



GOVERNMENT OF SIERRA LEONE

TENDER DOCUMENTS

FOR

**SUPPLY AND INSTALLATION OF STREET LIGHTING SYSTEM IN
FREETOWN, BO, KENEMA, MAKENI, SEFADU,
MAGBURAKA, PORT LOKO, KAMBIA, KABALA, KAILAHUN,
KONO, MOYAMBA AND PUJEHUN TOWNSHIPS.**

***PROJECT MANAGEMENT UNIT (PMU)
MINISTRY OF ENERGY AND WATER RESOURCES
5TH FLOOR, ELECTRICITY BUILDING
SIKA STEVENS STREET
FREETOWN***

APRIL 2010.

TENDER NOTICE ADMT 02

Issue Date: 19 May 2010.

Tender No: EWR/TSSLS/01/10

Subject: Supply and Installation of Solar street lighting system in Freetown, Lungi, Bo, Makeni, Moyamba, Kenema, Port Loko, Pujehun, Bonthe, Kambia, Kabala, Magburaka, Sefadu, Kailahun).

The Government of Sierra Leone (GoSL) intends to implement a Solar street lighting system project in Freetown and other towns in Sierra Leone (Lungi, Bo, Makeni, Moyamba, Kenema, Port Loko, Pujehun, Bonthe, Kambia, Kabala, Magburaka, Sefadu, Kailahun). The project seeks to enhance traffic safety and comfort of users, increase traffic circulation, improve night-life, promote urban activities and increase the supply of energy to the population.

The Project Management Unit of the Ministry of Energy and Water Resources acting for and on behalf of the Government of Sierra Leone invites tenders for the design, supply, installation and commissioning of solar street lighting system in the above-mentioned city and towns.

The project is divided into four lots and tenderers are requested to submit separate bid for each of lot. Tenders may bid for one or more lots. The lots include:

Lot No.	Name of City/Town	Qty of Street Lamp	Subtotal
Lot 1: Capital	Freetown	3,000	3,000
Lot 2: Northern Province	Lungi	540	3,100
	Makeni,	1000	
	Magburaka,	390	
	Kabala	390	
	Kambia	390	
	Port Loko	390	
Lot 3: Southern Provinces	Bo	950	1,800
	Moyamba	350	
	Pujehun	250	
	Bonthe	250	
Lot 4: Eastern Region	Kenema	950	2,100
	Kailahun	250	
	Sefadu	900	
Grand total		10,000	10,000

The works to be carried out under the contract involves:

- Provision of solar street lighting system on the main streets of Freetown and other towns;
- Installation of the solar street lighting equipment;
- Supply of spare parts;
- On-site training of staff.

Tender document (TD) shall be sold from 9th April, 2010 to 29th June, 2010 between 10.00 a.m. to 5.00 p.m. every week day. Clarification of bids will be made upon request of prospective bidders not more than 14 days prior to bid submission deadline.

Tender document can be obtained from the address below by making a nonrefundable payment of US\$5000 (Five Thousand United States Dollars) in Cash or the form of Demand Draft/pay order, in favour of the Ministry of Energy and Water Resources or by telegraphic transfer into Account No: 001-114671-03-00-01, Sierra Leone Commercial Bank, Siaka Stevens Street, Freetown, SWIFT Code : SLCBSLFR

**The Director
Project Management Unit
Ministry of Energy & Water Resources
5th Floor, Electricity House
Siaka Stevens Street
Freetown.**

Tel:232 33 387249/232 76 686442

Email: abduljay@gmail.com

Submission of tenders, containing (a) the technical offer/proposal and (b) the Financial offer /proposal in two separate sealed envelopes must be delivered to the above address **on or before 12.00 hours on 30th June 2010 at which time the Technical Offer/proposal will opened in the presence of tenderers.**

The Financial offers/proposals deemed to be competent and technically qualified shall be opened in the presence of tenderers or their representatives on the 23 June 2010 in the Conference Room of the Project Management Unit, 5th Floor, Electricity House, Freetown. The quantity of systems required may vary 15% plus or minus at the time of contract award. The MEWR reserves the right to reject any offer or all offers without assigning any reason thereof.

2. Covering letter

From,

(Full name and address of the tenderer)

M/S
.....
.....
.....

To,

The Director

Project Management Unit

Ministry of Energy and Water Resources

5th Floor, Electricity House, Freetown

Sierra Leone.

Phone Number: 232 33 387249/232 76 686442

Email: abduljay@gmail.com

Web site: [http//](http://)

Freetown, SIERRA LEONE.

Subject: - Offer in response to tender No:MEWR/TSSLS/01/10.

Sir,

We hereby submit our offer in full compliance with terms & conditions of the attached tender. The tenders are submitted in two separate and sealed envelopes marked Part-I & Part-II.

(Signature and seal of tenderer)

3. Check list of Annexures

S.No	Annexure No	Particulars	Yes/No
1	Annexure I	Details of bank draft	
2	Annexure II	Tentative supply capacity of the tenderer per month	
3	Annexure III	Experience - (relevant project(s) completed).	
4	Annexure IV	The Tenderer is a manufacturer of one or more major sub systems of SPV Panels and SPV based products.	
5	Annexure V	The Tenderer shall submit its authorized centre's certification for approval of all complete models of Solar Street lighting systems. Test reports issued in or after 2008 only would be considered valid.	
6	Annexure VI	The Tenderer should have valid Sales Tax/VAT/GST in the case of Sierra Leonean tenderers.	
7	Annexure VII	The Tenderer should have adequate financial stability and status to meet the financial obligations pursuant to the scope of works. Last year's audit report/balance sheet should be enclosed.	
8	Annexure VIII	The Tenderer should have adequate pole installation services facilities in cities of Sierra Leone. The details of which should be enclosed.	
9	Annexure IX	The Tenderer should have to provide self certification about life cycle of battery.	
10	Annexure X	The Tenderer should provide photographs regarding manufacturing & list of testing facilities.	
11	Annexure XI	Authorization letter of the Tenderer, for the person representing his firm, that he is authorized to discuss and with specific mention of this tender.	
12	Annexure XII	The contractor shall provide a certificate at the time of submission of tender that he has seen the various relevant clauses of the Administrative Approval of MEWR/TSSLS/01/10 dated 9 th April 2010 and shall abide by the various provisions provided therein.	

4. Particulars of tender

1	Tender No	MEWR/TSSLS/01/10
2	Particulars of the work:	Rate contract of design, supply, installation & commissioning of solar street Lighting system and training of Staffs systems exploiting.
3	Period of work:	Six months for supply, installations and commissioning from the award of work.
4	Cost of tender document:	US\$ 5,000 in the form of Bank Draft/Pay Order payable at secretariat of MEWR in favour of Government of Sierra Leone
5	Last date and time of submission of tender:	30th June 2010 at 12.00 hours
6	Amount of Earnest (bid security) money deposited:	Not less than 2% of financial offer for each lot.
7	Period of validity of tender for acceptance:	One year from opening of tender
8	Date and time of opening of tender:	12.00 hours on 30th June 2010 for technical Offers and 12.00 hours on 16th July 2010 for Financial Offers.
9	Place of opening of tender:	Conference Room, Project Management Unit, 5th Floor, Electricity House, Freetown, Sierra Leone
10	Name and status of firm /company/ individual to whom tender document is issued:	

(Signature and seal of tenderer)

5. General particulars of tenderer:

N°	Designation	Comments
1	Name of firm	
2	Postal Address	
3	Telegraphic address	
4	Telephone, Mobile number, Telex, 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	
8	Amount of earnest money deposited (as Annexure-I)	
9	Details of bank draft	
10	Financial capacity of the contractor/firm for carrying out the work	
11	Name and address of the Sierra Leone/foreign collaboration, if any	
12	Has anything/extra other than price of items (as mentioned in price schedule) has been written in the price schedule	
13	Has the contractor/firm have to pay arrears of income tax, if yes, up to what amount	
14	Has the contractor/firm have been ever debarred by any GoSL/Undertaking for undertaking any work	
15	Tentative supply capacity for solar street light within one month (as Annexure-II)	
16	Details of offer (please mention number of pages and number of Drawings)	
17	Reference of any other information attached by the tenderer (please mention no. of pages & no. of drawings)	
18	Has the contractor have any relative working in MEWR, if yes, state the name and designation	

(Signature and seal of Tenderer)

6. Experience - (relevant project(s) completed):

Please fill in information about similar projects undertaken SPV especially for solar street lighting system, if required, please use additional sheets (as Annexure-III).

N°	Designation	Comments
1	Name of organization which has awarded the works (Please enclose list of organization)	
2	Name of the location of the work (Please enclosed list of installation)	
3	Total contract amount	
4	Year of award	
5	Detail of involvement in work as an individual or as a company	
6	Was the work satisfactorily completed within stipulated period?	

(Signature and seal of tenderer)

7. Declaration by the tenderer:

Regarding Tender No:MEWR/TSSLS/01/10.....

I/We (hereinafter referred to as the Tenderer) being desirous of tendering for the work under the above mentioned tender and having fully understood the nature of the work and having carefully noted all the terms and conditions, specifications etc. as mentioned in the tender document, DO HEREBY DECLARE THAT:

1. The Tenderer is fully aware of all the requirements of the tender document and agrees with all provisions of the tender document;
2. The Tenderer is capable of executing and completing the work as required in the tender;
3. The Tenderer accepts all risks and responsibilities directly or indirectly connected with the performance of the tender;
4. The Tenderer has no collusion with other contractor, any employee of MEWR or with any other person or firm in the preparation of the bid;
5. The Tenderer has not been influenced by any statement or promises of MEWR or any of its employees but only by the tender document;
6. The Tenderer is financially solvent and sound to execute the work;
7. The Tenderer is sufficiently experienced and competent to perform the contract to the satisfaction of MEWR;
8. The information and the statements submitted with the tender are true;
9. The Tenderer is familiar with all general and special laws, acts, ordinances, rules and regulations of the Municipal, District, State and Government that may affect the work, its performance or personnel employed therein;
10. The Tenderer has not been debarred from similar type of work by MEWR and or Government undertaking/ Department;
11. This offer shall remain valid for acceptance for 12 (twelve) months from the date of opening of the tender;
12. The Tenderer has attached herewith the earnest money as required in the tender document;
13. The Tenderer accepts that the earnest money be absolutely forfeited by MEWR, if the tenderer fails to undertake the work or sign the contract within the stipulated period;

14. The Tenderer gives the assurance to execute the tendered work as per specifications, terms and conditions.

(Signature and seal of tenderer)

PART-2: INSTRUCTION TO TENDERERS

Section - 1: Introduction

ELIGIBILITY CONDITIONS

The Tenderer should provide sufficient evidence to satisfy the following conditions that:

1. The Tenderer shall provide a self certificate that he is a manufacturer of one or more major sub systems of SPV Panels and SPV based products (**as Annexure IV**).
2. The Tenderer shall submit MEWR authorized test centers' certification of approval of Solar Street lighting systems. Test reports issued in or after 2008 only would be considered valid (Details to be enclosed. **as Annexure V**).
3. The Tenderer should preferably have a test certificate of battery offered from MEWR authorized test centres.
4. The tenderer, who is not manufacturer of SPV module or of the battery, shall have to submit an undertaking from the MODULE supplier/ BATTERY supplier to him, about regular supply of the panel/battery, till the validity of the contract, before the signing of the agreement, if the work is awarded to the tenderer.
5. The Tenderer should have valid Sales Tax/VAT/Trade Tax registration certificate. A copy of which should be enclosed (**as Annexure VI**).
6. The Tenderer should have adequate financial stability and status to meet the financial obligations pursuant to the scope of works. Last year's audit report/balance sheet should be enclosed (**as Annexure VII**).
7. The Tenderer should have adequate pole installation services facilities in each site of project. The details of which should be enclosed (**as Annexure VIII**).
8. The Tenderer should have to provide self certification about life cycle of battery (**as Annexure IX**).
9. The Tenderer should have to provide photographs of manufacturing unit & list of testing facilities (**as Annexure X**).

Section - 2: The tender document

2.1 CONTENTS OF TENDER DOCUMENT

The Tender procedure and contract terms are prescribed in the Tender Document. In addition to the Invitation of Tender, the bidding documents include.

Part (1)

- a) Covering Letter
- b) Check list of Annexures
- c) General Particulars of Tender
- d) Experience – relevant project(s) completed
- e) Declaration by the Tenderer

Part (2) Instruction to Tenderer

Part (3) General Condition of Contract

Part (4) Scope of Work & Technical specifications

Part (5) Details of warranty

Part (6) Technical offer

Part (7) Financial Bid

The Tenderer is expected to examine all instructions, forms, terms and specifications as mentioned in the Tender document. Failure to furnish all information required by the Tender documents or submission of a bid not substantially responsive to the Bid Document in every respect will be at the tenderer's risk and is likely to result in outright rejection of the Tender.

The tender must be submitted in original. The annexures as detailed in the tender document must be enclosed serially to facilitate evaluation of technical bid. Any tender not having requisite details will be rejected.

2.2 INFORMATION REQUIRED WITH THE PROPOSAL

- a) Tenderers must clearly indicate the name of the manufacturer & make of each principal item of equipment proposed to be supplied. The Tender may also contain drawings and comprehensive descriptive materials in support of technical specifications.
- b) The above information may be provided with the Tender in the form of separate sheets, drawings, catalogues etc.

- c) Any Tender not containing sufficient descriptive material to describe the equipment proposed may be treated as incomplete and hence may be rejected. Such descriptive materials and drawings submitted by the Tender will be retained by the MEWR. Any departure from these drawing and descriptive material submitted will not be permitted during the execution of contract without specific written permission of the MEWR.

2.3 LOCAL CONDITIONS

It will be imperative on each bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the works covered under these documents and specifications. MEWR shall not entertain any request for clarifications from the Tenderer, regarding such local conditions. The tenderers are advised to visit the site before filling the tender.

2.4 CLARIFICATION OF TENDER DOCUMENTS

2.4.1

2.4.2 Verbal certifications and information's given by the MEWR or its employees or representatives shall not be in any way entertained.

2.5 AMENDMENT OF TENDER DOCUMENTS

2.5.1 At any time prior to the submission of the tender or prior to the opening of the financial bid the MEWR may for any reason, whether at its own initiative or in response to a clarification requested by a Tenderer, modify the Tender documents by issuing amendments.

2.5.2 The amendment will be notified in writing or by Fax to all prospective tenderer's, which have taken the tender documents. These amendments will be binding on them. MEWR will bear no responsibility or liability arising out of non-receipt of the same in time or otherwise.

Section - 3: Preparation of tender

3.1 LANGUAGE OF BID AND MEASURE

The Tender prepared by the Tenderer and all correspondence and documents relating to the bid exchanged by the Tenderer and MEWR shall be written in the English provided that any printed literature furnished by the Tender may be written in another language so long as accompanied by a English translation of its pertinent passages, in which case, for purpose of interpretation units of measurement shall be metric in accordance with System International.

3.2 DOCUMENTS COMPRISING THE BID

The Tender prepared by the Tenderer shall comprise of the following components:

- a) Covering letter as provided in tender document;
- b) Tender form;
- c) Documentary evidence establishing that the bidder is eligible to Tender and is qualified to perform the contract, if its tender is accepted;
- d) Bid security (Earnest money) furnished in accordance with the tender;
- e) Authorization letter of the Tenderer, for the person representing his firm, that he is authorized to discuss and with specific mention of this tender. In case of dealer participating in the tender, he shall have to provide an authorization letter from his principals, that he is participating in the tender as a single dealer of Sierra Leone for this tender **(as Annexure XI)**.

3.3 BID PRICE

3.3.1 The Tenderer shall indicate prices on the appropriate financial bid schedule attached to these documents.

3.3.2 Duties and taxes: The price quoted should include all taxes and duties, custom duty, excise duty, sales tax, local taxes, Trade tax, Income Tax, Surcharge on income tax etc. if any. Tax Deduction at Source (TDS) on payments made to the contractor shall be deducted as per the prevalent laws and rules of Government of Sierra Leone. The amount of taxes subject to TDS shall be shown clearly by the firm in the bills. A supplier/contractor shall be entirely responsible for all taxes, duties, license fees etc. All taxes payable as per Government income tax & service tax norms will be payable by the contractor. If any new tax/duty is levied during the contract period the same will be borne by the firm exclusively.

TDS will be deducted from the payment of the contractor as per the prevalent laws and rules of Government of Sierra Leone in this regard.

3.4 BID CURRENCIES

Prices shall be quoted in any freely convertible currency.

3.5 BID SECURITY (Earnest Money)

3.5.1 The bidder shall furnish, as part of its bid, bid security as mentioned in the tender notice in the form of a bank draft /pay order/Bank guarantee issued by a nationalized bank. The bank guarantee shall be valid for a period of 13 months from the opening of technical bid.

3.5.2 Any bid not secured with the earnest money will be rejected by the MEWR as non-responsive.

3.5.3 No Interest shall be payable on the amount of earnest money and the same will be released, after the tenders have been decided, to those tenderers who fail to get the contract.

3.5.4 The earnest money of successful tenders shall be converted into agreement security and shall be released after the expiry of the agreement.

3.5.5 The Tender security (earnest money) may be forfeited:

- a) If a Tenderer withdraws its tender during the period of tender validity specified by the tenderer on the tender form;
- b) If the successful tenderer fails to sign the contract within stipulated period;
- c) If the tenderer fails to carry out the work as per the agreement.

3.6 WORK ORDER SECURITY DEPOSIT (PERFORMANCE BOND)

3.6.1. The successful tenderers who execute the agreement with MEWR for the work tendered shall have to deposit a security amount (Performance Bond), against each work order placed on them. The amount of security deposit shall be equal to the 10% of cost of systems ordered in each work order placed on them. The security deposit may be forfeited in case of non-execution of work against the work order placed.

3.6.2 The security deposit/ bank guarantee shall be released only after completion of work in all respect along with the final payment.

3.6.3 After satisfactory completion of work, the bank guarantee shall be treated towards performance guarantee of the systems and shall be released after the

completion of warranty. If any delay occurs in completing the work, the bank guarantee shall be suitably extended to cover the delay period.

3.7 PERIOD OF VALIDITY OF TENDER

3.7.1 Validity of the offer shall be twelve months from the date of opening of the tender. Without this validity the tender will be rejected. The validity must be mentioned on the envelope otherwise tender may not be opened.

3.7.2 In exceptional circumstances; the MEWR will solicit the tenderer's consent to an extension of the period of validity. The request and the response there of shall be made in writing (or by cable). The contract performance security provided under clause 3.5.5 shall also be suitably extended.

3.8 FORMAT AND SIGNING OF TENDER

3.8.1 The bid must contain the name, residence and places of business of the persons making the tender and must be signed and sealed by the Tenderer with his usual signature. The name and designation of all persons signing should be typed or printed below the signature.

3.8.2 Tender by a partnership firm must be furnished with full name of all partners with a copy of partnership deed.

3.8.3 Tender by corporation/ company must be signed with the legal name of the corporation/company be the 'President', 'Managing Director' or by the 'Secretary', 'Agent' or other designation. Without disclosing his principal the tender may be rejected.

3.8.4 The original copy of the tender shall be typed or written in indelible ink and shall be signed by the Tenderer or a person duly authorized to bid and bidder to the contract. The letter of authorization shall be indicated by written power-of-attorney accompanying the tender. All pages of the bid shall be initialed by the person or persons signing the tender.

3.8.5 The bid shall contain no interlineations, erasures or overwriting except as necessary to correct errors made by the tender in which case such corrections shall be initialed by the person or persons signing the tender.

Section - 4: Submission of tender

4.1 SEALING AND MARKING OF TENDER

4.1.1 The tender must be complete in all technical and commercial respect and should contain requisite certificate, drawings, informative literature etc. as required in the specification. Any queries made should be promptly replied within following time schedule.

4.1.2 Fax query required to be replied by fax 4 days.

4.1.3 Query by letter to be replied by letter 14 days.

4.1.4 First sealed envelope (part-I) should contain Earnest Money (Bid Security) technical specifications, brochure, literature etc. It should be super scribed with Tender No: MEWR/TSSLS/01/10 & 'EM & TC'. All parts of tender documents except price bid duly signed should be submitted in the first envelope. Requisite earnest money in the form of Bank Draft/Bank Guarantee should be attached.

4.1.5 The tenderer should submit price bid duly signed on the original Financial Bid attached with this tender document. Second sealed envelope (part-II) should contain financial bid only. It should be super scribed with Tender No: MEWR/TSSLS/01/10. and "Financial bid". Anything in regard of financial condition, payment terms, rebate etc. mentioned in Financial bid may make the tender invalid. Therefore, it is in the interest of the tenderer not to write anything/extra in part-II except price.

4.1.6 The envelope shall be addressed as follows:

**THE DIRECTOR
PROJECT MANAGEMENT UNIT
MINISTRY OF ENERGY AND WATER RESOURCES
5TH FLOOR, ELECTRICITY HOUSE
FREETOWN, SIERRA LEONE.**

And must boldly marked:

TENDER FOR SUPPLY AND INSTALLATION OF SOLAR STREET LIGHTING SYSTEM. DO NOT OPEN BEFORE 12.00 HOURS ON 30th June 2010.

4.2 EXPENSES OF AGREEMENT

A formal agreement shall be entered with the contractor, according to the draft agreement issued by the MEWR, for the proper fulfillment of the contract. The expenses of completing and stamping of the agreement shall be paid by the contractor. **The agreement shall be rate contract type valid for 12 calendar months from the date of signing the contract**

4.3 DEADLINE FOR SUBMISSION OF BIDS

Bids must be received by the MEWR at the date, time and address specified in the tender notice/ tender documents.

4.4 LATE BIDS

Any bid received after the deadline for submission of bids prescribed by the MEWR pursuant to clause 4.3 shall be rejected and / or returned unopened to the Tenderer.

Section - 5: Tender opening and evaluation

5.1 OPENING OF TENDER

The procedure of opening of the tender shall be as under:

- 5.1.1** First envelope (part-I) bearing tender no and super scribed 'EM & TC' shall be opened at the time and date mentioned in the tender notice by MEWR's representatives in the presence of tenderers, who choose to be present.
- 5.1.2** Second envelope (part-II) containing price bid shall be opened (after obtaining financial clarifications and establishing technical suitability of the offer) as per time and date provided in tender notice. Second envelope of only those tenderer shall be opened whose first envelope (part-I) shall be found commercially clear and technically suitable.
- 5.1.3** In case it is not possible to open second envelop (part-II) on the same day due to unavoidable circumstances then the opening of the second envelope shall be postponed, and intimation of this effect shall be sent to tenderers by telegram/ fax. It will be in the interest of the tenderer to send their authorized representatives well conversant with the tender and competent enough to take decision on technical and financial matter at the time of opening second envelope.

5.2 CLARIFICATION OF TENDER

- 5.2.1** To assist in the examination, evaluation and comparison of bids, the MEWR may at its discretion ask the bidder for a clarification on its bid. The request for clarification and the response shall be in writing.

Section - 6: Award of contract

6.1 MEWR reserves the right of negotiation with eligible tenderers before the finalization of the tender.

6.2 The MEWR reserves the right at the time of award of contract to increase or decrease the quantity of goods without any change in price or other terms and conditions.

6.3 MEWR reserves the right to accept any bid and to reject any or all bids.

MEWR reserves the right to reject any or all the tenders or accept any tender in total or in parts or work may be divided among various tenderers without assigning any reason thereof.

6.4 NOTIFICATION OF AWARD

Prior to the expiration of the period of tender validity the MEWR will notify the tenders by registered letter or by cable or Fax, to be confirmed in writing by letter, that the bid has been accepted.

6.5 EXECUTION PERIOD

The work shall have to be completed within 06 (six) months from the date of award of work.

6.6 CONTRACT

Before execution of the work, a contract agreement for execution of the work shall be signed with the contractor, as per the draft agreement issued by MEWR. Since the agreement will be of rate contract type, it will be same for all the eligible tenderers and no deviations will be accepted. Tenderer has to sign the agreement within the 15 days of the communication of the offer by MEWR; otherwise earnest money deposited with the tender shall be forfeited.

Section - 7: Handing over certificate

Certified that a **Solar street lighting system** has been installed, commissioned and tested successfully at(location details – full address of site), and has been handed over on datewith the following assets.

S.No	Item	Check list (Description)
1	Solar PV Modules Make: Module nos: Wattage of each module: Year of manufacture:	
2	Battery Make and S.No.: Ampere-hour rating:	
3	Charge controller, Lamps...	
4	Mounting Structure, Accessories, Cables	

(A) Installation Report:

N°	Items	YES/NO
1	Verified that all solar modules are installed shadow free area and correctly oriented from horizontal	
2	Verified that all cable are crimped, terminated and routed properly	
3	Verified that battery are laid out as per drawing and have not received damage during transportation	
4	Verified that solar charge controller is installed properly and cable termination in the enclosure are tight and secure and have not received damage during transportation	
5	Verified that ear thing kit is installed and connected properly	
6	Verified that training for operation & minimum maintenance of the systems has been explained to MEWR staff	
7	Verified that user manual has been provided to MEWR staff	

(B) Commissioning Report:

S.No.	Date	Time	Array voltage	Battery voltage	Solar charge Controller status

(C) M/s has installed, commissioned and handed over the Solar street Lighting system to MEWR. The usage and the minimum maintenance for the systems have been explained to MEWR staff onsite.

During commissioning, the above system was tested and found to be working satisfactorily.

Handed Over by Supplier

Taken Over by MEWR

Full Name & Designation

Full Name & Designation

Signature

Signature

Seal :

Seal

Copies:

- 1. Copy to MEWR
- 3. Copy to Supplier

PART-3: GENERAL CONDITIONS OF CONTRACT

1 Definitions

In the deed of contract unless the context otherwise requires:

- 1.1 MEWR shall mean the Purchaser, the Minister or his representative of MEWR and shall also include its successors in interest and assignees. The Supplier or the Contractor shall mean the person whose tender has been accepted by MEWR and shall include his legal representatives, successor in interest and assignees.
- 1.2 The agreement shall be a rate contract for twelve calendar months and shall be on turn-key basis. The work shall be completed within six months from the date of placement of work order. However MEWR may in case of urgency ask the firm to complete the work earlier, with the mutual consent of the contractor. In case the contractor fails to execute the said work within stipulated time, MEWR will be at liberty to get the work executed from the open market without calling any tender and without any notice to the contractor, at the risk and cost of the contractor. Any additional cost incurred by MEWR shall be recovered from the contractor. If the cost of executing the work as aforesaid shall exceed the balance due to the contractor, and the contractor fails to make good the additional cost, MEWR may recover it from the contractors' pending claims against any work in MEWR or in any lawful manner.
- 1.3 The successful tenderers who execute the agreement with MEWR for the work tendered shall have to deposit a security amount, against each work order placed on them. The amount of security deposit shall be equal to the 10% of cost of systems ordered in each work order placed on them. The security deposit may be forfeited in case of non-execution of work against the work order placed.
- 1.4 The security deposit/ bank guarantee shall be released only after completion of work in all respect along with the final payment.
- 1.5 After satisfactory completion of work, the bank guarantee shall be treated towards performance guarantee of the systems and shall be released after the completion of warranty. If any delay occurs in completing the work, the bank guarantee shall be suitably extended to cover the delay period.
- 1.6 That on the request of the contractor and also in the interest of the organization the MEWR is authorized to extend the validity of the agreement, subject to that the request of the contractor is received before the expiry of the agreement period, or any extended period granted to the contractor.

- 1.7 The contractor, if he is major SPV module manufacturer of the country, may be allowed to operate in the state through a single authorized dealer for execution of the orders placed on them. It will be the sole responsibility of the contractor, to execute orders placed as per time schedule, and to ensure quality parameters, specifications and other requirements provided in the tender document and as per agreement.
- 1.8 The agreement shall be deemed to be extended till the date of completion of last supply order subject to the completion period as provided in the clause 1.2.
- 1.9 In the interest of the work and the programme, agreement executed between the tenderer and the MEWR may be extended to a mutually agreed period, if the need so arises.
- 1.10 It shall be sole responsibility of the contractor to get verified the quality & quantity of the supplied material at the site of delivery.
- 1.11 The contractor shall provide a certificate at the time of submission of tender that he has seen the various relevant clauses of the Administrative Approval of MEWR/TSSLS/01/10 dated 9th April 2010, and shall abide by the various provisions provided therein (as Annexure-XII).

2 Liquidated damages

If the contractor fails to perform the services within the time periods specified in the contract work order, the MEWR shall without prejudice to its other remedies under the contract shall deduct from the contract price as liquidated damage, a sum equivalent to 1% of the price of the unperformed services for each week of delay until actual performance up to a maximum deduction of 10% of the delayed services, of the contract price. Once the maximum is reached, the MEWR may consider termination of the contract. Performed services shall mean complete work of supply, installation and commissioning of each system.

- 3** The contractor shall have to comply with all the rules, regulations, laws and by-laws for the time being in force and the instructions if any, of the organization, in whose premises the work has to be done. MEWR shall have no liability in this regard.

4 Force majeure

- 4.1 Notwithstanding the provisions of clauses contained in this deed; the contractor shall not be liable for forfeiture of its performance security, liquidated damages, termination for default, if he is unable to fulfill his obligation under this deed due to the event of force majeure circumstances.
- 4.2 For purpose of this clause, "Force majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable. Such events may include, but are not restricted to, acts of Government either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 4.3 If a force majeure situation arises, the contractor shall promptly notify the MEWR in writing within a week from the date, situation so arises.
- 5 The High court of Judicature at Freetown shall alone have jurisdictions to the exclusion of all other courts.
- 6 The contractor shall not without the consent in writing of MEWR, transfer, assign or sublet the work under this contract or any substantial part thereof to any other party.
- 7 MEWR shall have at all reasonable time access to the works being carried out by the contractor under this contract. All the work shall be carried out by the contractor to the satisfaction of MEWR.
- 8 If any question, dispute or difference what so ever shall arises between MEWR and the contractor, in connection with this agreement except as to matters, the decisions for which have been specifically provided, either party may forthwith give to the other notice in writing of existence of such question, dispute or difference and the same shall be referred to the sole arbitration of the MEWR or a person nominated by him. This reference shall be governed by the Sierra Leone Arbitration Act, and the rules made there under. The award in such arbitration shall be final and binding on both the parties. Work under the agreement shall be continuing during the arbitration proceedings unless the MEWR or the arbitrator directs otherwise.
- 9 MEWR may at any time by notice in writing to the contractor either stop the work all together or reduce or cut it down. If the work is stopped all together, the contractor will only be paid for work done and expenses distinctly incurred by him as on preparation or the execution of the work up to the date on which such

notice is received by him. Such expenses shall be assessed by MEWR, whose decision shall be final and binding on the contractor. If the work is cut down the contractor will not be paid any compensation whatsoever for the loss or profit which he might have made if he had been allowed to complete all the work included in the contract.

10 Inspection and tests

- 10.1 The following inspection procedures and tests are required by the MEWR in the presence of MEWR's representative, if so desired by MEWR. MEWR shall issue the inspection order separately.
- 10.2 The MEWR or its representative shall have the right to inspect and / or to test the goods to confirm their conformity to the contract. The special conditions of the contract and/or the technical specifications shall specify what inspections and tests the MEWR requires.
- 10.3 **Inspection at works.**
- 10.3.1 The MEWR, his duly authorized representative shall have at all reasonable times access to the suppliers premises or works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the works during its manufacture.
- 10.3.2 The supplier shall give MEWR 15 days written notice of any material being ready for testing. It shall be mandatory that such notice should reach MEWR within 30 days of placement of supply order. Such tests shall be on the suppliers' accounts/ expenses except for the expenses of the inspector. MEWR reserves the full rights to waive off the inspections of the materials.
- 10.3.3 The supplier is required to get the entire lot of the ordered material inspected at one time, before the supply of the materials. In case the suppliers fails to get the entire lot inspected at one time, the total expenses of the further inspection will be borne by the supplier/contractor.
- 10.4 The inspection by MEWR and issue of dispatch instruction thereon shall in no way limit the liabilities and responsibilities of the supplier in respect of the agreed quality assurance programme forming a part of the contract.

Nothing contained in clause 10 and in case MEWR waives off inspection at works shall in no way release the supplier from any guarantee or other obligations under this rate contract.

11 Warranty

- 11.1 The supplier shall warrant as per standards for quality that anything to be furnished shall be free from all defects and faults in material, workmanship and manufacture, shall be of the highest grade and consistent with established and generally accepted standards for material of the type ordered, shall be in full conformity with the specifications and drawing.
- 11.2 Performance of Equipment: In addition to the warranty as already provided, the supplier shall guarantee satisfactory performance of the equipment and shall be responsible for the period or up to the date specified in sub-clause (c) hereof after the equipment has been accepted by the MEWR to the extent for any defects that may develop such defects shall be removed at his own cost when called upon to do so by the MEWR.
- 11.3 The Warranty period shall be 10 (ten) years for the PV modules and 02 (two) years for complete system including battery from the date of commissioning and handing over of the system. Defects developed in the system within warranty period shall be rectified by the contractor promptly. In case the defects are not rectified within 10 days of the receipt of the complaint by the contractor, MEWR shall have full liberty to restore the system in working condition. The expenditure so incurred by MEWR shall be deducted from the contractor pending claims, security deposit or in other law full manner.
- 12** Notice statement and other communication send by MEWR through registered post or telegram or fax to the contractor at his specified addresses shall be deemed to have been delivered to the contractor.
- 13** Any work which is not covered under this contract but is essentially required for the completion of job (to the satisfaction of MEWR) shall be carried out by the contractor as extra item for which payment shall be made separately at the rates decided by MEWR.
- 14** The work shall be carried out by the contractor as per design and drawings approved by MEWR, wherever necessary, the contractor shall submit relevant designs and drawings for approval in MEWR, well in advance. Work carried out without MEWR's approval shall not be accepted and the MEWR shall have right to get it removed and to recover the cost so incurred from the contractor.
- 15** The contractor shall provide one copy of instruction manual and routine maintenance manual with each system supplied or installed, this shall be in English. The following minimum details must be provided with:

- 15.1 About the photovoltaic system including PV modules, batteries and electronics;
- 15.2 Do's and Don'ts;
- 15.3 Clear instructions on regular maintenance and trouble shooting of the system;
- 15.4 Name & address of the contact person in case of non-functioning of the system.

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

17 Patent right and royalties.

The tender shall indemnify the MEWR against all third party claims of Infringement of patent, royalties' trademark or industrial design rights arising from use to the goods or any part thereof.

18 Packing & forwarding

- 18.1 Contractors wherever applicable shall after proper painting, pack and crate all the equipment in such a manner so as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till the time of installation. The contractor shall be held responsible for all the damages due to improper packing.
- 18.2 The contractor shall inform the MEWR of the date of each shipment from his works, and the expected date of arrival at the site for the information of the MEWR project offices at least 03 days in advance.

19 Demurrage wharfage, etc.

All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor.

20 Insurance

The goods supplied under the contract shall be fully insured against loss or damage, incidental to manufacture or acquisition, transportation, shall be included in the bid price.

21 Transportation

The Tenderer is required under the contract to deliver the goods to the site.

22 Termination for insolvency

MEWR may at any time terminate the contract by giving written notice to the contractor without compensation to the contractor, if it becomes bankrupt or otherwise insolvent, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the MEWR.

23 Termination for convenience

The MEWR, may by written notice sent to the supplier, terminate the contract, in whole or in part at any time for its convenience. The notice of termination shall specify that termination is for the purchaser's convenience in the interest of MEWR.

24 Applicable law

The contract shall be interpreted in accordance with the laws of the purchaser's country i.e. Sierra Leone. The station of MEWR shall have exclusive jurisdiction in all matters arising under this contract.

25 Notice

25.1 Any notice given by one party to the other pursuant to the contract shall be sent in writing or by telegram or telex/ cable and confirmed in writing to the address specified for that purpose in the special condition of contract.

25.2 A notice shall be effective when delivered or on the notice's effective date, whichever is later.

26 Taxes and duties

The price quoted should include all taxes and duties, custom duty, excise duty, sales tax, local taxes, Trade tax/VAT, Income Tax, Surcharge on income tax etc. if any. Tax Deduction at Source (TDS) on payments made to the contractor shall be deducted as per the prevalent laws and rules of Government of Sierra Leone. The amount of taxes subject to TDS shall be shown clearly by the firm in the bills. A supplier/contractor shall be entirely responsible for all taxes, duties, license fees

etc. All taxes payable as per Government income tax & service tax norms will be payable by the contractor. If any new tax/duty is levied during the contract period the same will be borne by the firm exclusively. TDS will be deducted from the payment of the contractor as per the prevalent laws and rules of Government of Sierra Leone in this regard. The amount of taxes subject to TDS shall be shown clearly by the firm in the bills.

27 Others:

- 27.1 I-V curve of the each module and technical details such as open-circuit voltage, short circuit current, optimum power voltage, maximum system voltage, fill factor, cell efficiency etc. shall be supplied along with each consignment and copy should be sent to MEWR for record shall be supplied along with the modules.
- 27.2 The contractor shall continue to provide spare parts of the system supplied, after the expiry of warranty period at the Government of Sierra Leone (GoSL) cost. If the contractor fails to continue to supply spare parts and services to GoSL, appropriate action shall be taken against the firm.
- 27.3 After successful commissioning of the system, the system will be handed over to the MEWR.
- 27.4 It shall be the sole responsibility of the contractor to get verified the quality & quantity of the supplied material at the site of delivery.

28 Payments

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

- 28.1 20% of the ordered value to be paid as mobilization advance against bank guarantee of equal amount valid for a period of six months as per contract value defined in this contract. Request for mobilization advance must be submitted within the 10 days of the release of work order. Release of mobilization in advance shall in no way effect the time schedule stated in the work order.
- 28.2 The contractor shall raise bill of 70% of the ordered value after the supply of the complete system as per the technical specification and terms and conditions specified in the contract. The contractors, if they have taken advance as per clause 28.1, shall be paid 50% of the order value after the adjustment of mobilization advance.

- 28.3 The contractor shall raise bill of 20% of the ordered value after installation and commissioning of the system.
- 28.4 The 10% payment shall be released after the two-year guaranty period. However, the amount may be released against the bank guarantee of equal amount valid for the 30 months.

29 Training of MEWR Staff

- 29.1 The supplier shall make arrangement and bear the cost of training staff of NPA in the operation and maintenance of the equipment. Training support and user manual must be prepared and made available to the Purchaser at the end of the training.
- 29.2 The training program shall be submitted to the Purchaser for approval within 30 days of the signature of the contract. The programme shall specify the training centre, number of trainees, durations, the curriculum vitae of the trainers.
- 29.3 The training will be carried out from the period between the installation and provisional acceptance of the equipment.

PART-4: SCOPE OF WORK AND TECHNICAL SPECIFICATIONS

DEFINITION

A stand alone solar photovoltaic street lighting system aims to provide solar electricity for operating overnight lights on streets. It comprises of a high efficiency long life lighting source (induction fluorescent lamps, lamps, LED...), colloid (gel) / AGM battery, PV module(s), control electronics, inter-connecting wires/cables, module mounting hardware, battery box, operation, instruction and maintenance manual.

GENERAL SPECIFICATIONS

The system should be designed to automatically switch ON at dusk, operate throughout the night and automatically switch OFF at dawn under average daily insolation of 3.7 kWh/sq.m on a horizontal surface. This represents the lowest monthly insolation values for the target installation sites.

The table bellow presents the main characteristics of the project sites.

PARTS	1	2						3						
REGIONS	Freetown	Lungi	Kambia	Port Loko	Makeni	Kabala	Magburaka	Bo	Pujehun	Bonthe	Moyamba	Kenema	Kailahun	Sefadu
No. of lamps/City	3,000	540	390	390	1000	390	390	950	250	250	350	950	250	900
Total No. of lamps/lot	3,000	3,100						1,800				2,100		
Total Number of streets lights	10,000													
Temperature (°C)	Max													
	Min													
Rainfall mm/annum														
Solar Irradiation (kWh/m ² .day)	3.7 – Lowest monthly minimum													
CRI	> 70 Typical													
Type of battery	colloid battery, others with high efficiency													
Days Autonomy (days)	Tenderers to quote 4 days as standard. Tenderers may quote as an option, 5 days autonomy.													
Height of the poles (m)	As Specified by the bidder.													
Poles Spacing (m)	30 Meters Minimum													
Type of lamp	Induction Fluorescent Lamps, LED and others high efficiency light sources													
Type of photovoltaic cell	Crystalline Silicon (Mono or Multicrystalline)													
Latitude of the site (°North)														
Longitude of the site (°West)														
Operating hours	12 – Hours or light provided per day													

COMPONENT SPECIFICATIONS

A. LIGHTING PERFORMANCE SPECIFICATIONS

The scope of this contract is to supply 10,000 solar powered street lights. These street lights will be positioned such as to maximize the total linear lane coverage while meeting required lighting performance as stated below as well as other minimum standards set out in this documents. Lighting levels chosen are based on IES RP-8-00. GoSL is cognizant of the current research with regards to the effectiveness of different lighting sources and the potential for the levels in IES RP-8-00 to be over specified. To that end, responders to this tender are requested to submit bids for both the stated IES RP-8-00 lighting levels and at a level of 0.67 * IED RP8-00. These values are clearly indicated below.

*** Note that for the 0.67 * RP8 scenario, the expectation is that the pole spacing will be greater to enable more roadway to be illuminated.*

The following general guidelines MUST be followed when determining system adherence to specifications:

- Light levels used are to be those AFTER lumen depreciation including
 - o Light source degradation (Lamp, LED, etc.)
 - o Fixture degradation (reflector, cover/diffuser plate, etc.)
- A 0.90 factor (10% loss) is to be applied to account for dust/dirt on the fixture
- Light levels are to be measured with the unit at thermal equilibrium with an assumed ambient temperature of 35° Celsius
- If battery state of charge impacts light levels, then the light level must be measured at worst case conditions.

Specified Light Levels are as follows:

- Lighting levels are specified based on "Illuminance Method"
- Defined Roadway width is 8 meters
- Minimum pole spacing is 30 meters
- Pole height and overhang to be determined by responding bidder
- Road type is defined as "Collector"
- Pedestrian conflict is defined as "Medium"
- Scenario (A), RP—8-00 levels are defined as:
 - o Minimum maintained Average Illuminance: 9.0 lux
 - o Uniformity Ratio $E_{avg}/E_{min} = 4.0$
- Scenario (B), 0.67 * RP—8-00 levels are defined as:
 - o Minimum maintained Average Illuminance: 6.0 lux
 - o Uniformity Ratio $E_{avg}/E_{min} = 4.0$

All responding bidders MUST supply a fully detailed lighting simulation analysis clearly showing conformance with the performance requirements of the tender.

B. GENERAL SPECIFICATIONS

The solar lighting system is to be designed such that reliable lighting is provided under all foreseeable circumstances. To that end, the following must be observed:

- Solar panels must be sized such that they can provide sufficient energy to the system for the intended service life of 20 years.
- System losses must be taken into account including dust and dirt, wiring losses, electronics losses, and charging losses
- Batteries must be sized for 80% capacity (exclusive of low voltage cut-off) to ensure a reasonable battery service life.
- Light levels, where specified in response to tender requirements, must represent the light levels at the end of the service life of the specified light.
- Light levels are assumed to be at rated levels for determining battery size for days of autonomy

All responders to the tender MUST complete, in full detail, the “ENERGY BALANCE WORKSHEET” for their systems.

The solar lighting system must be based on a 12V (nominal) or 24V(nominal) system voltage only.

C. SOLAR PHOTOVOLTIC MODULE

Cell material: Only crystalline silicon (Monocrystalline or Multi (poly) crystalline) based solar modules will be accepted.

Certification: Preference will be given to modules that are certified to IEC61215.

Efficiency: The minimum efficiency of the panel must be 12.75% based on nominal power rating to ensure modern technology is employed and to reduce the size of the panels employed. ** Note, 12.75% represents 127.5 watts/m² of module area.

Lamination: Modules not certified to IEC61215 must be composed of a laminated structure of:

- Tempered glass not less than 3.2 mm thick
- Ethylene Vinyl Acetate
- Solar Cell Strings
- Ethylene Vinyl Acetate
- Tedlar™
- Exceptions to this construction must be approved by GoSL

Frame: The frame of the module must be anodized aluminum.

Warranty: All modules must be supplied with the following MINIMUM TRANSFERRABLE warranty:

- Workmanship and materials: 5 years
- 90% Power output guarantee: 10 years
- 80% Power output guarantee: 20 years

Junction box: Each module should be equipped with a suitable junction Box with cover. It should have a provision for opening to replace the cable if required. The junction box must be rated IP65 or better. In case more than one module is used each module should have a suitable rating bypass diode fixed in junction box. Virtually all models >140 volts have bypass diodes build in. The specification for “more than one module” really only matters if they are wired in series.

Name plate: Each module should have a name plate with following information:

- a) Name of Manufacture or distinctive Logo,
- b) Module Type,
- c) Serial Number,
- d) Month and year of manufacturing, rating.

D. BATTERY

Only maintenance free batteries of a colloidal (GEL) construction or absorbed glass mat (AGM) construction will be accepted.

The battery must have the following characteristics:

- Minimum 2,000 cycles at 25% depth of discharge rated to 80% of initial capacity at 25 Celsius.
- Minimum 500 cycles at 80% depth of discharge rated to 80% of initial capacity at 25 Celsius.
- Self discharge < 4% / month (measured at 20 Celsius)
- Specifically designed for deep cycle/solar applications
- Valve regulated construction
- Self sealing vent
- Plates constructed of lead-calcium for colloidal (GEL) construction or pure tin-lead for absorbed glass mat (AGM) construction
- Reinforced polypropylene case construction

Others: Suitable clamp, nut bolt etc. should be provided with each battery. The word MEWR should be engraved on battery top along with battery Serial No. MEWR should be printed along with manufacturer Name. The month and year of activation of battery should also be engraved on battery.

E. BALANCE OF SYSTEM

i) **LIGHT TECHNOLOGY:** Preference will be given to lamps based on technology including induction fluorescent and LED technology that has the following characteristics:

- > 70% lumen maintenance after 50,000 hours of operation [* Note, systems will be evaluated based on a 20 year, 87,600 hour life cycle]
- Very low mercury content
- High efficiency (> 70 lumens/watt : Absolute photometry)
- CRI > 65
- Color temperature $\geq 3,500\text{K}$ and $\leq 8,500\text{K}$

Responding bidders specifying LED fixtures must provide the following details:

- LM79 test report for the fixture
- LM80 report from LED vendor for LED used in fixture
- Analysis of LED lumen maintenance that includes as a minimum:
 - Measured LED junction temperature for a given test condition and extrapolated for an ambient temperature of 35 Celsius
 - LED drive current
 - LED manufacturer data that clearly correlates LED junction temperature and LED drive current to lumen maintenance.

Responding bidders MUST provide for their light fixture (including lamp):

- IES files + lamp specifications as appropriate
- Test report prepared by an independent lab that shows:
 - Total fixture lumens (absolute photometry)
 - Input test voltage and test current of ballast during testing

The expectation is that the absolute photometric lumens of the light sources will be >2,500 lumens and as high as 5,000 initial lumens. ** Note: The specified lighting requirements MUST be met at the lumen depreciated value of the lamp (typically 70%).

ii) **LIGHT FIXTURE:** The light fixture must have the following characteristics:

- Aluminum and/or steel construction
- Painted/coated in an appropriate fashion to fulfill 20 year service life
- IP65 or better rating
- Allows easy replacement of lamp element

iii) **LAMP BALLAST / DRIVER:** The unit should have the following features:

- Highly Reliable:
 - i. MTBF of 1.5 million hours calculated per Telcordia SR332

- ii. Design life > 25 years assuming based on Sierra Leone temperature conditions and enclosure conditions.
- Rated maximum ambient temperature at design load of not less than 60 Celsius [A lower rated ambient temperature may be accepted where manufacturer data shows that internal fixture temperature will not exceed 60 Celsius with an external ambient temperature of 35 Celsius].

iv) CHARGE AND LIGHTING CONTROLLER: The unit should have the following features:

1. Highly Reliable:
 - i. MTBF of 1.5 million hours calculated per Telcordia SR332
 - ii. Design life > 25 years assuming based on Sierra Leone temperature conditions and enclosure conditions.
 - iii. Rated maximum ambient temperature (at design charge current) of not less than 60 Celsius
2. Selectable or fixed charge algorithms appropriate to the style of battery being used; colloidal (GEL) or AGM
3. Temperature measurement and compensation for charging algorithms to ensure batteries are not overcharged.
4. The charge controller must be designed to support a charge current =
 - i. $(\text{Rated panel output power} * 1.25) / 11$ (for a 12V system)
 - ii. $(\text{Rated panel output power} * 1.25) / 22$ (for a 24V system)
5. Low voltage load cut-off designed to ensure the battery is not discharged to beyond 80% of its capacity. ** Note, nominally this will be 11.8V for 12V systems and 23.6V for 24 volt systems.
6. The charge controller should reconnect the load when the battery has sufficient charge to supply at least one night of light.
7. The connection to the panel must be protected against incorrect polarity connection AND the reverse flow of current back into the panel from the storage battery.

8. The connection to the battery must be protected against reverse polarity connection.
9. Panel and Light (load) connections must be protected against lightning and other electrostatic discharges.
10. Indicators (LED or otherwise) included to show the following functions:
11. Charging in progress (Green - recommended)
12. Load On (Red - Recommended)
13. Low voltage disconnect engaged (Yellow – Recommended)
14. The indicator should be fixed on front side of the battery box/charge controller.
15. A switch & fuse should be provided with the controller.
16. The PCB's of controller should be glass epoxy.
17. The completed PCB MUST be either conformally coated and/or "potted" to ensure protection from the elements.
18. All connection points are to be clearly labeled in a permanent fashion.

v) MECHANICAL HARDWARE

The mechanical construction of the completed unit will consist of:

- (a) Rigid steel pole
 - (b) Concrete foundation
 - (c) Battery / Electronics enclosure
 - (d) Solar photovoltaic module (s)
 - (e) Module mount
 - (f) Light Fixture
 - (g) Mounting arm for light fixture
- 1. The SPV module should be fixed on a rigid pole.**
 - 2. The pole will have the following characteristics**

- i. Will be designed to support the battery box / electronics enclosure, the light fixture arm, and the mount for the solar modules
- ii. It will be of sufficient strength to support the mounted units as well as strong enough to support the wind load of all components at a wind speed of 160kph. **** NOTE**** all respondents to the tender **MUST** provide a calculation of the effective projected area of their equipment **AND** the rated wind load of the pole at 160kph.
- iii. Will be constructed such that after final installation, has a height as specified by the responding bidder to meet the lighting specifications. Be constructed of GI steel
- iv. Painted/Coated with a corrosion resistant coating
- v. Be bolted directly to the base plate
- vi. Have a service life of not less than 40 years

3. Concrete foundation

- i. Shall be designed and installed appropriate to the soil conditions and the calculated loading for the pole and equipment.
- ii. Shall include a steel base plate with integrated bolts of sufficient strength to support the pole under loading.
- iii. The battery box / control electronics enclosure.
- iv. Is to be made of aluminum or mild steel, appropriately coated for a 20 year service life.
- v. Is to be mounted > 5.0 meters and < 5.5 meters above ground at the base to discourage theft and vandalism reducing pole loading and easing servicing.
- vi. Provides a method by which a locking mechanism can be added.

- vii. Louvers for proper ventilation should be provided on each side and back of the battery box. No vent shall be providing on top of battery box.
- viii. The edges of box should be turned properly to give smooth edge and good strength.

4. Solar Module Mount:

- i. Is to be constructed of aluminum or mild steel and coated to ensure a 20 year service life
- ii. Is to be purpose built for the mounting of a solar module and appropriate in construction for the specified solar modules
- iii. Adjustable angle or provides a fixed 10/15 degree mounting angle
- iv. Is either adjustable at installation or on the pole to allow correct orientation of the solar panel.

vi) GENERAL ELECTRICAL OPERATION AND PROTECTION

1. The pole and the electrical system of the solar light must be grounded by adequate means to earth.
2. A disconnect method, either switch, or disconnect rated connectors must be provided to allow disconnection of the solar panel and/or battery to allow servicing.
3. No damage to the system can occur if the load is disconnected.
4. The battery(ies) must be fused within 0.3metres of the battery with an appropriate field replaceable fuse rated at approximately 1.25* the maximum expected charging current.
5. The connection of the solar panel to the charge controller must be fused at a maximum of 1.25* the short circuit current of the solar panels. Full protection against open circuit accidental short circuit and reverse polarity must be provided.
6. An ability to read the charge current without disconnecting or changing any circuits must be provided. This could take one of several forms:
 - i. Ammeter function with appropriate display built into the charge controller.

- ii. Output terminal on the charge controller that outputs a voltage signal that can be translated into a charge current and read by a volt meter.
- iii. A current shunt wired into the charge circuit such that the voltage across the shunt can be measured with a suitable volt meter.

vii) ELECTRIC CABLE

All electrical cable must be copper stranded PVC or XLPE insulated copper cable rated to a minimum of 90 Celsius and recognized by a suitable electrical authority (UL, CE, IE, etc.) and appropriate to the application use.

No non-armored cables are to be exposed. Cables between the solar panel and the pole are to be enclosed in plastic or metal conduit.

All wiring in the battery/control box must be:

- Properly labeled as per function
- Properly secured using tie-wraps as appropriate
- Consistent across all units delivered to ensure ease of support

All wire connections must be properly terminated using manufacturer specified connection tools. Improperly terminated connection may result in the rejection of equipment by GoSL.

- No bare wire connections to terminal/junction strips are allowed. Wire must be terminated with an appropriate wiring terminal.
- As the battery will be replaced regularly, the connections must be properly terminated to allow easy replacement of the battery with only basic tools.
- Wiring losses are to be kept to a minimum of 3.5% for the charging system (solar panel to controller to battery), and 2.5% for the load system (battery to controller to lighting load). This is to ensure minimal heating of the wire. Recommended minimum wiring sizes are as follows:
 - i. PV Module to charge controller 4 mm²
 - ii. Charge controller to battery 4 mm²
 - iii. Battery/Controller to lamps 2.5 mm²
- Recommended wire colors are RED for positive leads, and Black for negative leads. Grounds wires are to be Green and/or bare copper.

viii) OTHERS

1. There will be a name plate on the system, which will give:
 - i. Name of the manufacturer or distinctive logo
 - ii. Serial number, year of manufacture
2. Components and parts used in the solar street lighting system should conform to the international or recognized standards (IEC, CE, UL, etc.), wherever such specifications are available and applicable.
3. Other hardware such as clamp, nut bolt etc. should be as per requirement of system. The material should be of good quality.
4. An operation, instruction and maintenance manual in English should be provided with the solar street lighting system. The following minimum details must be provided in the Manual:
 - i. About photovoltaic;
 - ii. About solar street lighting system – its components and expected performance;
 - iii. About PV module;
 - iv. About Induction Fluorescent Fixture and Lamps, LED fixtures or others low consumption lamps provided;
 - v. About battery;
 - vi. Clear instruction about erection of pole and mounting or PV-module and lamp housing assembly on the pole;
 - vii. About electronics;
 - viii. About charging and significance of indicators;
 - ix. DO's and DON'Ts.
5. Clear instructions on regular maintenance and trouble shooting of the solar street lighting system;
6. The contractor must be adequately equipped in order to confirm operation, debug, and service the build and installations. Equipment should include but not be limited to:
 - i. Ability to confirm proper operation of the PV module including ability to confirm the output of the PV module.

- ii. Ability to measure radiometric sunlight intensity in the field in order to verify and debug operation.
 - iii. Able to test the charge controller under equivalent to install test conditions using suitable power supplies and loads.
 - iv. Service crews must be outfitted with all requisite test and service equipment including solar radiation measurement, meters, certified wire termination tools, etc.
7. Name and address of the contact person in case of non-functionality of the solar street lighting system.

SERIAL NUMBER

Each system should have a serial number starting from MEWR/GoSL/10/ (Serial No.) to be mentioned on a nameplate with manufacture's Name on battery box.

INSTALLATION OF THE SYSTEM

Adequate space should be provided behind the PV module/array for allowing an obstructed air flow for passive cooling. Any minor item that is not specifically included in the scope of supply but is required for proper installation and efficient operation of the SPV systems is to be provided by the manufacturer.

(Signature and seal of Tenderer)

PART-5: WARRANTY

It is an essential part of the contract that the Tenderer shall provide warranty of the full system for 5 years. During the warranty period following maintenance shall be required to be carried out by the contractor.

- 1 Quarterly checking, up keeping and replacement (if required) of the any component or sub-components of the system for proper operation of the system.
- 2 Repairing/replacement of all defective components and sub-components including battery of the system as per the requirement to ensure proper operation of the system.
- 3 The Scope of work includes repairing/replacement of battery charge controller to make the system functional within warranty period whenever a complaint is lodged by MEWR. The contractor shall attend the some within a reasonable period of time and in any case of breakdown shall be corrected within a period not exceeding 3 days.
- 4 In case of full damage or breakage of the component due to negligence or fault of beneficiary the same shall be replaced at GoSL cost.
- 5 In case of Solar PV module damaged due to natural calamity, contractor shall replace the same free of cost. Thus it is in the interest of the contractor to insure the Solar PV modules for such causality and the cost of the insurance should be included in the price bid.
- 6 The safety and security of the system shall be the sole responsibility of the GoSL.
- 7 Spare parts: the tenderer will have to plan with his responsibility a sufficient quantity of spare parts for the guarantee period. Beyond this period, the tenderer have to guaranty the availability of the spare parts necessary for the service after sales.

(Signature and seal of tenderer)

PART-6: TECHNICAL BID

A. CONFORMANCE TO PERFORMANCE REQUIREMENTS

SCENARIO (A) – RP-8-00

1	Minimum maintained Average Illuminance	
2	Uniformity Ratio Eavg/Emin	
3	Spacing between poles (meters)	
4	Pole height above ground level (meters)	

SCENARIO (B) – 0.67 * RP-8-00

1	Minimum maintained Average Illuminance	
2	Uniformity Ratio Eavg/Emin	
3	Spacing between poles (meters)	
4	Pole height above ground level (meters)	

GENERAL

1	Lighting analysis simulation provided?	
2	Energy balance spreadsheet completed?	
3	Lighting photometrics and tests provided (from independent lab)?	
4	Estimation of Lumen maintenance?	
5	Detailed data sheets supplied for all major components?	

B. SPV MODULE:

The detailed data sheet for the PV module supplied must be provided. The following information is to be supplied by the tendering company for comparison purposes.

1	Manufacturer name of module		
2	Make & model		
3	Type of cell (mono or multi/poly)		
4	Lamination Sheet		
5	Glass		
6	Frame Material		
7	Quantity Per System		
8	Power at STC		
9	Power at 600 W/m ²		
10	Power at 200 W/m ²		
11	Temperature coefficient of P _{MPP}		
12	Temperature coefficient of I _{MPP}		
13	Voltage at P _{mpp} at 25C		
14	Current at P _{mpp} at 25C		
15	Open-circuit voltage		
16	Short circuit current		
17	Maximum system voltage		
18	Operating temperature	Max (°C)	
		Min (°C)	
19	Dimensions		
20	Weight		
21	Guarantee on Workmanship and Materials		
22	10 year and 20 year power guarantee		
23	Other information		

C. BATTERY

The detailed data sheet for the battery supplied must be provided. The following information is to be supplied by the tendering company for comparison purposes.

1	Manufacturer		
2	Make & model		
3	Type (Colloidal or AGM)		
4	Valve Regulated Construction?		
5	Manufacturer's Nominal AH rating / Rated Discharge Time		
6	Nominal Voltage		
7	Separate Material		
8	Positive Plate Material		
9	Negative Plate Material		
10	Self sealing vent plug?		
11	Case Material		
12	Dimension		
13	Weight		
14	Quantity		
15	Number of discharge cycles at 25% depth of discharge. Battery is considered to be failed at 80% of initial capacity. Measured at 25 Celsius		
16	Number of discharge cycles at 80% depth of discharge. Battery is considered to be failed at 80% of initial capacity. Measured at 25 Celsius		
17	Capacity at maximum lighting system discharge rate (25 Celsius)		
18	Capacity as a percentage of 25 Celsius rating	60 Celsius	
		45 Celsius	
		25 Celsius	100 %
		15 Celsius	
19	Self discharge rate - %/ Month at 25 Celsius		
20	Impedance at 25 Celsius		
21	Recommended Charge Voltages (25 Celsius)	Initial charge voltage	
		Float charge voltage	
22	Manufacturer's Guarantee		
23	Other information		

D. BALANCE OF SYSTEM

i) LIGHT FIXTURE and LAMP/LIGHT ENGINE

The following table applies to systems consisting of a ballast and replaceable lamp element (i.e. Induction Fluorescent). For LED systems, please use the table that follows.

1	Fixture Manufacturer	
2	Make and model	
3	Lamp Manufacturer (if applicable)	
4	Make and model	
5	Quantity of Lamps	
6	Rated Lamp wattage	
7	Lamp rated lumens/watt	
8	Power draw of ballast in system at nominal battery voltage (watts)	
9	System rated lumens/watt (relative photometry)	
10	System rated lumens/watt (absolute photometry)	
11	Name of independent lab providing photometric data.	
12	Lumen Depreciation – Hours to 70% lumen maintenance and/or recommended bulb replacement hours (at >70% lumen maintenance) (*1)	
13	Nominal color temperature	
14	Color consistency (provide color coordinates of distribution of units shipped to fulfill contract)	
15	CRI (** Note, a graph of the color spectrum of the supplied light source must be provided).	
16	Life expectancy of the fixture (independent of the ballast) / failure mechanism	
17	Maintenance if any	
18	Guarantee	
19	Other	

(*1) While certain bulb types, i.e., metal halide may have a 20,000 hour lumen depreciation to 70% output, they experience complete failure at the end of their life. Hence, the replacement time could be rated at 15,000 hours to limit in field failure. For this case, 15,000 hours would be used.

The following table is to be used by systems employing LEDs.

1	Fixture Manufacturer	
2	Make and model	
3	LED Manufacturer	
4	LED model number(s)	
5	LM-80 report supplied?	
6	Total number of LEDs employed	
7	Effect on system of single LED failures	
8	LED drive current	
9	Maximum LED die temperature at 35C lighting fixture ambient temperature?	
10	Power draw of driver in system at nominal battery voltage (watts)	
11	System rated lumens/watt (absolute photometry)	
12	Name of independent lab providing photometric data.	
13	LM79 Report Supplied?	
14	Lumen Depreciation – Hours to 70% lumen maintenance	
15	Nominal color temperature	
16	Color consistency (provide color coordinates of distribution of units shipped to fulfill contract)	
17	Are the light engines field replaceable?	
18	Maintenance if any	
19	Guarantee	
20	Other	

ii) BALLAST / DRIVER

1	Manufacturer	
2	Make and Model	
3	Quantity per System	
4	Minimum Input Voltage	
5	Maximum Input Voltage	
6	Efficiency at Nominal Input Voltage	
8	MTBF	
9	Design Life	
10	Maximum operating ambient temperature	
11	Minimum operating ambient temperature	
17	Guarantee	
18	Other	

iii) CHARGE CONTROLLER

1	Manufacturer	
2	Make and Model	
3	Quantity per System	
4	System Voltage	
5	Charger type; MPPT or PWM	
6	Maximum rated charge current	
7	Charger efficiency at maximum system charging current.	
8	MTBF	
9	Design Life	
10	Maximum operating ambient temperature	
11	Minimum operating ambient temperature	
12	Designed for or selection for system battery type?	
13	Temperature compensation?	
14	Low voltage cut-off set point	
15	Reconnect voltage (or algorithm)	
16	Quiescent Current (load off, not charging)	
17	Guarantee	
18	Other	

iv) POLE AND LIGHT FIXTURE ARM

1	Manufacturer	
2	Construction material	
3	Total height	
4	Wall thickness in mm	
5	Rated effective projected area at 160 kph	
6	Rated effective projected area at other wind loadings	
7	Coating method	
8	Luminaire mounting height	
9	Battery/Control box mounting height	
10	Light fixture arm	
11	Slope of fixture arm	

v) BATTERY BOX Etc.

1	Manufacturer	
2	Construction material	
3	Dimensions	
4	Wall thickness in mm	
6	Coating method	

(Signature and seal of tenderer)

PART-7: PRICE BID - A

Tender No: MEWR/TSSLS/10/10

Financial offer for the Supply, transportation, installation and commissioning with 5 years warranty of Street Light Solar System, as per scope of work, technical requirement, specifications & terms and conditions, etc. of the tender.

Sl.No.	Name of works	Unit Rates in \$U.S.	
		In figures	In words
1	Supply of Solar Street Lighting systems with two years warrantee(Ex works cost)		
2	Average transportation cost		
3	Cost of installation and commissioning of Solar Street Lighting systems in various cities of Sierra Leone		
Total			

- 1 Certified that rate quoted above are as per specification terms & condition mentioned in the tender.
- 2 The rates are inclusive of all taxes & duties what so ever, as detailed in technical offer. If any new tax/duty is levied during the contract period, the same will be absorbed by the firm exclusively.
- 3 If required firm can attached separate sheet for additional items on the above format.

(Signature and seal of tenderer)

20 YEAR LIFECYCLE COST ANALYSIS

In order to evaluate bids of differing technologies effectively, all tenderers must provide the following information that will be used to estimate the 20 year lifecycle costs:

ITEM	# Of Replacements over 20 year period (per pole)	Total unit part cost of replacement in \$USD (per pole)	Estimated labor to replace in hours (not including travel)
Battery(ies)			
Lamp, LED light engine, or equivalent ^(*)			
Charge Controller			
Light Ballast / Driver			

^(*): If replacement requires replacement of lighting fixture, quote the cost of the complete fixture and associated labor.

(Signature and seal of tenderer)

PART-7: PRICE BID - B

Tender No: MEWR/SSLS/01/10

Financial offer for the Supply, transportation, installation and commissioning with 5 years warranty of Street Light Solar System, as per scope of work, technical requirement, specifications & terms and conditions, etc. of the tender.

S. No.	Items	Unit Rate in \$US	
		In figures	In words
1	PV Module(s) as per bid per system		
2	Battery(ies) as per bid per system		
4	Charge Controller		
5	Light Fixture		
6	Lamp / Light Engine		
6	Light Mounting Arm (if separate from fixture)		
7	Battery / Control Enclosure		

- 1 Certified that rate quoted above are as per specification terms & condition mentioned in the tender.
- 2 The rates are inclusive of all taxes & duties what so ever, as detailed in technical offer. If any new tax/duty is levied during the contract period, the same will be absorbed by the firm exclusively.
- 3 If required the firm can attached separate sheet for additional items on the above format.

(Signature and seal of tenderer)

Signature of Officer issuing the tender:

Signature of Officers opening the tender: