiary share of the system cost (over and above the subsidy) and the warranty agreement for the system shall be between the beneficiary and the Empanelled Agency that supplied, installed and commissioned the system. ANERT will not be responsible for delays in payment of beneficiary share by the beneficiary.
- 12.8 The Empanelled Agency shall not claim any subsidy/incentive from MNRE/ any other organisation for the projects sanctioned by ANERT. An undertaking to this effect has to be submitted with each completion report/ subsidy claim. ANERT shall submit all the subsidy claim details under this programme to MNRE, and also publish the same on ANERT website.

13. Envelopes and contents

Envelope-A

13.1 Envelop A shall contain.

1. Covering letter for submission as per format (given in page 3) on firm's letterhead- **Flag-1**
2. Application fee of Rs.50000/-(Fifty Thousand only) as DD in favour of Director ANERT payable at Thiruvananthapuram.- **Flag-2**
3. Attested copy of proof of the bidder being approved Channel Partner of MNRE for Grid Connected Solar Photovoltaic applications with valid accreditation **Flag-3**
4. Attested copy of proof of the bidder being approved Channel Partner of MNRE for Off Grid Solar Photovoltaic applications with valid accreditation. **Flag-4**
5. Attested copy of valid CST/VAT/TIN registration certificate for Kerala operations. –**Flag-5**
6. Power of attorney for the authorised signatory to sign the documents.- **Flag-6**
7. Attested copy of registration certificate issued by registrar companies or other competitive authority under which the firm is registered. **Flag-7**
8. Certificate of credit rating issued by an approved agency of MNRE. **Flag-8**
9. Part-I of the document downloaded from website, duly filled, signed and sealed by the bidder on all pages. **Flag-9**
10. Undertaking by the Agency in stamp paper worth Rs.200/- as per Annexure 4 **Flag-10**

If the envelope Part-A does not contain the requisite as above (10 documents) the bid will be summarily rejected. The documents attached should be arranged in the above order with flags to identify the document easily. All the pages should be numbered serially.

Envelope-B

(Envelope Part-II shall contain Two part Envelop-B1 and B2)

13.2 **Envelope-B** shall contain: (Solar grid connected Rooftop Programme)

1. Technical bid submission form (Format II-C) fully filled up. **Flag-1**
2. List of installed systems (Annexure 2 & 3) along with satisfactory working certificate from the customer **Flag- 2**
3. Documentary evidence such as MoU /Agreement with service centres (Annexure-5). **Flag 3**
4. Technical compliance certificates/ Test reports for solar modules proposed. Certificates/test report should be complete and valid **Flag- 4**
5. Technical compliance certificates / Test report for Power conditioning unit. Certificates should be complete and valid as on date of submission. **Flag- 5**
6. Part-II of the downloaded bid document duly filled, signed and sealed by the bidder on all pages. **Flag-6**
7. Addendum to the EoI document, if any, Sealed and signed by the bidder on all pages. **Flag-7**
8. For Channel partners(New entrepreneurs) , Audited statements of accounts for last three years has to be attached as **Flag-8**

9. NB:- Those agencies not interested in participating in ANERT programmes need not submit item 5 & 6

13.3 Envelope-B 2 shall contain(Off Grid Solar Power Plant Programme)

1. Technical bid submission form (Format II-C) fully filled up along with supporting documents as given below: - **Flag-1**
2. List of installed systems (Annexure 2 &3) along with satisfactory working certificate from the customer **Flag- 2**
3. Documentary evidence such as MoU /Agreement with service centres (Annexure-5). **Flag -3**
4. Technical compliance certificates/ Test reports for solar modules proposed. Certificates/test report should be complete and valid **Flag- 4**
5. Technical compliance certificates / Test report for Power conditioning unit (including MPPT if it is a separate unit). Certificates should be complete and valid. **Flag- 5**
6. Technical compliance certificates/ Test reports for Batteries proposed. Certificates/test report **Flag- 6**

NB:- Those agencies not interested in participating in ANERT programmes need not submit item iii , iv & v

Envelope-C

- 1.1 Envelop -C shall contain price offers in separate covers C1 & C2
- C1- Price offer for “Solar Connect” Grid Connected Solar Power Plant Programme (Format- III- A)
- C2- Price offer for “Suryodayam” Off grid Solar Power Plant Programme (Format III-B)

Superscription on envelopes

Envelope -A- Pre-Qualification
Notification No. 129/NSM/SRTP/EA/01
Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of Agency]

To
DIRECTOR, ANERT,
Vikas Bhavan(PO) ,
Thiruvananthapuram
Pin-695 033

Envelope B1- Technical Bid(Grid Connected Rooftop Solar Power Plant Programme)
Notification No. 129/NSM/SRTP/EA/01
Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of bidder]

To
DIRECTOR, ANERT,
Vikas Bhavan (PO) , Thiruvananthapuram
Pin-695 033

Envelope B2- Technical Bid(Off Grid Rooftop Solar Power Plant Programme)

Notification No. 129/NSM/SRTP/EA/01

Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of bidder]

To
**DIRECTOR, ANERT,
Vikas Bhavan(PO) , Thiruvananthapuram
Pin-695 033**

Envelope -C1 -Financial I Bid for Grid Connected Programme

Notification No. 129/NSM/SRTP/EA/01

Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of bidder]

To
**DIRECTOR, ANERT,
Vikas Bhavan(PO) , Thiruvananthapuram
Pin-695 033**

Envelope C2 -Financial I Bid for off Grid Programme

Notification No. 129/NSM/SRTP/EA/01

Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of bidder]

To
**DIRECTOR, ANERT,
Vikas Bhavan(PO) , Thiruvananthapuram
Pin-695 033**

- 13.4 All these three sealed covers shall be put in another cover and sealed, with superscription as follows:

Notification No. 129/NSM/SRTP/EA/01

Dated

Invitation of Expression of Interest for Empanelment of Agencies for Solar Rooftop Programme in Kerala under Distributed Power generation. (Grid connected & Off Grid)*Notification No. 129/NSM/SRTP/EA/01*

From
[name and address of bidder]

To
**DIRECTOR, ANERT,
Vikas Bhavan(PO) ,
Thiruvananthapuram
Pin-695 033**

I.E – Empanelment Procedure

14. Steps of empanelment-General

- 14.1 Expression of interest from pre-qualified agencies (agencies that satisfy prequalification criteria) as decided by ANERT will be invited.
- 14.2 The notification for expression of interest will be made available on ANERT website. Email communications will be forwarded to all empanelled channel partners of MNRE for Grid Connected and Off Grid solar power plants programme. The Email-address available in MNRE list will be utilised for this purpose .Newspaper advertisement will also be given at least in a national daily.
- 14.3 A bank guarantee of Rs.500000/- (Rupees Five lakhs) with five years validity has to be submitted as security deposit. Agency will be eligible for the installation of 100kW aggregated capacity of solar power plants. The agency has to submit bank guarantee of the same amount and validity for further allocation of target. The allocation will be given as multiples of 100kW.
- 14.4 The qualified agencies shall also enter into an agreement (on Kerala Stamp Paper) with ANERT agreeing to implement projects in Kerala including service facility.
- 14.5 For other works executed by ANERT, separate price offers will be invited based on the site specific requirements. The list finalised by this empanelment process based on the technical qualification will be the base list for this process.

15. Steps for empanelment –ANERT programmes

- 15.1 In addition to (14) ,following additional steps are involved in the empanelment of agencies for doing projects initiated by ANERT with Central Financial assistance/ State Financial assistance.
- 15.2 The price offers for the projects has to be submitted by the agencies in the prescribed format.
- 15.3 Lowest quoted 20 numbers (in each category) of agencies will be considered for empanelment initially. The price range will be finalised for the implementation in Kerala. The subsidy will be fixed based on the guidelines of MNRE and it will be updated as and when MNRE is updating the same.

16. General Terms and Conditions

- 16.1 Director, ANERT reserves the right to add, remove, and clarify any of the terms and conditions contained herein.
- 16.2 Any changes/ updates in MNRE guidelines will be binding on all the stakeholders.
- 16.3 All the lists/ announcements including dates related to the empanelment process, will be published on ANERT's website (www.anert.gov.in) and ANERT will not be responsible for delays or non-receipt of individual communications in this regard, if any.

Invitation of Expression of Interest for Empanelment
of Agencies for Solar Rooftop Programme in Kerala
under Distributed Power generation.
(Grid connected & Off Grid)

*Notification No. 129/NSM/SRTP/EA/01
Dated 5th September 2016*

PART-II

Submitted by _____ :
(name and address of bidder)



Agency for Non-conventional Energy & Rural Technology

Vikas Bhavan (PO), Thiruvananthapuram – 695 033, Kerala
Phone: (91-471) 2334122, 2334124, 2331803 (office), 2329854 Fax: (91-471) 2329853

Web: <http://www.anert.gov.in> **email:** director@anert.in

II.A – Technical requirements- Grid Connected Solar Rooftop Power Plants

17. Configuration Proposed

17.1 The capacity of the system is defined as the total capacity of solar modules.

17.2 The configuration proposed to be installed under “Solar Connect” Scheme implemented by ANERT is as given below.

Sl.No	Capacity of the System	Capacity of SPV Module	PCU Same as capacity of the system
1.	2kW	2kWp	Single phase/ 3Phase
2.	3kW	3kWp	Single phase/ 3Phase
3.	5kW	5kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
4.	10kW	10kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
5.	15kW	15kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
6.	20kW	20kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
7.	25kW	25kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
8.	30kW	30kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
9.	40kW	40kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
10.	50kW	50kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
11.	60kW	60kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
12.	70kW	70kWp	Combination of PCU’s can also be used as string inverters. 3 Phase
13.	80kW	80kWp	Combination of PCU’s can also be used as string inverters.3 Phase
14.	90kW	90kWp	Combination of PCU’s can also be used as string inverters.3 Phase
15.	100kW	100kWp	Combination of PCU’s can also be used as string inverters.3 Phase

17.3 The grid connected solar PV power plant comprises of solar PV modules with intelligent online inverter which feeds quality AC power to electrical loads taking energy from PV and feeding the excess generated electricity to the grid of Distribution Licensee through net metering facility. The connectivity should be as per CEA (Technical Standards for connectivity of the distributed generation resources)

Regulations, 2013 and KSERC (Grid Interactive Distributed Solar Energy Systems) CEA Regulations, 2014 and amendments thereof if any.

- 17.4 The plant should be sized based on the availability of shade free area for installing solar module array and the feasibility to connect to the grid by the distribution licensee. Maximum capacity of solar power plant availed by a beneficiary at a single location is 500 kW
- 17.5 The connectivity should be as per (Technical Standards for connectivity of the Distributed generation resources) Regulation, 2013.
- 17.6 KSERC (Grid Interactive Distributed Solar Energy Systems) Regulations, 2014.
- 17.7 CEA Regulation 2010 has to be followed Safety and Electricity Supply.
- 17.8 Metering should be as per CEA regulation 2006.
- 17.9 Any amendments thereof will also be applicable
- 17.10 The system should be connected to the mains -Single phase/ three phase -through a net/export-import meter tested and approved by a lab approved by the Distribution Licensee. Another Energy meter (Tested in approved labs) also has to be installed between the PCU and the point of interconnection , nearer to the net meter to record electricity generated from Solar power plant
- 17.11 Only **indigenous SPV modules** are allowed to be used. Imported modules do not qualify for this programme. The test certificate shall be as per the prevailing format/procedure by MNRE. The PV modules must be tested and approved by an IEC approved test centre or one of the MNRE authorised test centres for IEC/ IS certification. Test certificates can also be from any of the NABL/ BIS accredited Testing / Calibration Laboratories.
- 17.12 I –V curves of STC performance of the module should be submitted along relevant IEC qualifications.
- 17.13 The PV module(s) shall contain crystalline silicon solar cells.
- 17.14 PV modules of capacity 200Wp or higher capacity should be used.
- 17.15 Each PV module used in any solar power project must use a RF identification tag (RFID), which must contain the following information. The RFID should be inside the module laminate.(This is as per MNRE guidelines)
 - 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.

17.16 In addition to the above following details should be provided on the module as visible to the inspecting person.

- a. Name and address of manufacturer
- b. Make, model and Serial No
- c. Rated Power at STC
- d. Vmp, Imp, Voc & Isc

17.17 Display boards has to be placed near the PV array. Design and details to be provided will be provided by ANERT.

17.18 PV modules used in solar power plants/ systems must have a warranty 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.

17.19 The PCU (inverter) shall be a single unit up to the capacity of 5 kW and for capacity higher than 5 kW it can be multiple also. Technical data sheet of the inverter indicating operating modes, protection, efficiency etc. should be provided by the bidder.

17.20 PCU should comply following parameters

Output voltage	3 phase, 415 V AC Up to 5kW, it can also be single phase 230V AC depending on the consumer connection. Maximum allowable variation of voltage is +/- 10% 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 voltage 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

Standard conformation	IEC 61683/IS61683 (Efficiency) IEC 60068-2 (1,2,14,30) (Environment Testing), IEC 62116 (Procedure for Islanding prevention measures for Distribution Licensee connected PV inverter) IEC61727
Total Harmonic Distortion	Less than 5%
Operating temperature	- 5° to 60°C
Housing cabinet	PCU to be housed in suitable switch cabinet, IP 21 (Indoor)/ IP 54 (Outdoor) or IP65
PCU efficiency	95% and above at full load,
Power Control	MPPT
Harmonic current injections	Shall not exceed the limits specified in IEEE 519
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 in to the inverter)
Hysteresis required for re-energizing	Sixty seconds at stabilised condition
Power factor	>0.9
Maximum time for cease to Energise in the case of formation of an unintended Island	2 Seconds

- 17.21 Generation data and other important parameters should be accessible through web-based remote monitoring communication link for 5kW and above.
- 17.22 Full protection against accidental open circuit, reverse polarity and AC /DC bus short circuit shall be provided.
- 17.23 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.
- 17.24 The inverter enclosure shall be weatherproof and capable of surviving climatic changes and should keep the inverter intact under all conditions in the room where it will be housed. The inverter should be either wall/ pad mounted. Moisture condensation and entry of rodents and insects shall be prevented in the inverter enclosure. Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations.
- 17.25 All doors, covers, panels and cable exists shall be provided with gasket or otherwise designated to limit the entry of dust and moisture.

- 17.26 The Junction boxes, enclosures for inverters/ Charge controllers should meet general requirements as per IP 54 /IP 65 (for outdoor) / IP 21 (for indoor) as per IEC 529
- 17.27 Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.
- 17.28 The system should have MOV type of arrestors for higher withstand of continuous PV-DC voltage during earth fault condition. SPD shall have safe disconnection and short circuit interruption arrangements.
- 17.29 Lightning protection should be provided by using metal oxide varistors as per IEC 62305 and suitable grounding such that induced transients find an alternate route to earth.
- 17.30 In built protection for internal faults including excess temperature, commutation failure, and overload and cooling fan failure (if fitted) is obligatory
- 17.31 Fast acting semiconductor type current limiting fuses at the main bus bar to protect from the grid short circuit contribution.
- 17.32 All the Electrical Grounding (earthing) should be as per IS 3043. Copper or GI single conductor has to be used.
- 17.33 A manually operated isolating switch between the distributed generation resource and the electricity system, which shall meet following requirements:
- a) Allow visible verification that separation has been accomplished;
 - b) Include indicators to clearly show open and closed positions;
 - c) Be capable of being reached quickly and conveniently twenty four hours a day by licensee's personnel without requiring clearance from the applicant;
 - d) Be capable of being locked in the open position;
 - e) May not be rated for load break nor may have feature of over-current protection;
 - f) Be located at a height of at least 2.44 m above the ground level
- 17.34 The PCU shall be tested to demonstrate operation of its control system and the ability to be automatically synchronized, operate in parallel with the grid of distribution licensee.
- 17.35 Factory test certificate of PCU shall be made available as a reference for inspection and testing.
- 17.36 DC isolation facility has be provided in PCU or externally.
- 17.37 Switches/ Circuits Breakers/ Connectors should meet general requirements and safety requirements as per compliance required
- 17.38 Cabling practice: Cable connections must be made using PVC insulated copper cables, as per BIS specifications. All cable connections must be made using suitable

terminations for effective contact. Cabling should be as per National Electrical Code and technical compliance required for the programme.

- 17.39 All cables outside of terminal/ panels/ enclosures shall be protected by conduits.
- 17.40 Cables may be run in UV stabilised PVC conduits in GI trays with covers for protection.
- 17.41 Cables shall be provided with dry type compression glands wherever they enter junction boxes, panels, enclosures.
- 17.42 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.
- 17.43 Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent, which provides at least spraying thickness of 70 microns on steel as per IS 5905, if steel frame is used. Any other corrosion resistant material structures with adequate strength can also be used.
- 17.44 Each structure shall have 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 10-15° from the horizontal. If any deviation is required, that has to be conveyed with the beneficiary and the generation loss that may occur may be made aware to the beneficiary and an undertaking from beneficiary may be submitted in this regard along with the project proposal / feasibility report.
- 17.45 Each panel frame structure shall be so fabricated as to be fixed on the rooftop column/ wall structures. The structure should be capable of withstanding a wind load of 150-160 km/hr after grouting & installation. The lower end of the solar array must be minimum 30 cm above the rooftop. Grouting material for SPV structures shall be as per M15 (1:2:4) concrete specification.
- 17.46 The structures shall be designed for simple mechanical and electrical installation.
- 17.47 The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop column properly.
- 17.48 5 years warranty for the entire system should be provided by the supplier as per the conditions of the contract.
- 17.49 Copy of warrantee certificate from manufacturer of module and PCU has to be given to the beneficiary as an attachment to the warrantee certificate of the empanelled agency
- 17.50 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.

- 17.51 All the electrical installation shall be certified by a competent licensee of the Electrical Inspectorate. Scheme approval and energisation approval has to be obtained from the authority designated for the same.
- 17.52 The supplier shall agree to provide installation details of the PV modules and the support structures with appropriate diagrams and drawings.
- 17.53 Feasibility report on grid connectivity has to be obtained by the beneficiary from electrical distribution licensee for getting final approval for installation of Solar Power plant.
- 17.54 The eligible consumer shall obtain necessary sanction for installation and commissioning the solar energy system from Electrical Inspector having jurisdiction over the area, in accordance with provisions of the Central Electrical Authority (Technical standards for connectivity of distributed Generation) Regulations, 2013 and produce the sanction to Distribution Licensee.
- 17.55 The distribution Licensee shall test the solar energy system in accordance with the provisions of Central Electrical Authority (Technical Standards for Connectivity of Distributed Generation Resources) Regulation.2013, within fifteen days from the date of submission of approval of Electrical Inspector.
- 17.56 One copy each of the approved drawing and diagrams showing important equipment, protection and control features shall be signed by the applicant and the licensee and shall be in possession of the applicant and licensee. One copy of this has to be submitted along with commissioning report to ANERT.
- 17.57 These drawing and diagrams shall be amended as and when any changes are made in the distributed generation resource or interconnection facility.
- 17.58 The applicant shall provide reasonable access and other required facilities to the appropriate licensee for inspection of the equipment.
- 17.59 The energy meter for recording Solar electricity generated and the two way meter for net metering has to be got tested from the authorised meter testing facility of the Distribution Licensee before installation.
- 17.60 Necessary formalities like submitting application for the clearance from the Distribution Licensee and providing connectivity has to be done by the beneficiary. Charges for this services if any, has to be remitted by the beneficiary.
- 17.61 An Operation, Instruction and Maintenance Manual, in English and Malayalam, should be provided with the system.
- 17.62 The following minimum details must be provided in the manual:
- a. How to use
 - b. DO's and DON'T's
 - c. Regular maintenance and troubleshooting of solar power plant
 - d. Name , address, Phone number and E-mail ID of the contact person & service facility

17.63 Minimum Technical requirements summary

S/N	System Component	Capacity/ rating	Minimum Technical Compliance
1.	Solar panel	As per the rating system selected	IEC 61215 / IS14286; IEC 61730 Part 1 & II; IEC 61701
2.	Power conditioning Unit	As per the rating system selected	IEC 61683 / IS 61683 (Efficiency 95% and above) / IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Std. IEC 62116 –for islanding prevention Compliance to CEA (Distributed generation) regulation, 2013, IEC 61727 for utility interface
3.	Cables	For 15m wiring length AC & DC SIDE	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/ 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)	Module array and the PCU	As per IS 3043

Table- 2.2

II.B – Technical requirements- Off Grid Solar Rooftop Power Plants

18. Configurations Proposed

- 18.1 The capacity of the system is defined as the total capacity of solar modules.
- 18.2 The battery capacity Should be of minimum @7.2VAH/ Wp otherwise it will be considered as without battery
- 18.3 The configuration proposed to be installed under “Suryodayam” off grid power plant programme (1kW, 2kW,3kW,5kW) implemented by ANERT.

No	Capacity of the System	Capacity of SPV Module	Capacity of PCU (In KVA)	Battery Bank Option-1	Battery Bank Option-2
1	1kW	1000 Wp	1	7200 Whr	4800Whr
2	2kW	2000Wp	2	14400Whr	9600Whr
3	3kW	3000 Wp	3	21600Whr	14400Whr
4	5kW	5000Wp	5	36000Whr	24000Whr

19. Technical specification

SPECIFICATION AND CERTIFICATION REQUIREMENTS OF STAND ALONE SOLAR PV POWER PLANTS

- 19.1 The standalone solar PV power plant system comprises of solar PV modules with, Battery bank, intelligent online inverter which feeds uninterrupted quality AC power to electrical loads taking energy from PV or battery bank as the case may be. Batteries will be charged from solar energy by charge controller integrated in the inverter or by an external charge controller.
- 19.2 The system should be connected to the load through a change-over switch manual/ automatic. The change-over switch shall be provided to connect the load to the grid (wherever available), in case the battery is deep discharged.
- 19.3 Only indigenous modules are allowed to be used. Imported modules do not qualify for this programme. The PV modules must be tested and approved by one of the MNRE authorised/IEC/NABL test centres for IEC/ IS certification.
- 19.4 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.

- 19.5 Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent, which provides at least spraying thickness of 70 microns on steel as per IS 5905, if steel frame is used. Any other corrosion resistant material structures with adequate strength can also be used.
- 19.6 Each structure shall have 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 10-15° from the horizontal. If any deviation is required, that has to be brought to the notice of the beneficiary and the generation loss that may occur may be made aware to the beneficiary and an undertaking from beneficiary may be submitted in this regard along with the project proposal / feasibility report.
- 19.7 Each panel frame structure shall be so fabricated as to be fixed on the rooftop column/ wall structures. The structure should be capable of withstanding a wind load of 150-160 km/hr after grouting & installation. The lower end of the solar array must be minimum 30 cm above the rooftop. Grouting material for SPV structures shall be as per M15 (1:2:4) concrete specification.
- 19.8 The structures shall be designed for simple mechanical and electrical installation.
- 19.9 The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop column properly.
- 19.10 Battery bank comprising of batteries conforming to IEC 61427 and applicable BIS specification and meeting the following specification should be supplied, installed, and commissioned. Flooded type lead acid tubular battery/ VRLA/ Gel battery can be used. For getting CFA as per the guidelines of Solar Off-Grid Programme the Battery bank should be @7.2VAh/Wp. Otherwise it will be treated as Solar power plant without battery and the eligible subsidy will be made available.
- 19.11 Suitable ceramic vent plugs with float level indicators shall be provided with the batteries. It has to be installed on a suitable stand duly painted with acid resistant paint.
- 19.12 Power Conditioning Unit (PCU) shall comprise of charge controller and MPPT unit with power optimiser, inverter, voltage stabilizer, and distribution panel along with necessary displays, indicators and alarms. Power conditioning unit should meet relevant standards proposed by MNRE
- a. Output voltage - As per grid standard
 - b. Frequency 50Hz
 - c. THD < 5%
 - d. Efficiency 85% and above at full load
- 19.13 A Factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested .

- 19.14 Factory testing of the Inverter/ Inverters may be carried out. Beneficiary/ ANERT representative may be allowed to witness it at the manufacturer's premises, if so required.
- 19.15 All the electrical installation shall be certified by a competent licensee of the Electrical Inspectorate and approval has to be obtained from the authority designated for the same.
- 19.16 The supplier shall agree to provide installation details of the PV modules and the support structures with appropriate diagrams and drawings.
- 19.17 Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.
- 19.18 In-built protection for internal faults including excess temperature, over load is obligatory.
- 19.19 Over Voltage Protection against atmospheric lightning discharge to the PV array, voltage fluctuations in the load circuit, internal faults in the power conditioning unit, operational errors and switching transients should be provided.
- 19.20 Cable connections must be made using PVC insulated copper cables, as per BIS specifications. All cable connections must be made using suitable terminations for effective contact.
- Cables used should meet necessary compliance proposed by MNRE.
 - All cables to be supplied should have proper current carrying capacity.
 - All cables shall be adequately supported.
 - Outside of terminal/ panels/ enclosures shall be protected by conduits.
 - Cables shall be provided with dry type compression glands wherever they enter junction boxes, panels, enclosures.
 - Cable Marking: All cable/wires are to be marked with proper manner by good quality ferule or by other means so that the cable can be easily identified.
- 19.21 DC combiner box to receive the DC output from the array field with meters (Voltage & Current) shall be provided. Suitable capacity MCBs shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors.
- 19.22 AC Distribution Board (ACDB) shall control the AC power from inverter and should have necessary surge arrestors, meters, change over etc .
- 19.23 Two years warranty for the entire system and Three years CMC (comprehensive Maintenance Contract) should be provided by the supplier for the system installed as per the conditions of the contract.
- 19.24 The Warranty Card to be supplied with the system must contain the details of the system supplied, clauses of warrantee and CMC entered with beneficiary.

- 19.25 If the supplier/agency is not the manufacturer, copy of the warrantee card from the manufacturer also has to be provided along with warrantee card of the integrator.
- 19.26 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.
- 19.27 An Operation, Instruction and Maintenance Manual, in English and Malayalam, should be provided with the system.
- 19.28 The following minimum details must be provided in the manual:
- a. How to use
 - b. DO's and DON'T's
 - c. Regular maintenance and troubleshooting of solar power plant
 - d. Name , address, Phone number and E-mail ID of the contact person & service facility

19.29 Minimum Technical requirements

System Component	Capacity	Minimum Technical Compliance
Solar panel	1000 W _p	IEC 61215 / IS14286, IEC 61730 Part 1 & II IEC 61701
Battery	7200Whr ± 4%,	IS1651/IS13369 /IEC 61427/IS15549
Power conditioning Unit	1kW	IEC 61683 / IS 61683 IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Std Efficiency 85% and above at full load THD <5%
Cables		IEC 60227 / IS 694 IEC 60502 / IS 1554 (Pt. I & II)
Switches/ Circuit Breakers/ Connectors		IEC 60947 part I,II, III / IS 60947 Part I,II,III EN 50521
Junction Boxes /Enclosures for Inverters/ Charge Controllers		IP 54 (for outdoor) or IP 65 / IP 21(for indoor) as per IEC 529

II.C- Technical bid Submission form Grid Connected Solar Rooftop Power Plant Programme

(to be submitted by all agencies)

1.	Name of the bidder as in registration certificate (Copy of registration certificate to be enclosed)		Page no. in the offer document														
2.	Address in full		Page no. in the offer document														
3.	Contact Details	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 15%;">Mobile</td><td></td></tr> <tr><td>Land Phone</td><td></td></tr> <tr><td>Fax No</td><td></td></tr> <tr><td>Email</td><td></td></tr> </table>	Mobile		Land Phone		Fax No		Email								
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Fax No																	
Email																	
4.	Bank account details of the Bidder	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 15%;">Account No</td><td></td></tr> <tr><td>Name of account holder</td><td></td></tr> <tr><td>Bank</td><td></td></tr> <tr><td>Branch Name</td><td></td></tr> <tr><td>Address of the bank</td><td></td></tr> <tr><td>IFS code</td><td></td></tr> </table>	Account No		Name of account holder		Bank		Branch Name		Address of the bank		IFS code				
Account No																	
Name of account holder																	
Bank																	
Branch Name																	
Address of the bank																	
IFS code																	
5.	Name of the authorised signatory (Power of attorney to be enclosed)		Page no. in the offer document														
6.	Designation of the authorised signatory																
7.	Service centres in Kerala there should be at least one service centre for two districts. (Undertaking in stamp paper worth Rs.200/- has to be submitted)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 15%;">Kasaragod , Kannur</td><td></td></tr> <tr><td>Wayanad, Kozhikode</td><td></td></tr> <tr><td>Malappuram,Pal akkad</td><td></td></tr> <tr><td>Thrissur, Ernakulam</td><td></td></tr> <tr><td>Kottayam, Idukki</td><td></td></tr> <tr><td>Alappuzha, Pathanamthitta</td><td></td></tr> <tr><td>Trivandrum, Kollam</td><td></td></tr> </table>	Kasaragod , Kannur		Wayanad, Kozhikode		Malappuram,Pal akkad		Thrissur, Ernakulam		Kottayam, Idukki		Alappuzha, Pathanamthitta		Trivandrum, Kollam		Page no. in the offer document
Kasaragod , Kannur																	
Wayanad, Kozhikode																	
Malappuram,Pal akkad																	
Thrissur, Ernakulam																	
Kottayam, Idukki																	
Alappuzha, Pathanamthitta																	
Trivandrum, Kollam																	

II.D Details of System Components for Grid Connected to be submitted by agencies participating in “Solar Connect” Programme implemented by ANERT

8.1	Solar Module					
			IEC61215/IS 14286	IEC61730	IEC61701	
8.1.1	<u>Option-1</u>	1. Make				Page no. in the offer document
		2. Model No				
		3. Wattage				
		4. Test Certificate No.				
		5. Name of testing agency				
		6. Validity Up To				
			IEC61215/IS 14286	IEC61730	IEC61701	
8.1.2	<u>Option-2</u>	1. Make				Page no. in the offer document
		2. Model No				
		3. Wattage				
		4. Test Certificate No.				
		5. Name of testing agency				
		6. Validity Up To				
			IEC61215/ IS14286	IEC61730	IEC61701	
8.1.3	<u>Option-3</u>	1. Make				Page no. in the offer document
		2. Model No				
		3. Wattage				
		4. Test Certificate No.				
		5. Name of testing agency				
		6. Validity Up To				
8.2	Power Conditioning Unit					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
8.2.1.1	<u>Option -1</u>	1. Make				Page no. in the offer document
		2. Model No				
		3. Capacity				
		4. Test Certificate No.				
		5. Name of testing agency				
		6. Validity Up To				
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
8.2.1.2	<u>Option -2</u>	1. Make				Page no. in the offer document
		2. Model No				
		3. Capacity				
		4. Test Certificate No.				
		5. Name of testing agency				
		6. Validity Up To				
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
8.2.2.1		1. Make				Page no. in the offer

	<u>Option -3</u>	2.Model No					document
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.2.2	<u>Option -4</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.3.1	<u>Option -5</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.3.2	<u>Option -6</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					

I have read the technical requirements, warranty conditions and the details furnished above are true and correct and complete to my knowledge and belief. All the details furnished are supported by documentary evidence.

Date

Signature of the authorised signatory

Name

Designation

(Office Seal)

NOTE: If any more makes and models of system components are proposed, extra pages may be used.

II.E – Technical bid Submission form Off Grid Solar Rooftop Power Plant Programme

to be submitted by all agencies

1.	Name of the bidder as in registration certificate (Copy of registration certificate to be enclosed)		Page no. in the offer document
2.	Address in full		Page no. in the offer document
3.	Contact Details	Mobile	
		Land Phone	
		Fax No	
		Email	
4.	Bank account details of the Bidder	Account No	
		Name of account holder	
		Bank	
		Branch Name	
		Address of the bank	
		IFS code	
5.	Name of the authorised signatory (Power of attorney to be enclosed)		Page no. in the offer document
6.	Designation of the authorised signatory		
7.	Service centres in Kerala there should be at least one service centre for two districts wise (Undertaking in stamp paper worth Rs.200/- has to be submitted)	Kasaragod , Kannur	Page no. in the offer document
		Wayanad, Kozhikode	
		Malappuram, Palakkad	
		Thrissur, Ernakulam	
		Kottayam, Idukki	
		Alappuzha, Pathanamthitta	
		Trivandrum, Kollam	

II.F Details of System Components

(to be submitted by agencies participating in “Suryodayam” , ANERT programme)

8.1	Solar Module		IEC61215 /IS14286	IEC61730	IEC61701	
8.1.1	<u>Option-1</u>	1. Make				Page no. in the offer document
		2.Model No				
		3.Wattage				
		4.Test Certificate No.				
		5.Name of testing agency				
		6.Validity Up To				
			IEC61215 /IS14286	IEC61730	IEC61701	
8.1.2	<u>Option-2</u>	1. Make				Page no. in the offer document
		2.Model No				
		3.Wattage				
		4.Test Certificate No.				
		5.Name of testing agency				
		6.Validity Up To				
			IEC61215 / IS14286	IEC61730	IEC61701	
8.1.3	<u>Option-3</u>	1. Make				Page no. in the offer document
		2.Model No				
		3.Wattage				
		4.Test Certificate No.				
		5.Name of testing agency				
		6.Validity Up To				
8.2	Power Conditioning Unit		IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
8.2.1.1	<u>Option -1</u>	1. Make				Page no. in the offer document
		2.Model No				
		3.Capacity				
		4.Test Certificate No.				
		5.Name of testing agency				
		6.Validity Up To				
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
8.2.1.2	<u>Option -2</u>	1. Make				Page no. in the offer document
		2.Model No				
		3.Capacity				
		4.Test Certificate No.				
		5.Name of testing agency				
		6.Validity Up To				
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727

8.2.2.1	<u>Option -3</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.2.2	<u>Option -4</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.3.1	<u>Option -5</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.3.2	<u>Option -6</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.2.2	<u>Option -7</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.2.2	<u>Option -8</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
				IEC/IS 61683	IEC 60068	IEC62116	
8.2.2.2	<u>Option -9</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		6.Validity Up To					

		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.2.2	<u>Option -10</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.2.2	<u>Option -11</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727	
8.2.2.2	<u>Option -12</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
	Battery		IS 1651/IS13369/IEC 61427/IS15549				
8.2.2.2	<u>Option -1</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IS 1651/IS13369/IEC 61427/IS15549				
8.2.3.1	<u>Option -2</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IS 1651/IS13369/IEC 61427/IS15549				
8.2.3.2	<u>Option -3</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
			IS 1651/IS13369/IEC 61427/IS15549				

8.2.2.2	<u>Option -4</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					
		IS 1651/IS13369/IEC 61427/IS15549					
8.2.2.2	<u>Option -5</u>	1. Make					Page no. in the offer document
		2.Model No					
		3.Capacity					
		4.Test Certificate No.					
		5.Name of testing agency					
		6.Validity Up To					

I have read the technical requirements, warranty conditions and the details furnished above are true and correct and complete to my knowledge and belief. All the details furnished are supported by documentary evidence.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

NOTE: If any more makes and models of system components are proposed, extra pages may be used.

Annexure I- For submitting pre-bid queries

S/N	Reference clause no. in document	Clause	Query
1.			
2.			

Date

Signature of the authorised signatory

Name

Designation

(Office Seal)

Annexure 2- Details of installed grid connected systems

Sl. No.	Capacity of the system installed	Address in Full	Mobile/ Land Phone No.	Email ID	Date of Installation	Name of Electrical utility

It is certified that the details furnished above are true and correct to my knowledge and belief and all the systems are installed by our agency.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

Annexure 3–Details of installed Off grid systems

Sl. No.	Address in Full	Mobile/ Land Phone No.	Email ID	Date of Installation	Capacity of the system installed
				Total	

It is certified that the details furnished above are true and correct to my knowledge and belief and all the systems are installed by our agency.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

Annexure 4 –Undertaking by the agency

(In stamp paper worth Rs. 200/- (Rupees Two hundred only)

I (Name, Designation) authorised signatory of
..... (Name and full
address of the MNRE channel partner/Public sector undertaking) hereby undertake that

1. The system installed in Kerala under Distributed Solar Rooftop Grid connected Electricity generation Programme shall be as per technical specification stipulated by ANERT/ MNRE . The wiring and installation shall be done as per the recommended installation practices and using components as per the prescribed Technical Specifications.
2. Grid connected Solar Power Plant supplied and installed should be given warranty for 5 years.
3. Off Grid Solar Power plant supplied and installed should be given 2 years warranty and 3 years CMC
4. Solar modules will have a performance warranty of 90% of rated output at the end of 10 years and 80% of the rated output at the end of 25 years.
5. Necessary clearance from Distribution Licensee will be obtained and submitted to ANERT in association with beneficiary for getting final approval for installing the power plant.
6. At least one service centre will be maintainer for two districts. List of service centres provided are true and correct.
7. **No alteration in the downloaded document is made. If any alterations are detected at any stage, my offer is liable to be rejected.**
8. No subsidy other than from ANERT would be claimed for the systems installed under this Programme.
9. Beneficiary contribution will be collected after deducting eligible subsidy from the cost arrived for system installation.
10. Making available of energy meters, testing will be co-ordinated as an empanelled agency for the programme.
11. Pre-commissioning testing and establishing connectivity will be our responsibility.
12. All the above terms and conditions are acceptable to me/us.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

Annexure 5–Details of Service centres

Sl. No.	District	Address of Service Centre	Own/ others	If other-mode of appointment	Contact person	Contact No./ Email ID	Copy of agreement/MOU Enclosed/Not enclosed

It is certified that the details furnished above are true and correct to my knowledge and belief and all the systems are installed by our agency.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

Invitation of Expression of Interest for Empanelment of
Agencies for Solar Rooftop Programme in Kerala
under Distributed Power generation.
(Grid connected & Off Grid)

*Notification No. 129/NSM/SRTP/EA/01
Dated 5th September 2016*

PART-III

Submitted by (name and address of bidder)	:
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Agency for Non-conventional Energy & Rural Technology

TC No. 14/649, Opp. Thycaud House, Thycaud. PO, Thiruvananthapuram – 695 014, Kerala

Phone: (91-471) 2334122, 2334124, 2331803(office), 2329854 Fax: (91-471)2329853

Web: <http://www.anert.gov.in> email: director@anert.in

III.A –Financial Bid for Grid Connected Solar Rooftop Power Plants

1. Name of the Agency :

2. Address in Full

Sl.No	Capacity of the System	Price/ Unit all-inclusive in Rupees	Price/ Unit all inclusive(In Words)
1.	2kW		
2.	3kW		
3.	5kW		
4.	10kW		
5.	15kW		
6.	20kW		
7.	25kW		
8.	30kW		
9.	40kW		
10.	50kW		
11.	60kW		
12.	70kW		
13.	80kW		
14.	90kW		
15.	100kW		

Declaration

1. The price quoted by the bidder for each configuration shall be all inclusive of taxes and duties, and shall cover the pre-installation survey report, transportation, handling charges, supply and commissioning of a standard installation and cost of insurance.
2. The price quoted also includes the cost of meeting warranty requirements as per the warranty conditions of this project
3. The price quoted is applicable for any location in all fourteen districts of Kerala.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)

III.B – Financial Bid for Off Grid Solar Rooftop Power Plants

1. Name of the Agency :

2. Address in Full

No	Capacity of the System	Battery Bank Option-1	Price/ Unit all-inclusive in Rupees	Price/ Unit all inclusive(In Words	Battery Bank Option-2	Price/ Unit all-inclusive in Rupees	Price/ Unit all inclusive(In Words
1	1kW	7200 Whr			4800Whr		
2	2kW	14400Whr			9600Whr		
3	3kW	21600Whr			14400Whr		
4	5kW	36000Whr			24000Whr		

Declaration

1. The price quoted by the bidder for each configuration shall be all inclusive of taxes and duties, and shall cover the pre-installation survey report, transportation, handling charges, supply, commissioning of a standard installation and insurance charges .
2. The price quoted also includes the cost of meeting warranty requirements as per the warranty conditions of this project
3. The price quoted is applicable for any location in all fourteen districts of Kerala.

Date

Signature of the authorised signatory
Name
Designation

(Office Seal)