NOTICE FOR INVITING TENDER

SOLAR PHOTO VOLTAIC POWER PLANT AND WHITE LED BASED SOLAR STREET LIGHTING SYSTEM

For

INSTITUTE FOR DEFENCE STUDIES AND ANALYSES

AT

No.1, DEVELOPMENT ENCLAVE,

RAO TULA RAM MARG,

NEW DELHI-110010

General Information

NOTICE

1. Tenders are invited on behalf of the Director General, IDSA from Authorised channel partners of MNRE for the SOLAR PHOTO VOLTAIC POWER PLANT AND WHITE LED (W-LED) BASED SOLAR STREET LIGHTING SYSTEM for IDSA ,1 Development Enclave , Rao Tula Ram Marg, -New Delhi-110010. **Non MNRE channel partners need not apply .**

1.a Scope of Work.

The scope of work includes, supplying, installing testing & commissioning of the systems as defined in the Tender document.

There are 2 heads in which the submission is to be made

1 Technical Bid
2 Financial Bid

1.b Technical Bid:

Bidder must provide the details of company, work done etc. in the form of documents in prescribed format. This should be in a separate envelope labeled as "Technical Bid- Solar Photo Voltaic power plant and white led based solar street lighting system for IDSA, New Delhi – Name of Bidder"

1.c Financial Bid:

This should be in a separate envelope labeled as "Financial Bid- Solar Photo Voltaic Power plant and white LED based solar street lighting system for IDSA, New Delhi – Name of Bidder". Bidder must provide financial costs which is all inclusive except service tax .

The Technical bids shall be opened and evaluated first. The financial bid of only companies who qualify the technical bid (as assessed by the tender committee) shall be opened in presence of their representative(s)

2. Time:

The time allowed for carrying out the work will be 3 MONTHS from the day after the date of issue of Letter of Intent. The site for the work shall be made available on award of work. Rs 1000/- per day penalty will be imposed on firm after closing date of

completion without any valid reason . Decision of Estate Manager in this regard will be final and binding .

3. Tender document is free of cost and can be downloaded from the website .

4. Tenders, which should always be placed in main sealed envelope, with the name of work – "SOLAR Photo Voltaic power plant and white LED based solar street lighting system FOR IDSA "written on the envelopes, will be received by the IDSA upto 3.00P.M. On or before 19.04.2016 . The main envelop shall have two sealed envelopes inside with labels – "TECHNICAL BID ALONGWITH EMD– NAME OF BIDDER" and "FINANCIAL BID – NAME OF BIDDER".

5.. The tender shall be accompanied *with* earnest money, of Rs 20000/-(Rupees Twenty Thousand only) through Demand draft . from any Nationalized Bank issued in favour of IDSA, payable at New Delhi. The Earnest money deposit of the successful tenderer may be converted into the Security deposit. In respect of the unsuccessful tenderers, the same shall be refunded/ returned after completion of process of award of work or as decided by IDSA

6..The Earnest Money deposit shall be in a separate envelope with the title "Earnest Money Deposit for SOLAR PHOTO VOLTAIC Power Plant and white LED based solar street LIGHTING SYSTEM at IDSA – Name of Bidder". Tenders without Earnest Money Deposit shall be summarily rejected.

7. All the Rates/Amount in shall to be mentioned in words and figures.

8. The IDSA does not bind it self to accept the lowest or any other tender, and reserves its right to
reject any or cancel all of the tenders received without the assignment of any reason.

9. All tenders in whom any of the prescribed conditions are not fulfilled or are incomplete in any respect
are liable to be rejected.

10. Canvassing whether directly or indirectly, in connection with tender is strictly prohibited and the tender submitted by the contractors who resort to canvassing will be liable to rejection.

11. The IDSA reserves the right of accepting the whole or any part of the tender and the tenderer shall be bound to perform the same at the rate quoted.

12. The tender for the works shall remain open for acceptance for a period of one hundred and eighty days from the date of opening of tenders. If any tenderer withdraws his tender before the said period or makes any modifications in the terms and conditions of the tender which are not acceptable to the

    IDSA then the IDSA shall, without prejudice to any other right or remedy, be at liberty to forfeit 100% of the said earnest money as aforesaid.

13. This Notice Inviting Tender shall form a part of the contract document. The successful tenderer/ contractor, on acceptance of his tender by the IDSA , shall start the work within 15 days from the date of award of work. . The notice inviting tender, all the documents including additional conditions, specifications and drawings, if any, forming the tender as issued at the time of invitation of tender and acceptance thereof together with any correspondence leading thereto etc.

14. Tender schedule shall not be transferable.

15. The contractors may submit the tender during working hours on any working day from the date of publishing the tender notice up to the last date and time for receipt of tenders indicated. Tenders may be submitted by the contractor either in person or through any agent in the drop box or by speed post .

16. At the time of collecting the tender from IDSA, the contractor or his authorized representative must bring proof of their identity or letter of authorization that they are a part of the tenderer firm.

17. The tenderers or their agents are expected to be present at the time of opening of financial bid of the tenders. The tenders receiving officer/designated person of IDSA will on opening each tender prepare a statement of the attested and unattested submissions in the presence of tenderers. If any of the tenderer or their agents find it inconvenient to be present at the time then in such case the tender receiving officer will, on opening the tender of the absentee tenderer, make out statement of the unattested corrections and communicate it to him. The absentee tenderer shall then accept the statement of the corrections without any question whatsoever.

18. The contractor has to make his own arrangement for procurement, supply and use of all constituent materials.

19. Tender not submitted in proper form or in due time will be liable to be rejected, alterations which are made by the tenderer in the tender schedule, the conditions of the contract, the drawings, specifications accompanying the same will not be entertained and if any such alterations are made the tenders will be liable to be rejected.

20. Tenderer is advised to inspect and examine the site and its surroundings and satisfy themselves before submitting their tenders, the accommodation they may require and in general shall themselves obtain all items which influence or affect their tender. A tenderer shall be deemed to have full knowledge of the site whether he inspects it or not and no extra charges consequent on any misunderstanding or otherwise shall be allowed. The tenderer shall be responsible for arranging and maintaining at his own cost all materials, tools & plants, water, electricity access, facilities for workers and all other services required for executing the work unless otherwise specifically provided for in the contract documents. Submission of a tender by tenderer implies that he has read this notice and all other contract documents and has made himself aware of the scope and specifications of the work to be done , local conditions and other factors having a bearing on the execution of the work.

21. Additions and alterations in schedules or conditions will make the tenderer liable for disqualifications.

The contractor should procure required materials from the choice if available as per the specifications mentioned in the tender schedules.

22. In case of ambiguity in regard to conditions and qualification criteria and other related matters if

any with the Tenders the decision taken by the IDSA Committee shall be final.

23. **RIGHT TO OMIT OR ADD ONE OR MORE ITEMS**.

The IDSA shall have the right to omit or add one or more items put in the tender either before or after issuing work order. In order to comply with the latest requirements of the w o r k

24. If due to any reason the office happens to remain closed on the last date for receipt of tenders, as specified the tenders will be received on the next working day at the same time and venue.

25. Payment : Payment will be made after successfully completion of work and submission of completion report to MNRE in all respect . No part payment will be made during the work

26. Security Deposit /Retention Money: 5% of the contract value will be deposited with IDSA by the contractor as retention money in form of bank guarantee. The retention period would be one year from the date of depositing such amount. Earnest money deposited by the successful bidder may be adjusted in security money.

27. Taxes : Shall be on contractor's account. Rates quoted should be inclusive of all taxes except service tax . No escalation will be allowed.

28. Suitable deductions/recoveries like Work Contracts Tax will be made as per Government of India regulations, if any .

Signature of Estate Manager
For and on behalf of IDSA

TENDER ELIGIBILITY CRITERIA

S. No.	Minimum Eligibility Criteria	Proof to be submitted for fulfilling *The Eligibility Criteria*
1.	a) Bidder shall be a registered Company/ Firms in existence for at least past two audited year.	Certificate of Incorporation or Registration shall be submitted.
	b) Consortium not exceeding three partners. Each partner of the consortium shall be a Registered Company / Firms in existence for at least part one audited year.	i) Certificate of Incorporation or Registration of all the partners shall be submitted. ii) Copy of consortium agreement shall be submitted (**OR**) A letter of intent to execute a consortium agreement in the event of a successful bid shall be signed by all the partners and submitted with the bid along with the copy of proposed consortium Agreement. iii) In case of Consortium, all partners of the consortium shall be liable jointly and severally for the execution of the contract in accordance to the contract terms and a statement to this effect shall be included in the letter of intent.
2.	The Bidder shall use only SPV modules manufactured in India. (Make TATA, Vikram, Worai or CEL)	Necessary Self undertaking letter shall be submitted.
3.	Bidder should have experience in installation of SPV power plants of 15 KWp & above and shall have installed at least one of the tendered quantity (Power plants installed minimum 6 months prior to the date of bid submission will only be considered) & these systems should be working satisfactorily.	Copy of work orders and performance certificate for satisfactory function of power plants obtained from the agency issuing work order.
4.	PV Modules & PCU (Make Delta, SMA, Schnider, Huwai) of the SPV system shall conform to the MNRE standards as per tender document	Copy of test certificates along with reports shall be submitted.
5.	Bidder should not be blacklisted by any of the state of central Government or organization of the state or Central Government as on date of submission of tender.	Necessary undertaking letter should be furnished.
6.	Bidder shall be channel partner of MNRE	Necessary certificates shall be attached with validity period
7.	Rating as accredited by rating agency	Necessary certificate to be attached
8.	Test certificates for PV modules etc	Certificates to be attached from MNRE Accredited centres.

GENERAL PARTICULARS OF TENDERER

1- Name of firm :

2- Postal Address :

3- Telegraphic address :

4- Telephone, Fax No :

5- E-mail :
6- Web site :
7- Name and designation of the : representative of the tenderer to whom all references shall be made and his contact mobile number. :

8- Amount of the earnest money deposited.

10- Details of Earnest money :
Bank Draft no. and date etc -)

11- Financial capacity of the tenderer for carrying out the work .

12- Name and address of the Indian/foreign Collaboration if any.

13- Has the tenderer have been ever debarred by any Govt. deptt/Undertaking
for undertaking any work. If yes furnish details , if no submit an undertaking in this regard .

14- Reference of any other information :
attached by the tender (please Mention no. of pages & no. of drawings, copies to be attached)

(Signature of Tenderer)
with Seal

TENDER UNDERTAKING TO BE GIVEN ON COMPANY LETTER HEAD ALONG WITH TECHNICAL BID

TENDER UNDERTAKING

To

Institute for Defence Studies and Analyses
No 1, Development Enclave
, Rao Tula Ram Marg
New Delhi.-110010.

1. I/we do hereby tender and if this tender be accepted undertake to execute the following work viz, Solar Photo Voltaic Power Plant and white LED based solar street lighting system with the tender documents attached therein.

2 I/we agree to keep the offer in this tender valid for period of 180 days mentioned in the tender notice and not to modify the whole or any rt of it for any reason within in the above period. If the tender is withdrawn by me/us for any reason whatsoever the earnest money deposited by me/us will be forfeited to IDSA

3 I/We hereby distinctly and expressly declare and acknowledge that before the submission of my/our tender. I/We have carefully understood the instruction in the tender notice and have read the contract documents and of the plan, specification and quantities, etc. and rates and of the location and alignment where the said work is to be done and such investigation of work required to be done & materials required for the works as to enable me/us to thoroughly understand the intention of the same and the requirement, covenants , agreements, stipulations and restrictions contained in the contract and in the contract and in the said plans and specifications and distinctly agree that I/We will not hereafter make any claim or demand upon the I D S A based upon or a raising out of any alleged misunderstanding or misconception or mistake or my/ our part of the said requirement, covenants, agreements, stipulations, restrictions and conditions.

4 If my/our tender is not accepted the EMD paid by me /us shall be retuned to me / us with out interest on our application soon after the tender is decided or expiration of six months after the last date prescribed for the receipt of tenders whichever is earlier. If my/our tender is accepted the earnest money shall be retained by the I D S A as security for the due fulfillment of the contract. If upon to written to me/us by the IDSA, I/We fail to attend the said office on the date herein fixes or if upon intimation being given to me/us by the I D S A of accepted of my/our tender. I/We fail

to make the additional security deposit or enter into the required agreement as defined in tender notice, then I/we agree to the forfeiture of the earnest money. Any notice required to be served on me/us there under shall be deemed to have been served on me/us. If delivered to me/us personally or forwarded to me/us by post (Registered or Ordinary) or left at my / our address given herein. Such notice shall, if sent by post be deemed to have been served on me/us at the time when in due course of post if it would be delivered at the address to which it is sent.

5 I/We shall not assign the contract or sublet any portion of the same. In case, it becomes necessary such subletting with the permission of the IDSA , shall be limited to:

i) Labor Contract
ii) Transport Contract
iii) Material Contract
iv) Engaging specialists for special items of work.

6. I/We will employ the following technical staff supervising the work. I/We shall see that they are always at site during working hours personally checking all items of works and paying extra attention to such works which require special attention.

7. Keeping in view the national importance of this building I/We shall comply with all security measures laid down by the IDSA.

DECLARATION

I/We hereby declare that I/we have inspected and satisfied / ourselves thoroughly and I/We are conversant with the local conditions, the technical and materials specification, plans design and conditions of contract on which the offer have been based completely studied by me before submitting the tender.

Signature of Tenderer with Stamp

General Conditions

1. SCOPE AND INTENT

1.1 SCOPE:

The general character and the scope of the work is illustrated and defined by but not limited to the signed Contract Documents herewith attached.

1.2 EXTENT:

The contractor shall carry out and complete the said work in every respect in accordance with the contract, and with the directions of and to the satisfaction of the IDSA.

1.3 INTENT

The contract documents are complimentary, and what is called for by any one shall be binding as if called for by all. The intention of the documents is to include all labour and materials, equipment and transportation necessary for the proper execution of the work. Materials of Work described in words which so applied have a well known technical or trade meaning shall be held to refer to such recognized standards as applicable.

Wherever it is mentioned in the Documents that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost.

1.4 SCHEDULE OF QUANTITIES:

The quantities given in the Schedule of Quantities are provisional and are meant to indicate the intent of the work and provide a uniform basis for tendering. The contractor shall be paid for the actual quantity of work executed by him in accordance with the tender documents at the contract rates. IDSA reserves the right to increase or decrease any of the quantities or to totally omit any items of work either before or after Issuing the work order and the contractor shall not claim any extra or damages on these grounds. Any error in description or in quantity or omission of item in the Schedule of Quantities shall not vitiate this contract but shall be deemed to be a variation required by IDSA .

2. LICENSES AND PERMITS

License and permits for all materials under Government control shall be obtained by the contractor directly. IDSA may assist the contractor in this respect to the extent possible. The contractor shall include in his tender all transport charges and other expenses that may be incurred in this connection.

The contractor shall comply with all Government Acts including any bye-laws or regulations of local authorities relating to the works, and shall give all notices and pay all fees and charges demanded by law there under and indemnify the IDSA against the same. At no point of time shall any payment be due from the IDSA in this regard.

3. WATER AND POWER FOR INSTALLATION

3.1 WATER

Water shall be supplied to the contractor by IDSA free of cost Limiting to work only

3.2 POWER

Power shall be supplied to the contractor by IDSA free of cost limiting to the work.

The water and power shall be used for bonafide IDSA works only.

4. COMPENSATION FOR DELAY:

The contractor shall NOT be entitled to any compensation for any loss suffered by him on account of delays in commencing or executing the work whatever the cause of delays may be, including delays arising out of modification to the work entrusted to him or in any sub-contracts connected therewith or delays in awarding contracts for other trades of the project or in commencement or completion of such work. IDSA shall not be liable for any claim in respect thereof. IDSA does not accept liability for any sum besides the tender amount subject to such variations as are provided herein.

5. SAFETY CODE

In respect of all labour, directly or indirectly employed in the work for the performance of contractor's part of this agreement, the contractor shall at his own expense arrange for all the safety provisions as specified by Bureau of Indian Standards and Regulations, Rules and orders made thereunder and such other acts as applicable.

Precautions as stated in the Safety Clause are the minimum necessary and shall not preclude the contractor taking additional safety precautions as may be warranted for the particular type of work or situation. Also mere observance of these precautions shall not absolve the contractor of his liability in case of loss or damage to property or injury to any person including contractor's labour, Owner's and or any member of the public or resulting into death of any of these.

In case the contractor fails to make arrangements and provide necessary facilities as aforesaid, IDSA shall be entitled to do so and recover the costs thereof from the contractor. The decision of the IDSA in this regard shall be final and binding.

5.1 CHILD LABOUR

The contractor shall not employ any labour less than 18 years of age on the job. If female labour is engaged, the contractor shall make necessary provision at his own expense, for safeguarding and care of small children and keeping them clear of the site of operations.

5.2 SITE ENGINEER

The contractor shall ensure continued effective supervision with the help of a qualified, experienced and competent Engineer assisted by adequate staff as ascertained by the IDSA , for the entire duration of the works. The Site Engineer will be responsible for carrying out the work to the true meaning of the drawings, conditions of contract, specifications, schedule of quantities and IDSA 's instructions and directions or instructions given to him in writing shall be held to have been given to the contractor officially. Attention is called to the importance of requesting written

instruction from the IDSA before undertaking any work where IDSA 's directions or instructions are required. Any such work done in advance of such instructions will be liable to be removed at the contractor's cost. No staff including the Engineer and technical supervisory staff shall be transferred from the work without the written prior permission from the Estate Manager.

5.3 EQUIPMENT

The contractor shall provide and install all necessary hoists, ladders, scaffolding, tools, plants and all transport for labour, materials and plant necessary for the proper execution and completion of the work to the satisfaction of the Estate Manager.

5.4 SCAFFOLDING, STAGING, GUARD RAILS

The contractor shall provide scaffolding, staging, guard rails, temporary stairs and other temporary measures required during project . The supports for the scaffolding, staging, guard rails and temporary stairs shall be strong, adequate for the particular situations, tied together with horizontal pieces and braced properly. The temporary access to the various parts of the building under construction shall be rigid and strong enough to avoid any chance of mishaps. The entire scaffolding arrangement proposed shall be subject to the approval of the Architect.

6. ASSIGNMENT AND SUBLETTING

The contractor shall not, without the written consent of the Estate Manager assign this contract or sublet any portion of the work. Any permission to sublet parts of the work shall not absolve the contractor from any liability under this contract.

7. PRICE ESCALATION

The rates quoted by the contractor and accepted by the Owner shall hold good till the completion of the work and no additional claim will be admissible on account of statutory increase in prices, fluctuation in market rates, increase in duties, taxes/any other levies/fees etc.

8. MATERIALS & WORKMANSHIP

8.1 MATERIALS TO BE NEW

All materials and equipment to be in incorporated in the works shall be new. Materials, equipment and workmanship are to be of the best quality of the specified type and to the entire satisfaction of the IDSA. The contractor shall immediately remove from the premises any materials, equipment and/or workmanship which, in the opinion of the IDSA, are defective or unsuitable and shall substitute proper materials equipment and/or workmanship at his own cost. The term approval used in connection with this contract shall mean the approval of the Estate Manager.

The contractor shall, if required, submit satisfactory evidence as to the kind and quality of materials and equipment.

8.2 SPECIAL MAKES OR BRANDS

Where special makes or brands are called for, they are mentioned as a standard. Others of equivalent quality may be used, provided that the IDSA considers the substituted materials as equivalent to the brand specified and approval is first obtained in writing from the Estate Manager. Unless substitutions are approved by the Estate Manager no deviation from the specifications will be permitted. The contractor shall indicate and submit written evidence of those materials or equipment called for in the specifications that are not obtainable for installation

in the building within the time limit as per the tender document

8.3 PROPER SCHEDULING OF MATERIALS

All materials and equipment shall be delivered so as to ensure a speedy and uninterrupted progress of the work. The same shall be stored so as to prevent overloading of any portion of the structure, and the contractor shall be entirely responsible for damage or loss to the materials, by weather or other causes.

8.4 RIGHT KIND OF JIGS, TOOLS, EQUIPMENT ETC.

The contractor shall employ the right kind of workmen, jigs, tools and equipment to fabricate and install all materials and equipment, whether locally purchased or imported and whether provided by the IDSA or Contractor himself. They shall be fabricated and installed without any damage and in accordance with the manufacturer's instructions and manuals.

8.5 INSPECTION

All materials, equipment and workmanship shall be subject to inspection, examination and test by the IDSA at any and all items during manufacture and/or construction. IDSA shall have the right to reject defective material, equipment and workmanship or require its correction. Rejected workmanship shall be satisfactorily corrected and rejected materials and equipment shall be satisfactorily replaced with proper material and equipment without charge therefore, and the Contractor shall promptly segregate and remove the rejected materials and equipment from the premises. If the contractor fails to proceed at once with the replacement of rejected materials and/or the correction of defective workmanship, IDSA may replace such materials and equipment and/or correct such workmanship and charge the cost thereof to the contractor or may terminate the right of the contractor to proceed further with the work. The contractor shall furnish promptly, without additional charge all reasonable facilities, labour, materials and equipment necessary for the safe and convenient inspection and test that may required by the IDSA.

9. DEDUCTIONS FOR UNCORRECTED WORK

If the Estate Manager deems it inexpedient to correct work damaged or not done in accordance with the contract, an equitable deduction from the contract price shall be made therefore and the Estate Manager decision in this respect shall be final.

10. CORRECTION OF WORK BEFORE VIRTUAL COMPLETION OF WORK

The Estate Manager shall conduct a final inspection just before the virtual completion of the work and prepare a list of materials, equipment and tems of work which fail to conform to the Contract Specifications. The contractor shall promptly replace and re-execute such items in accordance with the contract and shall bear all expenses of making good all work.

If the contractor fails to remove and replace above rejected materials, equipment and/or workmanship within a reasonable time, fixed by written notice, IDSA may employ and pay other persons to amend and make good such defects at the expense of the contractor. All expenses incurred by the IDSA in rectifying the defects including all damages, loss and expenses consequent on the defects shall be recoverable from any amount due or that may become due to the contractor.

11. VIRTUAL COMPLETION

The work shall be considered as virtually completed only upon fulfillment of the procedure laid down in clause above and when the Estate Manager has certified in writing that the work has been virtually completed. The defects liability period shall commence from the date of such certificate.

11.1 MAINTENANCE DURING DEFECTS LIABILITY PERIOD

Any defects noticed and brought to the attention of the Contractor shall be promptly attended to by the Contractor expeditiously.

12. GUARANTEE

a) Besides guarantees required elsewhere, the contractor shall guarantee the work as specified in Tender Document .

b) All required guarantees shall be submitted to the Estate Manager by the contractor when requesting certification of accounts for payment IDSA .

c) All required guarantees shall be submitted to the Estate Manager as a pre-requisite to acceptance and payment.

13. BUREAU OF INDIAN STANDARDS

A reference made to any Indian Standard specifications in these documents, shall imply reference to the latest version of that standard, including such revisions/ amendments as may be issued by the Bureau of Indian Standards during the currency of the contract and the corresponding clause/s therein shall hold valid in place of those referred to.

14. FORCE MAJEURE

The right of the contractor to proceed with the work shall not be terminated because of any delay in the completion of the work due to unforeseen causes beyond the control and without the fault or negligence of the contractor, including but not limited to **Acts of God**, or of the public enemy, restraints of Governing State, Fires, floods unusually severe weather, earthquake, etc.

15. The contractor shall provide one copy of instruction manual and routine maintenance manual with each system supplied or installed, this shall be both in Hindi and English.

'The following minimum details must be provided with manual:

(a) About the complete photovoltaic system including PV modules, PSU, battery and electronics.

(b) Do’s and Don’ts

(c) Clear instructions on regular maintenance and trouble shooting of the system

(d) Name & address of the contact person in case of non-functioning of the system.

(e) Firm shall provide address post card and log card with the system for proper record and quick maintenance of installed system during warranty period.

16. The contractor shall not display the photographs of the work and not take advantage through publicity of the work without written permission of IDSA.

17 The tenderer shall continue to provide spare parts after the expiry of warranty period at the users cost if desired by the user. If the contractor fails to continue to supply spare parts and services to users UPNEDA shall take appropriate action against the firm.

18. After successful commissioning of the system and training, the system will be handed over the person designated by the end user.

19. It shall be the sole responsibility of the contractor to get verified the quality & quantity of the supplied material at the site of delivery

20. PAYMENTS:

The payments shall be made as per the following terms and conditions.

20.1 The Channel partner shall raise the bill to IDSA net of subsidy . The 30% subsidy of the bench mark cost (under JNNSM during 2015-16), as approved by MNRE for these projects will be reimbursed to the firm as received from MNRE on submitting the Completion Report to MNRE and verification thereof .

20.2 Firm shall be responsible for proper installation of system with required orientation / proper setting of Solar Modules. Firm shall also be responsible for regular top-up of electrolyte/distilled water during warranty period. The quarterly date may be fixed for the same. Firm shall depute an authorized representative whenever required at the time of inspection etc.

20.3 The tender document signed and sealed on each page and annexure duly attached in the last of the document making one document should be enclosed. Typing the formats in other pages, changing the serial order, loose papers etc will not be accepted.

Minimal Technical Requirements /Standards for SPV Systems / Plants to be deployed under the Programmes of Ministry of New and Renewable Energy

1. PV MODULES:

1.1 The PV modules must conform to the latest edition of any of the following IEC /equivalent BIS Standards for PV module design qualification and type approval: Crystalline Silicon Terrestrial PV Modules IEC 61215 / IS14286, Thin Film Terrestrial PV Modules IEC 61646 / Equivalent IS (Under Dev.), Concentrator PV Modules & Assemblies IEC 62108.

1.2 In addition, the modules must conform to IEC61730 Part 1- requirements for construction & Part 2 – requirements for testing, for safety qualification or Equivalent IS (Under Dev.)

1.3 PV modules to be used in a highly corrosive atmosphere (coastal areas, etc.) must qualify Salt Mist Corrosion Testing as per IEC 61701 / IS 61701.

1.4 IDENTIFICATION AND TRACEABILITY

Each PV module must use a RF identification tag (RFID),which must contain the following information:

(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 cells and module)
(v) I-V curve for the module
(vi) Peak Wattage, Im, Vm 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. Until March 2013, the RFID can be inside or outside the module laminate, but must be able to withstand harsh environmental conditions.

1.5 VALIDITY : The validity of the existing Certificates/Reports in the old format/procedure shall be valid till March 2013 only. Manufactures are advised to get their samples tested as per the new format/procedure before 31st March 2013, whose validity shall be for five years.

1.6 AUTHORIZED TESTING LABORATORIES/ CENTERS PV modules must qualify (enclose test reports/ certificate from IEC/NABL accredited laboratory) as per relevant IEC standard. Additionally the performance of PV modules at STC conditions must be tested and approved by one of the IEC / NABL Accredited Testing Laboratories including Solar Energy Centre of MNRE. For small capacity P V modules upto 50 Wp capacity S T C pe r f or m an c e a s a b ov e will be sufficient. However, qualification certificate from IEC/NABL accredited laboratory as per relevant standard for any of the higher wattage regular module should be

accompanied with the STC report/ certificate

1.6.1 Details of Test Labs are given in **Annexure-1(Part-1A)** . (Any other Test Lab that has set – up for testing and wants to get included may contact Director, MNRE)

1.6.2 While applying for Testing, the Manufacturer has to give the following details:

- A copy of registration of the company particularly for the relevant product/ component/ PV system to be tested
- An adequate proof from the manufacturer, actually showing that they are manufacturing product by way production, testing and other facilities
- Certification as per JNNSM standards for other bought out items used in the system Without above proof test centers are advised not to accept the samples.

WARRANTY: PV modules used in solar power plants /systems must be warranted for their out put peak watt capacity, which should not be less than 90% at the end of 12years and 80% at the end of 25 years.

2. BALANCE OF SYSTEM (BOS) ITEMS/ COMPONENTS: 2.1 The BOS items /components of the SPV power plants /systems deployed under the Mission must conform to the latest edition of IEC/ equivalent BIS Standards / MNRE specifications / as specified below:

BOS Item / System	Applicable BIS /Equivalent IEC Standard Or MNRE Specifications	
	Standard Description	Standard Number
Solar PV Lighting System	Solar PV Home Lighting System Solar Pv Street Lighting System Solar Pv lantern	As per MNRE Latest Specifications
Solar PV system (More than 100 wp) and up to 20 Kwp Capacity only Charge Controller MPPT units		IEC 60068-2(1,2,14,30)
Power Conditioners/ Inverters**including MPPT and Protections	Environmental Testing Efficiency Measurement Environmental Testing	/Equivalent BIS Std. IEC 61683/IS61683 IEC 60082-2(1,2,14,30) /Equivalent BIS Std.
Storage Batteries	General Requirements & Methods of Testing Tubular Lead Acid / VRLA / GEL Capacity Test Charge/Discharge Efficiency Self-Discharge	As per relevant BIS Std.

Cables	General Test and Measuring Method PVC Insulated Cables for working Voltage up to and including 1100 Volts and UV Resistant for outdoor installation	IEC 60227/IS694 IEC 60502/IS 1554 (Pt-I & II)
Switches/Circuit Breakers/ Connectors	General requirements Connectors-safety A.C/D.C	IEC 60947 Part 1,2,3/IS 60947 Part 1,2,3 EN 50521
Junction Boxes/Enclosure for Invertors /Charge Controller /Luminaries	General Requirement	IP 54(for Outdoor)/ IP 21 (For Indoor) As per IEC 529

**In case if the Charge controller is in-built in the inverter, no separate IEC 62093 test is required and must additionally conform to the relevant national/international Electrical Safety Standards wherever applicable

2.2 AUTHORIZED TESTING LABORATORIES/ CENTERS Test certificates / reports for the BoS items/components can be from any of the NABL/ IEC Accredited Testing Laboratories or MNRE approved test centers. The list of MNRE approved test centers will be reviewed and updated from time to time.

2.3 WARRANTY The mechanical structures, electrical works including power conditioners/inverters/charge controllers/maximum power point tracker units/distribution boards/digital meters/switch gear/storage batteries, etc. and over all workmanship of the SPV power plants/ systems must be warranted against any manufacturing/ design/ installation defects for a minimum period of 5 years.

Annexure-1(Part-1A)

Accredited Test Centres for MNRE OFF –Grid Programme

Lab/Organization	PV Modules	Lighting System		Battery	Inverter>100W		Charge Controller		Solar Pumping System
		As per MNRE Specifications	Environmental		Efficiency	Environmental	protections	Enviroment al	
NISE	Yes (IEC64215 op to 100 wp) NABL Accredited	Yes MNRE Accredited	Yes (Including IP) MNRE Accredited	Yes MNRE Accredited	Yes (Up to 10 KVA)MNRE Accredited	Yes (Including IP) MNRE Accredited	Yes MNRE Accredited	Yes (Including IP) MNRE Accredited	Yes MNRE Accredited
ERTL (east)	STC test facility	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes Up to 1000 AH	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	NO
ETDC	Yes (IEC 61215 under ICEEE-CB, IEC 61701(Up to 100 wp NABL	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes (up to 100 AH)	Yes (Up to 3 KVA)	**Yes** NABL /MNRE Accredited	**Yes** NABL /MNRE Accredited	**Yes** NABL /MNRE Accredited	NO

CPRI(B)	No	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes (up to 1000AH)	Yes (Up to 10 KVA) NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	Yes NABL /MNRE Accredited	No
ERTL (N)	No	Only Electronics & Luminaire NABL Accredited	Yes NABL Accredited	No	Yes (up to 5 KVA) NABL accredited	Yes NABL Accredited	Yes (up to 5 Kw) NABL Accredited	Yes NABL Accredited	No
UL(B)	Yes (IEC61215 & IEC 61730 Part-II and IEC 61701) Up to 400 Wp NABL Accredited	Yes (Except battery) NABL Accredited	Yes NABL Accredited	No	Yes (Up to 6 KVA) NABL Accredited	Yes NABL Accredited	Yes (up to 6 KW)NABL Accredited	Yes NABL Accredited	No
TUV Rhineland	Yes (IEC61215 & IEC 61730 Part-II) Up to 400 Wp NABL Accredited	No	Yes NABL Accredited	No	Yes (up to 10 KVA) NABL Accredited	Yes NABL Accredited	Yes (Up to 10 KW) NABL Accredited	Yes NABL Accredited	No

Inter TEK	No	Only Electronics & Luminaire NABL Accredited	Yes NABL Accredited	No	Yes (up to 5 KVA) NABL Accredited	Yes NABL Accredited	Yes (Up to 5 KW) NABL Accredited	Yes NABL Accredited	No
EQDC GandhiNagar	No	NO	NO	No	NO	No	NO	No	Yes MNRE Accredited

- Beyond 10 KVA Self-Certification by the manufacturer is acceptable .

WHITE-LED (W-LED) BASED SOLAR STREET LIGHTING SYSTEM

A standalone solar photovoltaic street lighting system (SLS) is an outdoor lighting unit used for illuminating a street or an open area. The Solar Street Lighting System consists of solar photovoltaic (SPV) module, a luminaire, storage battery, control electronics, inter-connecting wires/cables, module mounting pole including hardware and battery box. The luminaire is based on White Light Emitting Diode (W-LED), a solid state device which emits light when electric current passes through it. The luminaire is mounted on the pole at a suitable angle to maximize illumination on the ground. The PV module is placed at the top of the pole at an angle facing south so that it receives solar radiation throughout the day, without any shadow falling on it. A battery is placed in a box attached to the pole.

Electricity generated by the PV module charges the battery during the day time which powers the luminaire from dusk to dawn. The system lights at dusk and switches off at dawn automatically.

White LED. (W-LED) based Solar street Lighting system (Model-I)

- The Street light operates from dusk to dawn at full Brightness.

Broad performance Specifications

PV Module	40 Wp under STC
Battery	Lead acid Tubular Flooded or Tubular Gel /VRLA, 12v-40 AH @ c/10
Light Source	White Light Emitting Diode (W-LED) 9 watt , white LED Luminaire , dispersed beam , soothing to eyes with the use of proper optics and diffuser
Light Output	Minimum 16 Lux when measured at the periphery of 4 metre diameter from a height of 4 metre. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred
Mounting of light	Minimum 4 metre pole mounted
Electronics Efficiency	Minimum 85% of total
Duty Cycle	Dusk to dawn
Autonomy	3 days or Minimum 42 operating hours per permissible discharge

TECHNICAL DETAILS

PV MODULE

(i) Indigenously manufactured PV module should be used.

(ii) The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to IEC 61215 Edition II / BIS 14286 from an NABL or IECQ accredited Laboratory.

(iii) The power output of the module(s) under STC should be a minimum of 40 Wp at a load voltage* of 16.4 ± 0.2 V.

(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 12 %.

(vi) The terminal box on the module should have a provision for opening it for replacing the cable, if required.

(vii) There should be a Name Plate fixed inside the module which will give:
a. Name of the Manufacturer or Distinctive Logo.
b. Model Number
c. Serial Number
d. Year of manufacture

(viii) **A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.**
*The load voltage and Voc conditions of the PV modules are not applicable for the system having MPPT based charge controller

BATTERY

i. Lead Acid, tubular positive plate flooded electrolyte or Gel / VRLA Type.
ii. The battery will have a minimum rating of 12V, 40 Ah at C/10 discharge rate.
iii. 75 % of the rated capacity of the battery should be between fully charged and load cut off conditions.
iv. Battery should conform to the latest BIS/ International standards.

LIGHT SOURCE

i. The light source will be a white LED type.
ii. The colour temperature of white LED used in the system should be in the range of 5500 o K–6500o K.
iii. W-LEDs should not emit ultraviolet light.
iv. The light output from the white LED light source should be constant throughout the duty cycle.
v. The lamps should be housed in an assembly suitable for outdoor use.
vi. The temperature of heat sink should not increase more than 20o C above ambient temperature during the dusk to dawn operation.

ELECTRONICS :

(i).The total electronic efficiency should be at least 85%.
(ii). Electronics should operate at 12 V and should have temperature compensation for proper charging of the battery throughout the year.
(iii). No Load current consumption should be less than 20 mA.
(iv). The PV module itself should be used to sense the ambient light level for switching ON and OFF the lamp.
(v).The PCB containing the electronics should be capable of solder free installation and replacement.
(vi). Necessary lengths of wires/cables, switches suitable for DC use and fuses should be provided.

ELECTRONIC PROTECTIONS:

(i).Adequate protection is to be incorporated under “No Load” conditions e.g. when the lamp is removed and the system is switched ON.
(ii). The system should have protection against battery overcharge and deep discharge conditions.

(iii). Fuse should be provided to protect against short circuit conditions.
(iv). Protection for reverse flow of current through the PV module(s) should be provided.
(v).Electronics should have temperature compensation for proper charging of the battery throughout the year.
(vi). Adequate protection should be provided against battery reverse polarity.
(vii). Load reconnect should be provided at 80% of the battery capacity status.

MECHANICAL COMPONENTS

(i).A corrosion resistant metallic frame structure should be fixed on the pole to hold the SPV module.
ii. The frame structure should have provision to adjust its angle of inclination to the horizontal, so that it can be installed at the specified tilt angle.
iii. The pole should be made of Galvanised Iron (GI) pipe.
iv. The height of the pole should be 4 metres above the ground level, after grouting and final installation.
v. The pole should have the provision to hold the luminaire.
vi. The lamp housing should be water proof and should be painted with a corrosion resistant paint.
vii. A vented, acid proof and corrosion resistant metallic box with a locking arrangement for outdoor use should be provided for housing the battery.

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.

QUALITY AND WARRANTY

(i). The street lighting system (including the battery) will be warranted for a period of five years from the date of supply.
(ii). The PV module(s) will be warranted for a minimum period of 25 years from the date of supply. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
(iii). The Warranty Card to be supplied with the system must contain the details of the system.

OPERATION and MAINTENANCE MANUAL

An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Street Lighting System. The following minimum details must be provided in the Manual:

- Basic principles of Photovoltaics.
- A small write-up (with a block diagram) on Solar Street Lighting System - its components, PV module, battery, electronics and luminaire and expected performance
- Type, Model number, Voltage & capacity of the battery, used in the system.
- The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of W-LEDs used in the lighting system.
- About Charging and Significance of indicators.
- Clear instructions about erection of pole and mounting of PV module (s) and lamp housing assembly on the pole.
- Clear instructions on regular maintenance and trouble shooting of the Solar Street Lighting System.
- DO's and DONT's.
- Name and address of the contact person for repair and maintenance, in case of non-functionality of the solar street lighting system.

Financial Bid

Sr No	Description	Amount in Rs (in figure and words)
1	Grid-tied 10 KWP Solar PV system Complete in all respect including procurement , supply , Installation ,commissioning and testing (Inclusive of All taxes, excise ,customs and transportation net of subsidy . (Without service tax) (turnkey basis project)	
2.	White –LED (W-LED) based (PV Modules), 40 wp , 4 Nos Solar street lighting system as per MNRE latest specification as already defined in the tender .	
	Gross Amount in Rs (in figures and words) without service tax .	

Signature of contractor with seal of company

Note : Price Bid will be separately sealed otherwise bid will be liable to be rejected)

(Signature of Tenderer)
with seal

Date :