

Invitation of Expression of Interest for Empanelment of Agencies for Supply /installation of Solar Powered Devices (below 1KW) in Kerala under Distributed Power Generation. (Off Grid)

EMPANELMENT DOCUMENT

Notification No. ANERT-Tech/85/2017-TO(MJ)

Dated 26th August 2017

PART-I



Agency for Non-conventional Energy & Rural Technology

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I.A – Notice

Notification No. ANERT-Tech/85/2017-TO(MJ) **Dated 26th August 2017**

As per Circular No.DA1/244/2017-LSGD dated 2.6.2017, Local self Government Department, Government of Kerala, has given guidelines for the implementation of solar projects and also informed that quotation/ Tender for Solar projects should be invited from the empanelment list of ANERT. Based on this, ANERT has decided to prepare the list of empanelled agencies for implementation of solar devices below 1 kW SPV capacity. Hence Expression of Interest in accordance with the attached Pre-qualification criteria, Technical specifications and financial terms and conditions are invited from reputed and experienced channel partners of MNRE, Govt of India, with valid accreditation as on date of submission of offers. Reputed public sector undertakings listed by MNRE as channel partners, and state government Agencies are also eligible to apply for empanelment.

If required number of agencies could not be listed during initial process of empanelment, the applications received on or before 25th of every month will be processed, provisional list will be published by 25th of Next month and after completing the necessary formalities of empanelment the qualified agency will be listed in Empanelled list published by ANERT.

The EoI includes three types of products.

1. Solar Lanterns
2. Solar Home lighting Systems
3. Solar Street lights.

The offers have to be submitted based on the qualification criteria and as per the bid submission guidelines. This list will be valid for all Solar Energy programmes implemented in Kerala with Central or State financial assistance in Kerala with support of ANERT.

Price offers have to be submitted for the Solar lantern, Solar Home Lighting System and Solar Street Lights systems proposed to be implemented by ANERT. The guidelines and documents for Expression of Interest can be downloaded from the website (www.anert.gov.in) of ANERT.

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under

The application should be received on or before 12 noon, 25th of every month 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. The submission will be evaluated and qualified bidders shall be included in the empanel list till the registration of 10 nos agencies for a particular model per district. 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
26.08.2017

Director

I.B – Abstract

Notification No.	Notification No. ANERT-Tech/85/2017-TO(MJ) Dated 26th August 2017
Superscription	Invitation of Expression of Interest for Empanelment of Agencies for supply/installation of solar powered Devices (below 1KW) in Kerala under Distributed Power generation (Off Grid)
Date of release of Invitation	26 th August 2017
Date of submission EOI by the agencies	12:00 noon, 25 th of Every Month starting from 25 th Sep 2017 to 25 th Jan 2018.
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

Director

26th August 2017

I.C –Implementation plan

1. General

- 1.1 This Expression of Interest is being invited for preparing the list of Empanelled Agencies for installation of Solar devices(Below 1kW) in Kerala. Only the agencies listed through this process will be eligible for the implementation of projects with LSGD, State and Central Financial Assistance/ fund. The validity of the list will be two years. The list of Empanelled Agencies prepared through this process will be published for the information of proponents for installation of Solar devices(Below 1kW). The status of empanelment of any agencies in this list shall be terminated without notice, in case of their nonexistence/removal from the channel partner list of MNRE or other violations.
- 1.2 The Beneficiary /Government/any other proponent shall have the freedom to select an agency of their choice from the list of Empanelled Agencies published by ANERT through this process, for installation of the solar powered devices. This list will be the base list for the implementation of Solar powered devices in Kerala. However, for government funded programmes, necessary formalities based on store purchase rules / any other relevant guidelines in force may also be observed.
- 1.3 The installation of solar devices should be as per the technical compliance and installation practices of MNRE and ANERT. Any amendments/ modification issued from time to time, in this regard will be incorporated.
- 1.4 The Central & State Financial Assistance will be as per the guidelines of MNRE & ANERT respectively and its amendments from time to time.

2. ANERT and LSGD programmes

- 2.1 ANERT and LSGD Programmes shall include supply and installation of solar devices for any interested LSGD institutions within the State, who invite quotation/ Tender for such supply and the proposed locations found suitable for the same. These supply/installations could be with or without Government Subsidy.
- 2.2 Price offers are invited for various solar products along with this EoI so as to enable time-bound supply and installations. The Agencies technically qualified for empanelment would be short - listed based on the price offered for supply of such products.

- 2.3 Deposit works entrusted to ANERT by various institutions / firms for the Supply/ installation of Solar lantern, Solar LED street lights and Solar Home lighting systems would be another category of ANERT programmes during this period. The Agencies empanelled in this process only would be eligible for undertaking such works also and price offers will be collected based on site conditions separately (if required).

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 All the Solar devices should have 5 year warranty including battery.
- 3.3 Agency should have at least one service centre for two adjacent districts of Kerala (even though a service centre in every district would be appreciated). A service agreement in the given format along with copy of MoU / Agreement with the service centres has to be submitted along with EoI. Failure to fulfil this will make them ineligible from getting included in the list of Empanelled Agencies.
- 3.4 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 the supply and installation of solar powered Devices
- 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 solar devices as per requirement.
- 4.4 Monitoring the performance of agencies based on supply, installation and maintenance.
- 4.5 Co-ordinating with Agency and LSGD institutions for smooth and speedy implementation of the programme.

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. Bid submission

- 6.1 Bids shall be submitted in three envelopes named:
- i) Envelope A - Pre-qualification
 - ii) Envelope B - Technical Bid
Envelope B may consists of
Technical bid for Empanelment for Solar devices
 - iii) Envelope C- Financial offer
Envelope –C may contain,
Financial offer for Empanelment for Solar devices
- 6.2 If the bid does not contain the offer in 3 separate sealed envelopes Envelope - A, Envelope-B and Envelop C , the bid will be summarily rejected.
- 6.3 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).
- 6.4 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, as detailed in next section.

7.Envelopes and contents

7.1 Envelope-A

Envelop A shall contain.

1. Covering letter for submission as per format (given in page 18) on firm's letterhead- **Flag-1**
2. Application fee of Rs.50000/-(Rupees 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 Off Grid Solar Photovoltaic applications with valid accreditation. **Flag-3**
4. Attested copy of valid GST registration certificate. -**Flag-4**
5. Power of attorney for the authorized signatory to sign the documents.- **Flag-5**
6. Attested copy of registration certificate issued by registrar of companies or other competitive authority under which the firm is registered. **Flag-6**
7. Part-I of the document downloaded from website, duly filled, signed and sealed by the bidder on all pages. **Flag-7**
8. Undertaking by the Agency in stamp paper worth Rs.200/- as per Annexure I-B **Flag-8**
9. List of installed systems (Annexure I-C, I-D and I-E) along with certificate regarding satisfactory working from the customer **Flag- 9**
10. Documentary evidence such as MoU /Agreement with service centre (Annexure- I-F). **Flag 10**
- 11.Addendum to the EoI document, if any, Sealed and signed by the bidder on all pages. **Flag-11**
- 12.For Channel partners(New entrepreneurs) , Audited statements of accounts for last Two years has to be attached as **Flag-12**

The documents attached should be arranged in the above order with flags to identify the document easily. All the pages should be numbered serially.

7.2 Envelope-B

Envelope-B shall contain:

1. Technical bid submission form (Format II-A) fully filled up. **Flag-1**
2. Technical compliance certificates/ Test reports for solar Lanterns (as per ANNEXURE II-B). Certificates/test report should be complete and valid as on date of submission **Flag- 2**

3. Technical compliance certificates / Test report for Solar Home lighting Systems (as per ANNEXURE II-B). Certificates should be complete and valid as on date of submission. **Flag- 3**
4. Technical compliance certificates / Test report for Solar Street lighting Systems (as per ANNEXURE II-B). Certificates should be complete and valid as on date of submission. **Flag- 4**
5. Part-II of the downloaded bid document duly filled, signed and sealed by the bidder on all pages. **Flag-5**

7.3 Envelope-C

Envelop -C shall contain price offers in separate covers C1, C2 & C3

C1- Price offer for Solar Lantern Programme (Format- III- A)

C2- Price offer for Solar Home lighting system Programme (Format III-B)

C3- Price offer for Solar Street lighting Programme (Format III-C)

Superscription on envelopes

<u>Envelope -A- Pre-Qualification</u>	
<i>Notification No.. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017</i>	
Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Solar powered devices Programme in Kerala under Distributed Power generation. (Off Grid) <i>Notification No. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017</i>	
From	
[name and address of Agency]	To DIRECTOR, ANERT, Vikas Bhavan(PO) , Thiruvananthapuram Pin- 695 033

<u>Envelope B- Technical Bid(Solar powered Devices(Off grid) Programme)</u>	
<i>Notification No. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017</i>	
Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under Distributed Power generation. (Off Grid) <i>Notification No. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017</i>	
From	
[name and address of bidder]	To DIRECTOR, ANERT, Vikas Bhavan (PO) , Thiruvananthapuram Pin-695 033

Envelope -C1-Financial Bid for Solar Lantern

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From

[name and address of bidder]

To

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

Envelope C2 -Financial I Bid for Solar Home lighting system

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From

[name and address of bidder]

To

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

Envelope C3 -Financial I Bid for Solar Street lighting system

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Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under Distributed Power generation. (Off Grid)*Notification No. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017*

From

[name and address of bidder]

To

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

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

Notification No. ANERT-Tech/85/2017 -TO(MJ) Dated 26th Aug 2017

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From

[name and address of bidder]

To

**DIRECTOR, ANERT,
VikasBhavan(PO) ,
Thiruvananthapuram
Pin-695 033**

I.E – Empanelment Procedure

8 . Steps of empanelment-General

- 8.1 Expression of interest from pre-qualified agencies (agencies that satisfy prequalification criteria) as decided by ANERT will be invited.
- 8.2 The notification for expression of interest will be made available on ANERT and MNRE website(if allowed) .
- 8.3 The offers received up to 12 pm on 25th of every month will be considered for empanelment.
- 8.4 The qualified agencies shall also enter into an agreement (on Kerala Stamp Paper) with ANERT agreeing to implement projects in Kerala including service facility.
- 8.5 For Deposit works executed by ANERT, separate price offers may be invited based on the site specific requirements. The list finalized by this empanelment process based on the technical qualification will be the base list for this process.

9 . Steps for empanelment –ANERT/LSGD programmes

- 9.1 In addition to (8 above), following additional steps are involved in the empanelment of agencies for undertaking projects initiated by ANERT/LSGD with Central Financial assistance/ State Financial assistance.
- 9.2 The price offers for the projects has to be submitted by the agencies in the prescribed format.
- 9.3 For the LSGD/Other Govt. dept. works separate price bid may have to be submitted.

The price offers to be submitted in Govt depts. and other institutions should not exceed the approved price of ANERT
- 9.4 Empanelled agencies shall be provided with a capacity allocation for each term of the empanelment period (Each term is of duration of 6 months). Once the list of agencies are published by ANERT, each of the agencies has to submit an application for target allocation for the first term of empanelment. The capacity allocation for any agency for the subsequent term shall be based on evaluation of their performance in the previous term.

The bench mark price for a configuration is listed below.

Solar Lantern

Module Capacity (w)	bench mark cost(Rs)
12	3500

Solar Home Lighting System

Model	Module Capacity	Benchmark cost(Rs)
100 W DC Solar system	100 W	20,000
300 W AC Solar system	300 W	60,000
500 W AC Solar system	500 W	70,000

The cost of wiring other than 15m, cost customisation of structure other than on a flat roof etc. are used, may be collected additionally, if required after convincing the beneficiary.

Solar Street light

Model	Module Capacity	Benchmark cost(Rs)
Solar Street light	75 W	35,625
Solar Street light	150 W	71,250
Solar Street light	200 W	95,000
Solar mini high mast	600 W	2,85,000

10. General Terms and Conditions

10.1 Director, ANERT reserves the right to add, remove, and clarify any of the terms and conditions contained herein.

10.2 Any changes/ updates in MNRE guidelines will be binding on all the stakeholders.

10.3 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.

10.4 The Registration of Empanelled Agencies for the installation of NRSE devices all over Kerala shall be invited by ANERT and a list of qualified firms will be published, and will be intimated to Local self Government institutions along with the approved price list.

10.5 The Empanelment is mainly based on District wise/ state wise. Agency should have at least 1 service centre for 2 adjacent districts in Kerala (eventhough a service centre in every District would be appreciated) .Name, Address and contact No. of District wise service Technician / Engineer is required for empanelment in the concerned District.

10.6 The beneficiary / Govt dept. shall have the freedom to select an Agency of their choice from the list provided from ANERT for installation of the NRSE devices.

10.7 Each Agency should quote their minimum allowable rate of each products for each system per district or state wide Including transportation, installation and taxes. The rate quoted should not exceed benchmark cost. Lowest quoted 10 agencies only will be considered for empanelment for the particular model of device. The maximum allowed rate will be L1 rate plus 15% or benchmark cost whichever is lower. Lowest quoted 9 agencies can give a chance to reduce the rate to L1 rate or up to L1 rate plus 15 %as per their interest. If required number of agencies could not be listed during initial process of empanelment, the applications received on or before 25th of every month will be processed and provisional list will be published by 25th of Next month and after completing the necessary formalities of empanelment the qualified agency will be listed in Empanelled list published by ANERT.

10.8 All the Empanelled Agencies should submit the details of installation in the prescribed format to concerned District ANERT office and ANERT HQ before 5th of every month. Renewal of Empanelment registration for every 2 year should be done based on this report.

I F- Eligibility Criteria

11. Pre-qualification Criteria

- 11.1 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 and certificate has to be submitted.*
- 11.2 *Agencies having channel partnership under the category “Government agencies” need not submit Certificate of credit rating for qualifying for the EoI. State Government Agencies may submit the declaration.*
- 11.3 The Agency should have a **valid GST registration certificate in Kerala** -*Attested Copy has to be enclosed.*
- 11.4 Power of attorney for the signatory authorised to sign the tender document and future documentation during implementation process has to be submitted along with the EoI. 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 of 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.
- 11.5 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 of this certificate has to be submitted.*
- 11.6 The Agency should submit the application fee of Rs.50000/- (Rupees Fifty Thousand only) (Non refundable) as DD in favour of Director ANERT payable at Thiruvananthapuram.
- 11.7 The experience and financial criteria for each programme are listed below for the empanelment of solar devices.

11.8 Only offers that meet the above criteria shall be considered for technical evaluation.

12.Experience Criteria

Table 12-1: Solar Lanterns

Sl. No	Capacity of the Solar Module	Experience in Solar Lanterns	Details of Agencies
1	3- 15 W	Bidder must have supplied at least 500 Nos as on date of submission of documents. Copy of work order and Bills/ Certification from the purchaser regarding the execution of order should be submitted as a proof of executing the supply. 50% of the total quantity should be supplied to government department/agencies.	All Channel Partners including new entrepreneurs and all Govt. agencies empanelled for the programme

Table 12-2: Solar Home lighting system

Sl.No	Capacity of the Solar module	Experience in Solar Home system	Details of Agencies
1	40W- 1KW	Bidder must have supplied/ installed at least 100 Nos as on date of submission of documents. Copy of work order and Bills/ Certification from the purchaser regarding the execution of order should be submitted as a proof of executing the supply and installation. 50% of the total quantity should be supplied to government department/agencies.	All Channel Partners including new entrepreneurs and all Govt. agencies empanelled for the programme

Table12-3: Solar street lights

Sl.No	Capacity of the Solar module	Experience in Solar LED street lights	Details of Agencies
1	30W- 600W	Bidder must have supplied and installed at least 100 Nos as on date of submission of documents. Copy of work order and Bills/ Certification from the purchaser regarding the execution of order should be submitted as a proof of executing the supply. 50% of the total quantity should be supplied to government department/agencies.	All Channel Partners including new entrepreneurs and all Govt. agencies empanelled for the programme

13.Financial Criteria

- 13.1 The system installed should be insured against possible damages due to natural calamities, theft, burglary, electrical and mechanical breakdown etc. during the warranty 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.
- 13.2 The price quoted by the bidder for each configuration shall be all inclusive of taxes (GST) 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 14.2. In the case of Solar Home lighting system, Cabling of 15meters length for both AC and DC side shall be included in the costing. If the structure requires additional customization for installation on a roof other than a flat roof, or the cabling exceeds 15 meter each for the DC side (not considering the module interconnection cables) and AC side, up to the existing AC distribution board etc. the expense may be charged from the beneficiary.
- 13.3 Empanelment of agencies will be made for each SPV Devices separately. For a particular Solar device, **the agencies who quoted less than or equal to bench mark cost will be considered.**
- 13.4 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.
- 13.5 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.
- 13.6 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.

ANNEXURE I A - 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

Name

Date:

Designation

(Office Seal)

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

Annexure I B – 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 solar devices supplied/installed in various Govt. departments in Kerala 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. All the Solar Devices supplied and installed should be given warranty for 5 years.
3. 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. The rate quoted for solar home lighting system and solar street lights include transportation and installation.
6. At least one service centre will be maintained 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. All the components of Solar devices supplied should be approved by ANERT.
9. The rate of Solar devices quoted in LSG institutions, Government departments and other beneficiaries will not exceed the approved rate of ANERT.
10. All the above terms and conditions are acceptable to me/us.

Date

Signature of the authorised signatory

Name

Designation

(Office Seal)

Annexure I -C - Details of Solar lanterns Supplied

Sl. No.	Capacity of lantern	Address in Full	Mobile/ Land Phone No.	Email ID	Total No of systems supplied	Name of Beneficiary

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 I- D –Details of HLS Systems installed

Sl. No.	Address in Full	Mobile/ Phone No.	Land	Email ID	Nos. of systems supplied/ installed	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 I-E –Details of Solar LED Street light installed

Sl. No.	Address in Full	Mobile/ Phone No.	Land	Email ID	Nos. of systems installed	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 I F – 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 supply/installation of solar powered Devices (below 1kW) in Kerala under Distributed Power generation. (Off Grid)

Notification No. *ANERT-Tech/85/2017 -TO(MJ)*
Dated 26th Aug 2017

PART-II



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 Specification of Devices

14. Technical Qualification Criteria

- 14.1 The system installed should conform to the minimum technical requirements by ANERT (undertaking by the agency to be submitted as per Annexure I-B.)
- 14.2 All the components of the system should comply with the minimum technical requirements of the ANERT. Technical compliance certificate/ Test report from the approved laboratory of MNRE, NABL, IEC accredited has to be submitted for the complete system including module & battery of all the models and brands proposed. The certificate should be valid as on the date of submission.
- 14.3 The Agency should have completed the installation of at least an aggregated minimum capacity as per the experience criteria (Table 12-1, 2, 3) for each category of empanelment. The list of installed systems should be provided in the enclosed format (Annexure I-C, I-D, I-E) along with certificate of satisfactory performance issued by the user.

15. Technical specifications of solar lantern

A Solar Lantern is a portable lighting device consisting of a PV module, battery, lamp, and electronics. Battery, lamp, optics and electronics should be enclosed in a suitable housing, made of metal or plastic or fiber glass. The Solar lantern is suitable for either indoor or outdoor lighting, covering a full range of 360 degrees.

PV module converts sun light into electricity, charges the battery which powers the luminaire. Luminaire consists of White Light Emitting Diode (W-LED), a solid state device which emits light when an electric current passes through it.

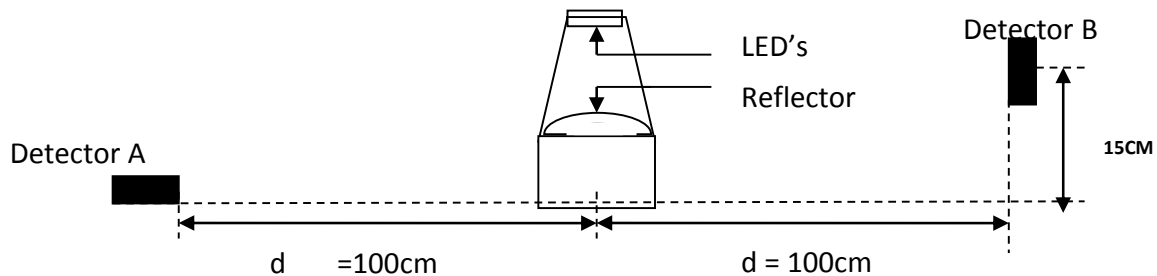
15.1 BROAD PERFORMANCE SPECIFICATIONS

The broad performance specifications of a W-LED light source based solar lantern system are given below:

PV Module	12Wp under STC
Battery	75 Wh(+ 20 % permissible),Lithium Ferro Phosphate battery
LED	150 Lumen/watt W-LED's (as per LM- 80 certificate) luminaire, top mounted facing down, dispersed beam, soothing to eyes without dark patches with the use of proper dome shaped reflector. Maximum power consumption of luminaire should be 5 watts(Including driver). Minimum power consumption of the LED's should be 4 watts.(+25% permissible)
Light Output	Minimum level of illuminance from W-LED lantern should be as follows

S No.	Horizontal distance (d) of detector from centre of light source (cm)	Illumination level when detector [A] is placed horizontally on the same plane as lantern base.(Lux)	Illumination level when detector [B] is placed vertically at a height of 15cm from plane of lantern base (Lux)
1	100	10	35

Test certificate regarding light output from MNRE approved or NABL accredited test centres should be submitted with tender.



Note : The shape/ design of Lantern is indicative only.

Electronics Efficiency approximately 85%

Duty cycle 4 hours a day under average daily insolation of 5.5 kWh/ sq.m. on a horizontal surface.

15.2 TECHNICAL DETAILS

PV MODULE

- (i) Indigenously manufactured PV modules should be used in the solar lantern.
- (ii) **The PV module should have crystalline silicon solar cells, and should have a test certificate conforming to IEC 61215 Edition II / BIS 14286** from an NABL or IECQ accredited Laboratory. In case the certificate for the offered module is not available, a test certificate for higher capacity module of same make and series produced by the same PV module manufacturer should be available. Test certificate should be submitted with tender.
- (iii) The PV module must have a minimum of 12 Wp at a load voltage* of 16.40 ± 0.2 V under the standard test conditions (STC) of measurement.
- (iv) The open circuit voltage* of the PV modules under STC should be at least 21.0 Volts.
- (v) **The module efficiency should not be less than 10%.**
- (vi) The terminal box on the module should have a provision of opening it for replacing the cable, if required.
- (vii) There should preferably be an arrangement (stand) for mounting the module at an optimum angle in the direction facing the sun.
- (viii) A foil/ strip containing the following details should be fixed inside the module so as to be clearly visible from the front side:-
 - a) Name of the Manufacturer and/ or distinctive Logo
 - b) Model and/ or Type No.
 - c) Serial No.
 - d) Year of manufacture

- (ix) The cable connecting module to the lantern should be good quality 2 core, 1 sq. mm double sheathed copper cable suitable for outdoor use and having a length of minimum 8 meters.

**The load and open circuit voltage conditions of the PV module are not applicable for the system having MPPT.*

BATTERY

- (i) 75 Wh(+ 20 % permissible),Lithium Ferro Phosphate battery **(IEC 62133 test certificate should be submitted with the document)**

LIGHT SOURCE

- i. The light source will be of White Light Emitting Diode (W-LED) type, minimum Luminous efficacy 150 Lumen/watt.
- ii. The colour temperature of W-LED(s) used in the system should be in the range of 5000°K –6500°K.
- iii. W-LED(s) should not emit ultraviolet light.
- iv. The light output from the W - LED should be constant throughout the duty cycle.
- v. **LM 80 test certificate of the LED should be submitted with the document.**

ELECTRONICS

- (i) Efficiency of the electronic system should be at least 85%.
- (ii) Electronics should have temperature compensation for proper charging of the battery throughout the year.
- (iii) The PCB containing the electronics should be capable of solder free installation and replacement.
- (iv) Necessary switches suitable for DC use and other protections should be provided.
- (v) **A cable of dual sheathed 2 core copper cable of each cable 1 sq.mm at least 10 meters in length should be provided for inter-connection between the module and the lantern.**

ELECTRONIC PROTECTIONS

- (i) Adequate protection is to be incorporated for “No Load” condition, e.g. when the lamp is removed and the lantern is switched ON.
- (ii) The system should have protection against battery overcharge and deep discharge conditions.
- (iii) The load reconnect should be provided at around 80% of the battery capacity status.
- (iv) Adequate protection should be provided against battery reverse polarity.
- (v) A fuse should be provided to protect against short circuit conditions.
- (vi) Protection for reverse flow of current through the PV module should be provided.
- (vii) During the charging, lamp cannot be Switched “ON”.

INDICATORS

The system should have two indicators, green and red.

The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.

Red indicator should indicate the battery "Load Cut Off" condition

15.3 QUALITY AND WARRANTY

- (i) The complete Solar Lantern with W-LED including battery will be warranted for five years
- (ii) Performance warranty of modules: PV modules should be warranted for their output peak capacity which should not be less than 90% at the end of 10 years.
- (iii) The Warrantee/ Guarantee Card to be supplied with the Solar Lantern must contain the details of the system supplied.

15.4 OTHER FEATURES

- i An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Lantern. The following minimum details must be provided in the Manual:
 - a. Basic principles of Photovoltaics.
 - b. A small write-up (with a block diagram) on Solar Lanterns - its components, PV module, battery, electronics and luminaire and expected performance.
 - c. Significance of indicators.
 - d. Type, Model number, Voltage, capacity of the battery, used in the system.
 - e. The make, model number, country of origin and technical characteristics(including IESNA LM-80 report) of W -LEDs used in the lighting system.
 - f. Clear instructions on mounting, operation, regular maintenance and trouble shooting of the Solar Lantern.
 - g. Instructions on replacement of battery.
 - h. DO's and DONT's.
 - i. Name and address of the contact person for repair and maintenance during the warranty.

16. Technical specification for Solar Home lighting system

16.1 100W DC Solar System Model .1

Solar Module 100W

Battery Flooded Tubular Lead acid- 900Wh at C/10

Solar Charge Controller 12V, 10A

Luminary 3W LED 3Nos and 6W LED 2 Nos

DC Table Fan 20W DC

Test certificate should be submitted for the following model as per Technical Specification for Solar Photo Voltaic Lighting System and Power Packs (MNRE Off-Grid Solar Applications Schemes 2016-17) MNRE Model: Solar Power Pack 100Wp - Solar based Home System(Solar Power Packs) DC model

The installation of DC system includes fixing of Solar module in module mounting frame on roof top, wiring of charge controller and battery, Casing- capping or PVC conduit wiring of LED bulbs in 3 Rooms

16.2 300W AC Solar System Model .2

Solar Module 300Wp

Battery Flooded Tubular Lead acid- 2880 Wh at C/10

Solar Charge Controller 24V,15A or 12V,30A

Power Conditioning unit/Solar Inverter 24V/12V, 300VA-1KVA, 300VA(min), Pure Sine wave, THD <5%

Test certificate should be submitted for the following model as per Technical Specification for Solar Photo Voltaic Lighting System and Power Packs(MNRE Off-Grid Solar Applications Schemes 2016-17) MNRE Model:Solar Power Pack 300WP Solar based Home System(Solar Power Packs)AC model

16.3 500W AC Solar System Model .3

Solar Module 500Wp

Battery Flooded Tubular Lead acid- 3600Wh at C/10

Power Conditioning unit/Solar Inverter 48V/24V/12V, 500VA- 1 KVA, 500VA(min),
Pure Sine wave, THD <5%

16.4 SPECIFICATION AND CERTIFICATION REQUIREMENTS FOR 300 W & 500W AC SOLAR SYSTEM

The 300 W/ 500W AC solar system comprises of solar PV modules with, Battery bank, intelligent 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.

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.

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.

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.

Structural material shall be corrosion resistant and electrolytic ally 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.

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.

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.

The structures shall be designed for simple mechanical and electrical installation.

The array structure shall support SPV modules at a given orientation and absorb and transfer the mechanical loads to the rooftop column properly.

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.

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.

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

A Factory Test Report (FTR) shall be supplied with the unit after all tests. The FTR shall include detailed description of all parameters tested .

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.

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.

The supplier shall agree to provide installation details of the PV modules and the support structures with appropriate diagrams and drawings.

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.

In-built protection for internal faults including excess temperature, over load is obligatory.

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.

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.

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.

AC Distribution Board (ACDB) shall control the AC power from inverter and should have necessary surge arrestors, meters, change over etc .

Five years warranty for the entire system should be provided by the supplier for the system installed as per the conditions of the contract.

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.

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.

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.

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

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

Minimum Technical requirements

Table 2.4

System Component	Capacity	Capacity	Minimum Technical Compliance
Solar panel	500 W _p	300W _p	IEC 61215 / IS14286, IEC 61730 Part 1 & II IEC 61701
Battery	3600Whr	2880Whr	IS1651/IS13369 /IEC 61427/IS15549
Power conditioning Unit	500 VA – 1kVA (min 500 VA)	300VA-1KVA(min 300VA)	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

The system installed should conform to the minimum technical requirements by ANERT (undertaking by the agency to be submitted as per Annexure I-B.

All the components of the system should comply with the minimum technical requirements of the ANERT. 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 and Battery) of all the models and brands proposed. The certificate should be valid as on the date of submission.

The Agency should have completed the installation of at least an aggregated minimum capacity as per the experience criteria (Table 12-1, 2, 3) for each programme of empanelment. The list of installed systems should be provided in the enclosed format (Annexure I-C, I-D, I-E) along with certificate of satisfactory performance issued by the user.

17. Technical specification for Solar street lights

17.1 Solar Street light Model 1

Solar Module	75 Wp
Battery(Lithium Ferro Phosphate)	250 Wh (+20% permissible)
Luminary	8 W (+25% permissible)
Pole (GI pole with Rubber coated paint)	Height -4m, Dia -3"

17.2 Solar Street light Model 2

Solar Module	150 Wp
Battery(Lithium Ferro Phosphate)	768 Wh (+20% permissible)
Luminary	20 W (+25% permissible)
Pole (GI pole with Rubber coated paint)	Height -4m, Dia -4"

17.3 Solar Street light Model 3

Solar Module	200Wp
Battery(Lithium Ferro Phosphate)	1152 Wh (+20% permissible)
Luminary	36W (+25% permissible)
Pole (GI pole with Rubber coated paint)	Height -5m, Dia -4"

17.4 Solar Mini Mast light Model 4

Solar Module	600Wp
Battery(Lithium Ferro Phosphate)	3072Wh (+20% permissible)
Luminary	24W ,4 sets (+25% permissible)
Pole (GI pole with Rubber coated paint)	Height -6m, Octagonal

17.5. BROAD PERFORMANCE PARAMETERS

White Light Emitting Diode (W-LED) is a solid state device which emits light when forward electric current passes through it. A LED based solar street lighting system consists of a PV Module, control electronics, battery, and W-LED based Luminaire, all suitably mounted on a Pole. The battery is charged by electricity generated through the PV module during day time and the luminaire provides light from dusk to dawn.

LED	White Light Emitting Diode (W-LED)(SMD LED) with minimum luminous efficacy 150 lumen/watt
Luminaire	Minimum luminaire efficacy should be 100 lumen/watt
Colour Temperature	White colour (colour temperature 5000°-6500°K), the illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred. Uniformity should be greater than 30%.
Lux level for model 1	Minimum 4 lux within a rectangle when measured at a distance of 6 m from the pole along the road (on either side of the road) and 4m from the pole across the road.
Lux level for model 2	Minimum 6 lux within a rectangle when measured at a distance of 6 m from the pole along the road (on either side of the road) and 4m from the pole across the road.
Lux level for model 3	Minimum 8 lux within a rectangle when measured at a distance of 6 m from the pole along the road (on either side of the road) and 4m from the pole across the road.
Lux level for model 4	Minimum 7 lux within a rectangle when measured at a distance of 6 m from the pole along the road (on either side of the road) and 4m from the pole across the road.
Electronics Efficiency	Min 85% total.
Duty cycle	Dusk to dawn.
Make of LED	NICHIA/ CREE/ OSRAM/ PHILIPS or equivalent
Charge Controller	MPPT.

DUTY CYCLE

The W-LED solar street lighting system should be designed to operate from dusk to dawn, under average daily insolation of 5.5 kWh /sq.m. on a horizontal surface.

LUMINARY

The light source will be a white LED type. Single lamp or multiple lamps can be used. The colour temperature of white LED used in the system should be in the range of 5000°K–6500°K. Use of LEDs which emits ultraviolet light is not permitted.

The light output from the white LED light source should be constant throughout the duty cycle.

The lamps should be housed in an assembly suitable for outdoor use. The temperature of heat sink should not increase more than 20°C above ambient temperature even after 48 hrs of continuous operation. This condition should be complied for the dusk to dawn operation of the lamp while battery operating at any voltage between the load disconnect and the charge regulation set point.

The make, model number, country of origin and technical characteristics (**including LM-80,LM-79 report**) of white LEDs/LED Luminary used in the lighting system must be furnished

The enclosure of luminary should be with **IP65** protection.

BATTERY

Lithium ferro Phosphate Battery.

Battery should conform to the latest BIS/International standards (IEC 62133).

- Battery should have minimum 5 year warranty.
- The battery should be fixed at the bottom side of the Solar module/top of the pole in a battery box with IP65 protection.

PV MODULE

- The PV module(s) shall contain mono/ multi crystalline silicon cells. In case of crystalline silicon solar cell module it is required to have certificate for the supplied PV module as per IEC 61215,IEC 61730 and IEC 61701 specifications.
- The power output of the PV module must be reported under standard test conditions (STC) at 16.4 volt loading voltage. I-V curve of the sample module should be submitted.
- The open circuit voltage of the PV modules under STC should be at least 21.0 volt.
- The terminal box on the module should have a provision for opening for replacing the cable, if required.
- Identification and Traceability

- Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RFID used on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions.)
 - a) Name of the Manufacturer or distinctive Logo
 - b) Model or Type No.
 - c) Serial No.
 - d) Year of make

ELECTRONICS, INCLUDING PROTECTIONS

- The total electronic efficiency should be at least 85%.
- Electronics should operate at 12 V/24V/36V/48V and should have temperature compensation for proper charging of the battery throughout the year.
- The light output should remain constant with variations in the battery voltages.
- The system should have protection against battery overcharge and deep discharge conditions.
- Fuse should be provided to protect against short circuit conditions.
- A blocking diode should be provided as part of the electronics, to prevent reverse flow of current through the PV module(s). In case such a diode is not provided with the PV module, full protection against open circuit, accidental short circuit and reverse polarity should be provided.
- The charge controller should be incorporate with MPPT.
- The gauge of wire size used for internal wiring from Module to Light unit and Light unit to Battery should be 2.5 mm² PVC insulated Cu wire.

MECHANICAL COMPONENTS AND INSTALLATION

Aluminum frame structure, with anodizing to be fixed on the Pole to hold the SPV module. The frame structure should have provision to adjust its angle of inclination to the horizontal between 0 and 45 degrees, so that it can be installed at the specified tilt angle. The Aluminum arm should be for fixing luminary.

It should be possible to mount the light source on a Aluminum arm attached to the pole. The Aluminum arm for holding the light assembly should have suitable length and should be set at a suitable angle to maximize uniform lux of desired level over the specified area.

A vented FRP/ABS/ Aluminium box (IP65 protection) with suitable structure in the bottom side of Module/ top of the pole for housing the storage battery should be provided.

All mechanical metallic parts shall be of aluminium/ stainless steel of suitable thickness to withstand loads including wind loads and should have good aesthetic appearance. All external parts should be Aluminium/Stainless Steel and should be replaced during the warranty period in case of any defects. All nuts and bolts should be used of stainless steel.

The foundation of the pole should be of PCC of required size . The pole with foundation plate of suitable size should be fixed on the PCC foundation using foundation bolts.

The pole should be GI with Rubber coated paint.

The foundation plate should be fixed 150 mm above ground level.

The battery box should be fitted in the bottom side of the Module/ top of the pole

OTHER FEATURES

The system should be provided with two LED indicators: a green light to indicate charging in progress and a red LED to indicate deep discharge condition of the battery. The green LED should glow only when the battery is actually being charged.

There will be a Name Plate(12" X 6") on the Pole(1 m above ground level), which should be displayed following details prominently with total size not less than 12" X 6".

- a) Name of the supplier.
- b) Phone number of service centres.
- c) Date of installation.
- d) Name of Implementing agency.

Necessary lengths of wires / cables and fuse should be provided

Quality stickers with post number will have to be pasted on to the pole .

QUALITY AND WARRANTY

Components and parts used in White LED solar street lighting systems should conform to the latest BIS/ International specifications, wherever such specifications are available and applicable. A copy of the test report/ certificate stating conformity of BIS/ International standards must be submitted.

White LED solar street lighting system including the battery will be warranted for a period of at least 5 years or **3 year warranty+2 year AMC** from the date of commissioning .

The PV module used should be warranted for its output peak watt capacity, which should not be less than 90% at the end of 10 (ten) years and 80% at the end of 25 (twenty five) years.

DOCUMENTATION

An Operation, Instruction and Maintenance Manual, in English and Malayalam, should be provided with the solar street lighting system. Besides other information the Manual should contain the following minimum details:

- a) About Photo Voltaics. A small write up (with a block diagram) on PV Module, electronics, lamps and battery.
- b) About White LED solar street lighting system - its components and expected performance The make, model number, country of origin and technical characteristics of W-LEDs should be stated in the product data sheet
- c) Clear instructions about mounting of Pole, Grouting details, fixing of PV module, battery and luminaire. Clear wiring instructions with line diagram
- d) About significance of indicators
- e) DO's and DONT's
- f) Clear instructions on regular maintenance and trouble shooting of the system
- g) Name and address of the person or service centre to be contacted in case of failure or complaint.

17.6. Special conditions for solar LED Street Lights

- Total system warranty (including luminary and battery) should be 5 years from date of installation.
- Solar module must have IEC 61215, IEC 61730 & IEC 61701 test certificates. Copy of the test certificate should be attached with the tender document (for the quoted model of module).
- Lithium ferro phosphate Battery must have 5 year warranty. Copy of certificate of IEC 62133 should be provided with the tender document.
- Light unit must have LM 80 report for LED and LM 79 report for luminary. Copy of the report should be attached with the tender document.
- White Light Emitting Diode (W-LED)(SMD LED) with minimum 130 lumen/watt. White colour (colour temperature 5000°-6500°K), the illumination should be uniform without dark bands or abrupt variations, and soothing to the eyes. Higher light output will be preferred.

ANNEXURE II.A – Technical bid Submission form for solar powered Devices (below 1kW)

(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: 40%;">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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4.	Bank account details of the Bidder	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="width: 40%;">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 authorized 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: 40%;">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																	

ANNEXURE II.B - Details of System Components for Solar powered devices to be submitted by agencies participating in “Empanelment” Programme implemented by ANERT

18. Solar Lantern

21.1	Solar Module					
			IEC61215/IS 14286	IEC61730	IEC61701	
21.1.1	<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	
21.1.2	<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	
21.2	Solar LED Lantern(Test certificate should be submitted as per ANERT specification)					
			Module	Battery	Luminary	
21.2.1	<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				
			Module	Battery	Luminary	

21.2.2	<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				

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.

19. Solar Home Lighting system

1. 100 W DC Solar System

Solar Home lighting System (Test certificate should be submitted as per MNRE Specification), DC Solar Power pack 100 Wp

22.1.1	Solar Module						
			IEC61215 /IS14286	IEC61730	IEC61701		
22.1.1.1	<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		
22.1.1.2	<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		
22.1.2	Solar Charge Controller						
			IEC/IS 61683	IEC 60068	IEC6211	IEC 61727	
22.1.2.1	<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	IEC6211	IEC 61727	
22.1.2.2	<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					
22.1.3	Luminary			LM 79		LM 80	
22.1.3.1	<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					
				LM 79		LM 80	
22.1.3.2	<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					
22.1.4	Battery			IS 1651/IS13369/IEC 61427/IS15549			
22.1.4.1	<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					
				IS 1651/IS13369/IEC 61427/IS15549			
22.1.4.2	<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					

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.

2. 300 W AC Solar System

Solar Home lighting System (Test certificate should be submitted as per MNRE Specification), AC Solar Power pack 300 Wp

22.2.1	Solar Module						
			IEC61215 /IS14286	IEC61730	IEC61701		
22.2.1.1	<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		
22.2.1.2	<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		
22.2.2	Power Conditioning Unit/Inverter						
			IEC/IS 61683	IEC 60068	IEC6211 6	IEC 61727	
22.2.2.1	<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	IEC6211 6	IEC 61727	

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under

22.2.2.2	<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					

22.2.2.3	<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					
22.2.2.4	<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					
22.2.3	Battery		IS 1651/IS13369/IEC 61427/IS15549				
22.2.3.1	<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					
			IS 1651/IS13369/IEC 61427/IS15549				
22.2.3.2	<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					

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

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Designation

(Office Seal)

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

3. 500 W AC Solar System (Test certificates should be submitted as per ANERT off- grid ,Roof top programme specification)

22.3.1	Solar Module					
			IEC61215 /IS14286	IEC61730	IEC61701	
22.3.1.1	<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	
22.3.1.2	Option-2	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	
22.3.1.3	Option-3	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				
22.3.2	Power Conditioning Unit					
			IEC/IS 61683	IEC 60068	IEC62116	IEC 61727
22.3.2.1	<u>Option -1</u>	1. Make				Page no. in the offer document

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		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	
22.3.2.2	<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	
22.3.2.3		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					

		5.Name of testing agency					
		6.Validity Up To					
22.3.3	Battery		IS 1651/IS13369/IEC 61427/IS15549				
22.3.3.1	<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					
			IS 1651/IS13369/IEC 61427/IS15549				
22.3.3.2	<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					
			IS 1651/IS13369/IEC 61427/IS15549				

22.3.3.3	<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		

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Date

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Name
Designation

(Office Seal)

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

20.Solar LED Street light

1. Solar Street light (model -1)

23.1.1	Solar Module				
			IEC61215/IS 14286	IEC61730	IEC61701
23.1.1.1	<u>Option-1</u>	1. Make			
		2.Model No			
		3.Wattage			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
			IEC61215/IS 14286	IEC61730	IEC61701
23.1.1.2	Option-2	1. Make			
		2.Model No			
		3.Wattage			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
23.1.2	Battery				
			IEC 62133		
23.1.2.1	<u>Option -1</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
			IEC 62133		
23.1.2.2	<u>Option -2</u>	1. Make			
		2.Model No			
		3.Capacity			

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		4.Test Certificate No.		
		5.Name of testing agency		
		6.Validity Up To		
23.1.3	Luminary		LM 79	LM 80
23.1.3.1	<u>Option -1</u>	1. Make		
		2.Model No		
		3.Capacity		
		4.Test Certificate No.		
		5.Name of testing agency		
		6.Validity Up To		
			LM 79	LM 80
23.1.3.2	<u>Option -2</u>	1. Make		
		2.Model No		
		3.Capacity		
		4.Test Certificate No.		
		5.Name of testing agency		
		6.Validity Up To		

2. Solar Street light (Model 2)

23.2.1	Solar Module				
			IEC61215/IS 14286	IEC61730	IEC61701
23.2.1.1	<u>Option-1</u>	1. Make			
		2.Model No			
		3.Wattage			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
			IEC61215/IS 14286	IEC61730	IEC61701
23.2.1.2	<u>Option-2</u>	1. Make			
		2.Model No			

		3.Wattage			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
23.2.2	Battery				
					IEC 62133
23.2.2.1	<u>Option -1</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
					IEC 62133
23.2.2.2	<u>Option -2</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
23.2.3	Luminary			LM 79	LM 80
23.2.3.1	<u>Option -1</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
				LM 79	LM 80
23.2.3.2	<u>Option -2</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			

3. Solar Street light (Model 3)

22.3.1	Solar Module				
			IEC61215/IS 14286	IEC61730	IEC61701
23.3.1.1	<u>Option-1</u>	1. Make			
		2. Model No			
		3. Wattage			
		4. Test Certificate No.			
		5. Name of testing agency			
		6. Validity Up To			
			IEC61215/IS 14286	IEC61730	IEC61701
23.3.1.2	Option-2	1. Make			
		2. Model No			
		3. Wattage			
		4. Test Certificate No.			
		5. Name of testing agency			
		6. Validity Up To			
23.3.2	Battery				
			IEC 62133		
23.3.2.1	<u>Option -1</u>	1. Make			
		2. Model No			
		3. Capacity			
		4. Test Certificate No.			
		5. Name of testing agency			
		6. Validity Up To			
			IEC 62133		
23.3.2.2	<u>Option -2</u>	1. Make			
		2. Model No			
		3. Capacity			
		4. Test Certificate No.			
		5. Name of testing agency			
		6. Validity Up To			

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under

23.3.3 Luminary			LM 79	LM 80
23.3.3.1	<u>Option -1</u>	1. Make		
		2. Model No		
		3. Capacity		
		4. Test Certificate No.		
		5. Name of testing agency		
		6. Validity Up To		
			LM 79	LM 80
23.3.3.2	<u>Option -2</u>	1. Make		
		2. Model No		
		3. Capacity		
		4. Test Certificate No.		
		5. Name of testing agency		
		6. Validity Up To		

4. Solar Street light (Model 4)

23.4.1 Solar Module			IEC61215/IS 14286	IEC61730	IEC61701
23.4.1.1	<u>Option-1</u>	1. Make			
		2. Model No			
		3. Wattage			
		4. Test Certificate No.			
		5. Name of testing agency			
		6. Validity Up To			
			IEC61215/IS 14286	IEC61730	IEC61701
23.4.1.2	Option-2	1. Make			
		2. Model No			
		3. Wattage			
		4. Test Certificate No.			

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under

		5.Name of testing agency			
		6.Validity Up To			
			IEC61215/ IS14286	IEC61730	IEC61701
23.4.1.3	Option-3	1. Make			
		2.Model No			
		3.Wattage			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
23.4.2	Battery				
			IEC 62133		
23.4.2.1	<u>Option -1</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
			IEC 62133		
23.4.2.2	<u>Option -2</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
			IEC 62133		
23.4.2.3	<u>Option -3</u>	1. Make			
		2.Model No			
		3.Capacity			
		4.Test Certificate No.			
		5.Name of testing agency			
		6.Validity Up To			
23.4.3	Luminary		LM 79	LM 80	
23.4.3.1	<u>Option -1</u>	1. Make			
		2.Model No			
		3.Capacity			

		4.Test Certificate No.		
		5.Name of testing agency		
		6.Validity Up To		
			LM 79	LM 80
23.4.3.2	<u>Option -2</u>	1. Make		
		2.Model No		
		3.Capacity		
		4.Test Certificate No.		
		5.Name of testing agency		
		6.Validity Up To		
			LM 79	LM 80
23.4.3.3	<u>Option -3</u>	1. Make		
		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

Invitation of Expression of Interest for Empanelment of Agencies for supply/installation of solar powered Devices (below 1kW) in Kerala under Distributed Power generation. (Off Grid)

PRICE SCHEDULE

Notification No. *ANERT-Tech/85/2017 -TO(MJ)*
Dated 26th Aug 2017

PART-III

Submitted by (name and address of bidder)	:
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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

III-A Price schedule

C1- Price offer for Solar Lantern Programme (Format- III- A)

- 1. Name of the Agency :
- 2. Address in Full :

Solar Lantern

Capacity of the Module	Price/ Unit all-inclusive in Rupees	
	In digits	In Words
12 W		

1.The price quoted by the bidder for solar lantern shall be inclusive of cost of, transportation, handling, and supply of a standard item and cost of insurance, taxes if any and including 5 year warranty etc.

2.The price quoted is applicable for any location in all fourteen districts of Kerala.

In the case of solar AC Systems .The cost of wiring other than 15m, cost customisation of structure other than on a flat roof, may be collected additionally, if required after convincing the beneficiary.

Date

Signature of the authorised signatory

Name

Designation

C2- Price offer for Solar Home lighting system Programme (Format III-B)

1.Name of the Agency :

2.Address in Full :

Solar Home Lighting System

Model	Price/ Unit all-inclusive in Rupees	
	In digits	In Words
100 W DC Solar system		
300 W AC Solar system		
500 W AC Solar system		

1.The price quoted by the bidder for each configuration shall be inclusive of cost of pre-installation survey report, transportation, handling, supply and commissioning of a standard installation and cost of insurance, taxes if any and including 5 year warranty etc.

2.The price quoted is applicable for any location in all fourteen districts of Kerala.

In the case of solar AC Systems .The cost of wiring other than 15m, cost customisation of structure other than on a flat roof, may be collected additionally, if required after convincing the beneficiary.

Date

Signature of the authorised signatory

Name

Designation

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under Distributed Power generation. (Off Grid)Notification No. ANERT-Tech/85/2017 -TO(MJ)

Dated 1st Aug 2017 (Office Seal)

C3- Price offer for Solar Street lighting Programme (Format III-C)

1.Name of the Agency :

2.Address in Full :

Solar Street light

Model	Capacity of Module	Price/ Unit all-inclusive in Rupees	
		In digits	In digits
Model 1	75 W		
Model 2	150 W		
Model 3	200 W		
Model 4 Solar Mini Highmast light	600 W		

1.The price quoted by the bidder for each configuration shall be inclusive of cost of pre-installation survey report, transportation, handling, supply and commissioning of a standard installation and cost of insurance, taxes if any and including 5 year warranty etc.

2.The price quoted is applicable for any location in all fourteen districts of Kerala.

In the case of solar AC Systems .The cost of wiring other than 15m, cost customisation of structure other than on a flat roof, may be collected additionally, if required after convincing the beneficiary.

Date

Signature of the authorised signatory

Name

Designation

Invitation of Expression of Interest for Empanelment of Agencies for addition of empanelled agencies for Solar Powered Devices Programme in Kerala under Distributed Power generation. (Off Grid)Notification No. ANERT-Tech/85/2017 -TO(M)

Dated 1st Aug 2017 (Office Seal)