



Procurement of Design, Supply, Delivery, Install, Test, Commission and Maintenance of 20 kW Grid Tied Roof Top Solar Systems for Department of Animal Production and Health – Administrative Building at Walisara – Ragama

Procurement No: 1/1/16/Proc/94/2024

Bidding Document

Tel: 0112958474

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Procurement No : 1/1/16/Proc/94/2024

Bidder's Name :.....
(Issued To) :.....
Address :.....
Tel. :.....
Fax. :.....

Issued Officer :

Seal :..... Date :

General

The Chairman , procurement committee department of animal production & health , welisara invites for bids from eligible and qualified bidders to design with supply, delivery, install, test, commission and maintenance of grid tied solar rooftop system on the top of roof. Utility provider is Ceylon Electricity Board (CEB). Selected bidder shall have good capacity, availability of stock and financial strength for quickly installing the system on date of agreed. Selected bidder should sign a contract agreement with Provincial Director , Department of Animal Production & Health , Welisara after issuing the acceptance letter. System capacity is designed by bidder. Power injection method is net accounting system. Bidder should visit to site and decide technically installing maximum AC capacity within CEB / LECO limit with considering available roof space, undergo weight on the roof, working path between the arrays on the roof and to get the maximum benefit to the client.

Table: A

Place	Address	Connection	kW ac	Required Tilt Angle	Required DC to AC
Department and Animal production and Health	Walisara- Ragama	3-Ph	20kW	8 or 12	1.2

Employer's Requirement

1. Scope

The Solar PV system and other associated system elements shall be designed to ensure continuity of operation under all working conditions and to facilitate inspection, maintenance and repairs. Every effort shall be made during design and selection of equipment, with a reasonable safety margin, to ensure,

1. Trouble free operation of the solar PV system during its intended design life
2. Safety of operating personnel, equipment and accessories
3. Continuous supply of spare parts in case of faulty situation

1.1 General

- a. This specification covers the general requirements for Supplying, Installation, testing and commissioning of set of solar PV systems. The proposed solar PV systems will be installed at the locations which listed in Table A.
- b. Layout plan and mounting structures to be prepared. Solar panels shall be mounted on a Aluminum structure without affecting the architectural view of the building. Cost of

Aluminum structure is required to be included in the Bid. A certification from a structural engineer to be obtained to ensure the roof stability.

- c. Single line diagram of the system shall be as specified in Annex – B with all DC/AC protection devices.
- d. Complete system shall comply with the CEB/CEB / LECO requirements for net Accounting facility and auto isolation feature (*anti-islanding*) shall be available when failure or malfunction of CEB/CEB / LECO grid connection.
- e. All equipment offered shall be brand new, latest in model/version and currently in production and shall comply with IEEE 1547/VDE 0126 -1-1 and SLS Stagnated. It shall be completed with standard components and accessories to perform the desired functions and conform to the required specification.

1.2 The scope of work includes

Design, supply, installation, testing and commissioning of set of solar PV systems each capacity with associated power evacuation system and other facilities. The proposed solar systems will be installed at the locations specified in Table A. The Solar PV system shall be connected to the existing low voltage network of the building which operates at 400 Volts,/230Volt 50 Hz.

- a. Supply and complete installation of required number of solar panels with all necessary mounting structures and associated civil works on the allocated space of the roof.
- b. Supply and installation of all other standard components to complete the system including the inverter, IP 65 combiner box, IP 65 distribution board AC and DC cables and isolation switches and surge protection devices.
- c. Supply and installation of lightning protection systems as per *Clause 5.1*.
- d. Installation of necessary grounding system
- e. Testing and Commissioning of the system SLSI Standard and PV Analyze Repot.
- f. Certification of the system complied with the CEB / LECO regulations to obtain the net Accounting facility.
- g. Providing preventive maintenance services to the solar PV system for a period of Five years (05) from the date of grid connected. Before releasing the retention payment of 10%, the supplier should agree to sign the maintenance services agreement with the client.

The above work scope may be achieved by accomplishing following essential milestones.

- a. Inspection of premises.
- b. Assessment of identified roof structures for structural integrity and load bearing capacity.
- c. Assessment of surrounding area for water availability.
- d. Assessment of surrounding area for system grounding.
- e. Site solar resource assessment.
- f. Design the solar PV system
- g. Procure required equipments, accessories and deliver to the site.
- h. Prepare the roof structure in line with structural assessment and solar PV system design.
- i. Arrange all equipment, materials and tools required for installation, testing and commissioning of the plant.
- j. Carry out the installation, testing, commissioning and acceptance testing (including performance verification testing under site conditions) for solar PV system.
- k. String cables are properly tagged, identified and traceable at key locations (at array, junction box , inverter).
- l. Durable warning signs and labeling should be displayed to identify the components and their hazardous nature.
- m. Emergency shutdown procedure, single line diagram should be displayed at the inverter room.
- n. Essential documentation including Operation and Maintenance Manuals (including operational and maintenance procedures) and layout diagrams for trouble shooting.
- o. Train the designated representatives of the client.
- p. Deliver and hand over of essential spare parts (SPD DC/AC/ MC4, MCB/) including tool kits for routine operation & maintenance work.**
- q. Carry out preventive maintenance of the solar PV system for a period of Five years (5) to ensure that the plant is operated to deliver guaranteed energy output.
- r. Insurance should be covered by both client, the contractor and third party for human damage and material damage during the construction period.
- s. Ony year Insurance covered for PV system**

1.3 System cost

- a. The system cost shall include all the costs related to above Scope of Work. Bidder shall quote for the entire facilities on a basis such that the total bid price covers all the obligations mentioned in this specification respect of Design, Supply, Installation , Testing and Commissioning Including Warranty, Operation & Preventive Maintenance, goods(PV

module/ PV Inverters and services **including spares required, logistics, replacement (if any) during operation & essential maintenance period.**

- b. The Bidder must take all necessary permits, approvals, licenses, and Insurance to complete the scope of work mentioned in *Clause 1.2* above. The project cost shall remain firm and fixed and shall be binding on the successful bidder till completion of work for payment his actual cost of execution of the project.
- c. No escalation will be granted on any reason whatsoever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever. The cost shall be inclusive of all duties and taxes, insurance etc. The prices quoted by the firm shall be complete in all respect and no price variation/adjustment shall be payable.
- d. The operation & maintenance of solar PV system would include wear, tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors, spares, consumables & other parts till the end of warranty period.

2. Operating Conditions

a. Design data:

i. Weather Condition	Humid Tropical Climate
ii. Wind gusts speed	50m/s
iii. Min. Ambient Temperature	27°C
iv. Max. Ambient Temperature	40°C
v. Max. Relative Humidity	95%

- b. The solar PV array and mounting structure must be able to withstand wind gusts speed up to 50m/s without damage.
- c. All wiring, enclosures, and fixtures that are mounted outdoors must be resist to high humidity, corrosion, insect and dust intrusion. Use of corrosion resistance terminals is required. Protection of the electronic circuit boards from corrosion by potting or applying a conformal coating is recommended.
- d. The design data specified herein are average values for concerned location. Its bidder's responsibility to obtain precise data required to optimize the performance of system without compromising safety norms on his own cost.

3. Grid Parameters

Bidders shall consider grid parameters specified herein to integrate the solar PV system with the utility grid. Also Bidders shall obtain further data (*if necessary*) from relevant authorities to establish complete synchronization and protection. Costs associated with the integration of solar PV system and utility grid shall be included in the bid and quote separately in the Price Schedule.

i. Grid Nominal Voltage	400 V
ii. Grid Highest Voltage	440 V
iii. Rated Fault Current	20 kA
iv. No. of phases	3 phase and neutral
v. System frequency	50 Hz
vi. Method of grounding	Solidly Earthed
vii. Grid Frequency Tolerance range:	+/- 3%
viii. Grid Voltage Tolerance:	-6% & +10%

4. Accessories

4.1 Specifications/standards/requirements for Solar PV Modules

The solar PV modules intend to use for the proposed solar PV system should be in conformity to following standards and requirements;

- a. Should be made from Monocrystalline N-type/P-type
- b. Photo electrical conversion efficiency of Solar PV module shall be 21.0% or higher.
- c. Maximum Module rating is 450 to 560Wp.
- d. Rated output of module shall be positive tolerance only.
- e. Shall perform in an operating environment where, solar PV panel temperature ranging between 10°C to 85°C and relative humidity is 95%.
- f. **Temperature coefficient (Pmax)** - 0.35%/°C or below
- g. Economic life should be more than 30 years.
- h. Module fill factor shall be 0.78 or higher.
- i. Modules shall be encapsulated and sealed to protect silicon cells from external environment and prevent ingress of moisture during its economic life.
- j. The PV modules must be tested & approved by one of the IEC authorized test centers as per relevant and latest IEC standards.
- k. The modules should be complied with **IEC 61215, IEC 61730, IEC 61701, and IEC 62804**
- l. **Electrical** Protection Class II and CE guidelines or latest for safety.
- m. The modules should be complied with **Anti- PID** (IEC62804)

- n. Solar modules should be preferably of replaced origin and should be IEC 61215, IEC 61730 , ISO 9001:2008 certified and comply to the QC080000 HSPM regulations (*certificate copies should be provided*)
- o. Solar cell surface to be coated with anti-reflective coating.
- p. Module frame shall be made out of Aluminum only.
- q. Module shall be built to withstand against 100 m/s of wind speed.
- r. The bidder should be an Authorized Representative to market and service of this product in Sri Lanka (*Attach a copy of the Authorization letter from the manufacture*).
- s. Product warranty for the solar modules should be 12 years, and linear performance warranty should be indicated against 85% power output in 25th years. Warranty statement from the supplier should be attached.
- t. Indicate the period of the insurance cover provided against the insolvency or bankruptcy of the manufacturer in case of a claim within the said warranty period.

4.2 Identification of solar PV modules

Solar PV modules shall be provided with RF identification label. This should include following essential information pertaining to design and manufacture of solar cells and modules;

- a. name of the PV module manufacturer
- b. country of solar cells
- c. country of solar module
- d. date and year of manufacture of solar cells
- e. date and year of solar module manufacture
- f. type or model number
- g. serial number
- h. module I-V curve
- i. power rating
- J.name of testing agency for IEC certification, date and year of obtaining IEC qualifying certificate for solar PV module
- k. maximum permissible system voltage for which the module is suitable

4.3 Specifications/standards/requirements for Inverter (or Power conditioning unit)

- a. The Inverter operation shall be based on Maximum Power Point Tracking (MPPT) principle.
- b. The grid interconnection protection scheme required (shall be as per the standards and requirement specified by the Ceylon Electricity Board) at the grid interface may be built in to inverter or separately provided (Most of the modern Inverters are equipped with this protection scheme as a built in capability). The Bidders are expected to study and understand the protection scheme required at the grid interface prior to choose the Inverter.

- c. PV Inverter shall be protected against incorrect polarity of DC input.
- d. DC surge protection - compatible with TYPE II protection class according to EN/IEC 61643-11
- e. AC surge protection- compatible with TYPE II protection class according to EN/IEC 61643-11 and Residual current monitoring
- f. PV Inverter should comply **Arc fault protection**
- g. The power quality of the Inverter output shall be as specified by the Ceylon Electricity Board (as per the standard and specifications of Net Accounting Scheme stipulated by CEB / LECO).
- h. The nominal Inverter power output shall be delivered to the existing low voltage network at three (03) phases, 400V, 50 HZ.
- i. The operating range of the Inverter shall be +/- 10% nominal voltage and -6% / +4% of power frequency. These settings should be adjustable to set the Inverter operating range.
- j. The required system AC capacity to be met using 3-ph 20kWac, PV Inverters
- k. The Inverter efficiency shall be 98% or more.
- l. The applicable IP class shall be IP 65.
- m. Shall be built with capability to synchronize with low voltage grid.
- n. Shall be built with capability to log data, remote monitoring and data transferring to remote computer.
- o. Shall be built with capability to protect against incorrect polarity.
- p. Inverters shall be warranted for a minimum of ten (10) years.
- q. The Inverters should be grid interactive and also DG set interactive if necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter in addition to the above shall be as follows:
 - i. Grid Frequency Synchronization range: +/- 3Hz
 - ii. Maximum Input DC Voltage: Depending on the inverter used. (Shall not exceed overloading limits as specified by manufacturer)
 - iii. No-load losses: Less than 1% of rated power.
 - iv. THD: < 3%
- o. Inverters shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- p. Inverters should comply with applicable IEC standard for efficiency measurements and environmental tests as per standard codes IEC 61683 and IEC 60068 2(6, 21, 27, 30, 75, 78). The MPPT units should qualify IEC 62093 and IEC 60068 2 (6, 21, 27, 30, 75, 78).
- q. Inverters should comply with IEEE 1547 (and IEC 62116) for islanding protection and interconnecting with grid as required by CEB / LECO.
- r. Inverters should be tested and approved by internationally recognized test houses.
- s. Should be capable of generating 3 phase AC power which suits the local grid code. Inverters

- t. The bidder should be an Authorized Representative to market and service this product in Sri Lanka or should be purchased from authorized dealer (Attach a copy of the Authorization letter).

4.4 Specifications/standards/requirements for Array Structure

- a. The structures provided shall be of flat-plate design with combination of I, C and L sections as per structure design requirement to withstand 100 m/s wind speed. Suitable fastening arrangement such as grouting and clamping should be provided to secure the installation against the specified wind speed. The solar PV panel mounting structure shall be firmly secured on to the roof structure without affecting the structural integrity. This shall be performed in consultation with a qualified structural engineer.
- b. Structural material shall be Aluminum and electrolytic ally compatible with the materials used in the module frame, its fasteners, nut and bolts.
- c. The fasteners used should be made up of stainless steel. Proper sealing materials to be employed for roof penetrations.
- d. The structures shall be designed to allow easy replacement of any module. Panel array to be oriented towards East-West direction wherever possible.
- e. Each structure should have angle of inclination as per the site conditions to take maximum irradiance. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.
- f. Regarding civil structures the bidder need to take care of the load bearing capacity of the roof and need arrange suitable structures based on the quality of roof.
- g. The mounting structure could be removed easily on a major roof repair and reinstall using the same materials.
- h. The module alignment and tilt angle shall be calculated to provide maximum annual energy output wherever possible. The existing roof alignment may be followed if the difference in energy yield (*energy maximum tilt angle Vs roof angle*) found to be insignificant. The panel mounting angle shall be as much as closed to the optimum value.
- i. Panels to be separated from the roof surface using a suitably designed insulation layer to prevent excessive heat being transferred to panels.
- j. Free space to be provided between panel rows for ease of maintenance which include replacement, inspection and cleaning of panels.

- k. Panels to be separated from the roof surface using a suitably space (*as per the installations guide of SLSI- SLS 1522*) to prevent the generation of excessive heat under the panels.
- l. Appearance of the roof, if visible at a distance, also to be considered for deciding mounting angle.
- m. Proper sealing materials to be employed for roof penetrations.
- n. Materials shall be UV resistant and shall be designed to withstand the temperatures to which they are exposed.
- o. Dissimilar metals, if used, shall be isolated from one another using non-conductive materials.

4.5 Specifications/standards/requirements for Combiner Boxes (Junction Boxes)

- a. Shall be suitably rated (box bus bar) to handle the expected current flow at the combiner box.
- b. The array combiner boxes shall be sealed to prevent ingress of dust, vermin and moisture
- c. The IP rating shall be IP 65.
- d. Shall be provided with test point for fault detection.
- e. Shall be equipped with suitable arrangement to disconnect and isolate arrays.
- f. Shall be fitted with cable glands for both incoming and outgoing cables.
- g. DC negative and positive cables put in to the separate conduit pipe/cable trays
- h. Cables to be properly terminated at the combiner box.
- i. Protective devices to be installed at combiner boxes to protect against over voltages and lightning conditions.
- j. Cables shall be properly tags for identification.
- k. Ground fault protection to be provided either at combiner boxes or at inverters.

4.6 Distribution board

- a. DC Distribution panel is needed to receive the DC output from the array field, with analog measurement panel for voltage, current from different MCBs so as to check any failure in the array field.
- b. It shall have MCCBs of suitable rating for connection and disconnection of array sections. DCDB shall be fabricated by CRC Sheet to comply with IP65 protection.

4.7 Cables and conduits

- a. The cables used in the system should be XLPE insulated copper conductors. Cables of various sizes as per load requirement for connecting all the modules/arrays to Junction Boxes, Junction Boxes to DC distribution box and DC distribution box to inverter. The cables shall be able to handle maximum expected current in case of a short circuit condition.
- b. Cross section area of the conductors shall be selected such that energy losses are within the stipulated limits.
- c. Cross section area of the conductors shall be selected such that voltages are managed at stipulated limits to facilitate trouble free operation of the equipments and PV system. Over current protection shall be provided at appropriate levels of the network.
- d. The DC cable network shall be designed such that energy losses are kept below 2% when transferring the rated power. Similarly energy losses at AC side shall be kept below 1%.
- e. Copper / Aluminum Cables of appropriate size shall be provided from Inverter onwards in AC side. Only copper wires of appropriate size and of reputed-made shall have to be used. However Aluminum cables can be used on AC side of transmission. The permissible voltage drop from the solar modules to inverter shall not be more than 2% of peak power voltage of the power source (solar panel).
- f. All connections should be properly terminated, soldered and/or sealed from outdoor and indoor elements. Cables shall be terminated using proper tools.
- g. All cables used outdoor shall comply with latest standards. In general relevant IEC standards should be adopted in calculation of current rating, voltage drops and cable de-rating factors.
- h. Cabling and other accessories should be warranted, and indicate the warranty period including for the workmanship.
- i. Cables to be taken through either conduits or cable trays and the same shall be firmly secured.
- j. All exposed cables, conduits and cable trays shall be resistance to UV radiation, heat and abrasion.

4.8 Data monitoring equipment:

- a. Each inverter shall be included LCD display or monitoring facility the energy production and essential parameters.

- b. External Digital Energy Meter shall be provided to log the actual value of Energy generated, voltage and current by the solar system. Technical data sheet of the digital meter should be provided.

5. Protection

The system should be provided with all necessary protections like grounding, lightening, and grid islanding as follows:

5.1 Lightning protection

- a. If you decided installing the lightning arrester to protect the proposed solar PV panel system, cost of the lightning protection system shall be included in the bid quote separately in the Price Schedule. Technical details and drawings shall be submitted with the offer. Test point should be indicated.

5.2 Grounding protection

- a. All components and exposed metal parts in the system shall be properly grounded. Solar panels shall include both equipment and system grounding. In addition the lightning arrester/masts should also be provided inside the array field if applicable.
- b. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. AC Distribution Board and DC Distribution Board should also be earthed properly. It shall be ensured that all the grounding points are bonded together to make them at the same potential.
- c. Grounding shall meet such norms as specified in the electrical code of practice in use and as specified by utilities cost of necessary grounding shall be included in the bid.

5.3 Grid Islanding & Surge Protection

- a. Solar system shall be equipped with islanding protection. In addition to disconnection from the grid (islanding protection i.e. on no supply), under and over voltage conditions shall also be provided.

- b. Solar system shall be provided with adequate rating fuses, fuses on inverter input side (DC) as well as output side (AC) for overload and short circuit protection and disconnecting switches to isolate the DC and AC system for maintenances as needed.
- c. Fuses of adequate rating shall also be provided in each solar array module to protect them against short circuit.

6. Earthing

- a. All non-current carrying metal objects such as solar PV panel frames, mounting structures, enclosures etc shall be grounded using unbroken earth wire. Earth wire shall be neither disconnected nor connected via fuse or any other link which has the tendency for physical opening or separation.
- b. Earthing system shall be electrically connected to provide return to earth path from all equipment irrespective of their mechanical connection.
- c. Earth resistance shall be less than Five (5) Ohm.
- d. Test point shall be provided for earth electrode for inspection and testing.
- e. The earth wire shall be made out of copper and shall be designed to withstand expected highest current.
- f. If it is required the lightning arrestor, the earth down conductor shall be made out of copper strip and shall be designed to withstand expected highest current.

7 Site visits

The bidder shall visit the site and acquaint all information that may necessary for the design purpose at his own cost. It is required to get the permission for such inspection from each site during office hours.

8 Manuals and Training

- a. The unit shall be supplied with necessary operation and service manuals in ENGLISH.
- b. The successful bidder shall provide a complete on-site training to the staff-in-charge on operation and maintenance of the unit.

9 Warranty

- a. The bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials.

- b. The bidder shall provide warranty covering the rectification of all defects in the design of equipment, materials and workmanship including spare parts (*if any*) for a period of not less than 12 years from the date of commissioning.
- c. Such a warranty shall also include servicing and preventive maintenance during this period. Bidder shall specify in detail the means available to them to implement such a warranty.
- d. Indicate the warranty from the date of commissioning is required for the performance of the system. Further, minimum warranty is required for the inverters and modules with not more than 15% performance degradation in accordance with industrial standard warranty conditions.

10. CEB / LECO Requirement

There should be lockable isolating switch which should be located at an accessible place to the CEB / LECO personal at any time.

11. Document

The following documents shall be submitted along with the Tender;

1. Catalogues with technical literature of the offered units
2. Duly filled and signed technical schedule
3. Schematic drawings for panel layout, electrical drawings
4. Previous supply records of the bidder.
5. Complete circuit line diagram with including all accessories(solar panel, string fuses, switch gears, isolators, earthing, digital energy meter, inverter, SPDetc)
6. Certificate from internationally recognized testing laboratory or organization to conform the quality of the equipment
7. PID certification
8. Performance curve of PV panels for its life time
9. Warranty contract and associated documents
10. Manufacture authorization letters,
11. 25-year Energy calculation and Financial calculation
12. PV recycling process after the warranty period to be submitted.
13. PV DC and AC Combiner Box test report
14. Company Insurance

Section II. Bidding Data Sheet (BDS)

The following specific data for the goods to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (ITB). Whenever there is a conflict, the provisions herein shall prevail over those in ITB.

ITB Clause Reference	A.
ITB 1.1	The Purchaser is Provincial Director, Department of Animal Production & Health , Welisara
ITB 1.1	The name and identification number of the Contract are Name: Procurement of 20kW Grid Tied Solar Rooftop Systems Procurement No: 1/1/16/Proc/94/2024
ITB 2.1	The source of funding is
ITB 4.4	Not Applicable
B. Contents of Bidding Documents	
ITB 7.1	For Clarification of bid purposes only, the Purchaser's address is: Attention: The chairman Address : Animal Production & Health , Welisara Telephone : 0112958474 Fax : 0112959260 E- mail address: animalphwppd@gmail.com
C. Preparation of Bids	
ITB 15.1	The bidder shall quote all prices in Sri Lankan Rupees only. If it is not, that bid will be rejected.
ITB 17.3	Installation should be completed during 30 days from date of commencement
ITB 18.1 (b)	After sales service is required
ITB 19.1	The bid shall be valid until 27 October 2024
ITB 20.1	(a) Bid shall include a Bid Security (issued by any bank under

	Central bank of Sri Lanka) included in Section IV Bidding Forms
ITB 20.2	The amount of the Bid Security shall be: Rs 74,800/- The validity period of the bid security shall be until 27 October 2024
	D. Submission and Opening of Bids
ITB 22.2 (c)	The inner and outer envelopes shall bear the following identification marks: Procurement No: 1/1/16/Proc/94/2024 Grid Tied Solar Roof Top systems for Department of Animal Production and Health – Administrative Building at Walisara – Ragama
ITB 23.1	For bid submission purposes, the Purchaser’s address is: Address : Department of Animal Production & Health , Walisara The deadline for the submission of bids is: Date: 03.10.2024 Time: 02.00 hrs (p.m)
ITB 26.1	The bid opening shall take place at: Provincial Director’s office Address: Walisara , Ragama Date: 03 .10.2023 Time: 02.01 hrs (p.m)
	E. Evaluation and Comparison of Bids
ITB 34.1	Domestic preference shall not be a bid evaluation factor.
ITB 35.3(d)	The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria: (a) Deviation in Delivery schedule: No Option 3 is selected and the adjustment is 0.05% per week

	<p>(b) Deviation in payment schedule: No</p> <p>(c) the cost of major replacement components, mandatory spare parts, and service: No</p> <p>(d) Components should be compiled with given specifications. If it is not, bid will be rejected.</p>
ITB 35.5	Bidders shall not be allowed to quote for one or more items. Bidder should be quoted for all items shown in schedule of requirements (See table 01)
ITB 35.6(add)	The Employer reserves the right to accept or reject any bid or accept part of items, and to cancel the bidding process and reject all Bids or decreasing/increasing capacity at any time prior to the award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the Employer's action.
ITB 35.7(add)	The law of Democratic Socialist Republic of Sri Lanka is applicable

Section III. Qualification and Evaluation Criteria

1. Eligibility Information

- (i). SLSEA Registered Solar PV Service provider (Bidder) should be founded at least Five (05) years prior to the bid submission deadline.
- (ii). The bidders should have previous experience of design, Installation, testing, commissioning and maintenance of at least 50 nos grid-connected Solar Photovoltaic power generation systems with total Installed capacity shall be 3000 kW or more.
- (iii). Bidder shall not have been blacklisted.
- (iv). Bidder should have the certificate of business registration issued by a government authority for companies. Local authority-issued business registration shall not be considered.
- (v). Bidder should have obtained valid registration from Sri Lanka Sustainable Energy Authority (**SLSEA**) for “Soorya Bala Sangramaya” on or before the date of bid closing/opening.
- (vi). Bidder should have the financial strength and should be able to execute this contract without financial failure and attend required after sales services for the committed time period.

Note

Bids will be rejected as non-responsive if documentary evidence in proof of above has not been provided.

1. Evaluation Criteria

- a. After opening the bids, the Technical Evaluation Committee (TEC) will undertake the detail study and evaluation of the bids received to determine the substantially responsive bidders among others and after that ranking of ascending as per considering price.
- b. Prior to the detail evaluation of bidders, the TEC will determine whether each Bidder has fulfilled the followings. Bids are rejected if they do not have the following.
 - (1) Meets the eligibility criteria mentioned above
 - (2) Whether required documents are submitted properly and signed
 - (3) Substantial responsiveness of the bidder to the requirements/conditions
 - (4) Necessary warranty required
 - (5) Past experience and performances
 - (6) Human resources availability of the company and WC Insurance
 - (7) Previous/Present client list
- c. After that preliminary examination of above, the TEC will attend to a detail examination(technically and financially) with considering the following
 - (1) Conformity with specifications
 - (2) Complied with SLS standards
 - (3) Financial Stability
 - (4) After Sale Service
 - (5) Delivery Schedule
 - (6) Installation and commissioning period
 - (7) Total Price
 - (8) Technical Capacity
 - (9) Able to maintain the spare parts after warranty period
 - (10) Technical verification certificates of all parts of the system

NB

1. All wiring, installation and verification should be done according to the code of practice for grid-connected photovoltaic power system (SLS 1522) published by Sri Lanka Standard institution.
2. Bidder should not request any comments, changes, proposal adding to this bid document. But bidder could be allowed for such things in writing to the procurement entity before 10 days of bid opening.
3. Option prices/option proposals shall not be included in same document.
4. Multiple bids shall not be submitted same bidder.

Section IV

Bid Submission Form

Date:

To:

.....
.....

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents

- (b) We offer to supply in conformity with the Bidding Documents and in accordance with the Delivery Schedules specified in the Schedule of Requirements the following Goods and Related Services [Solar panels, Inverters, Necessary protection devices, Isolators, Mounting structure with relevant components & Other relevant system components with design, installation, test, commissioning, maintenance and after sale service]

- (c) The total price of our Bid without VAT, including any discounts offered is:
.....
.....

- (d) The total price of our Bid including VAT, and any discounts offered is:
.....
.....

- (e) Our bid shall be valid for the period of time specified in ITB Sub-Clause 18.1, from the date fixed for the bid submission deadline in accordance with ITB Sub-Clause 23.1, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

- (f) If our bid is accepted, we commit to obtain a performance security in accordance with ITB Clause 43 and CC Clause 17 for the due performance of the Contract;

- (g) We have no conflict of interest in accordance with ITB Sub-Clause 4.3;
- (h) Our firm, its affiliates or subsidiaries—including any subcontractors or suppliers for any part of the contract—has not been declared blacklisted by the National Procurement Agency;
- (k) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed.
- (l) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Signed:

In the capacity of

Name:

Duly authorized to sign the bid for and on behalf of: *[insert complete name of Bidder]*

Dated on day of

Price Schedule

Table 1

Description	Place of Delivery & installation	Contract Period in Days from the issue of Purchase Order	System Capacity	Any Discount offered	Total Amount (Rs. &Cts.)	VAT (Rs. &Cts)
Supply, Delivery, Install, Commission & maintenance(with in warranty period) of System with including CEB / LECO / CEB Charges	See the table "A"	Within 45 days(Including Supply, Delivery, Install , maintenance and commission) from date of awarding	20 kW			

We agree to supply, delivery, install, commission & maintenance the above goods and services in accordance with the technical specifications for a total contract price (without tax) of Rupees
 (amount *in words*).....(*amount in figures*) within the period specified in the bid document.

We also confirm that the warrantee/guarantee specified shall apply to the offered goods.

.....

Signature of the Bidder & Common Seal

.....
Name of the Bidder

Date

Bid Guarantee

[this Bank Guarantee form shall be filled in accordance with the instructions indicated in brackets]
----- *[insert issuing agency's name, and address of issuing branch or office]* -----

Beneficiary:

.....
.....

Date: ----- *[insert (by issuing agency) date]*

BID GUARANTEE No.: ----- *[insert (by issuing agency) number]*

We have been informed that ----- *[insert (by issuing agency) name of the Bidder; if a joint venture, list complete legal names of partners]* (hereinafter called "the Bidder") has submitted to you its bid dated ----- *[insert (by issuing agency) date]* (hereinafter called "the Bid") for the supply of *[insert name of Supplier]* under Invitation for Bids No.

Furthermore, we understand that, according to your conditions, Bids must be supported by a Bid Guarantee. At the request of the Bidder, we ----- *[insert name of issuing agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----- *[insert amount in figures]* ----- *[insert amount in words]*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of bid validity specified; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- © having been notified of the acceptance of its Bid by the Purchaser during the period of bid validity, (i) fails or refuses to execute the Contract Form, if required, or (ii) fails or refuses to furnish the Performance Security, in accordance with the ITB.

This Guarantee shall expire: (a) if the Bidder is the successful bidder, upon our receipt of copies of the Contract signed by the Bidder and of the Performance Security issued to you by the Bidder; or (b) if the Bidder is not the successful bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder that the Bidder was unsuccessful, otherwise it will remain in force up to ----- *(insert date)*

Consequently, any demand for payment under this Guarantee must be received by us at the office on or before that date.

[Signature of authorized representative(s)]

Manufacturer's Authorization (This letter should be provided for Solar Panel and Inverter)

[The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. This letter of authorization should be on the letterhead of the Manufacturer and should be signed by a person with the proper authority to sign documents that are binding on the Manufacturer. The Bidder shall include it in its bid, if so indicated in the BDS.]

Date: *[insert date (as day, month and year) of Bid Submission]*
No.: *[insert number of bidding process]*

To:

.....
.....

WHEREAS

We *[insert complete name of Manufacturer]*, who are official manufacturers of *[insert type of goods manufactured]*, having factories at *[insert full address of Manufacturer's factories]*, do hereby authorize *[insert complete name of Bidder]* to submit a bid the purpose of which is to provide the following Goods, manufactured by us *[insert name and or brief description of the Goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with Clause 27 of the Conditions of Contract, with respect to the Goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the Manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the Manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of: *[insert complete name of Bidder]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Section V

SCHEDULE OF REQUIREMENTS

Table 1

Item Number	Brief Description for One Unit	Specifications	Minimum Product Warranty	Bidder's Response	
				Warranty	Delivery(Date)
1.	Solar Panel	See Table 06	12 years and 25Years Power Output warranty		
2.	Inverter	See Table 07	10 years		
3.	Lightening Arrestor	See Table 12	3 years		
4.	AC Surge Protection	See Table 10	3 years		
5.	DC Surge Protection	See Table 10	3 years		
6.	DC Switch disconnectors, disconnectors ,String Fuses, AC MCB, MCCB	See Table 11	5 years		
7.	Cable, Connection Box and required system components	See Table 08	5 years		
8.	Mounting Structure	See Table 08	10 years		
9.	Web Monitoring facility items	See Table 09	3 years		
10.	Smart Digital Energy Meter	See Table 18	5 years		

.....
Signature of the Bidder &
Common Seal

.....
Name of the Bidder

Date

List of Goods and Delivery Schedule - Table 3

Item No	Description of Goods	Unit	Quantity	Final (Project Site) Destination as specified in BDS	Delivery Date		
					Required Delivery Date* (From date of awarding letter)		Bidder's offered Delivery date [to be provided by the bidder]
					Earliest	Latest	
1	Solar Panel	No	As per bidder specified	Pl. see table A	07	30	
2	Inverter	No	As per bidder specified	Pl. see table A	07	30	
3	Lightening Arrestor	No	As per bidder specified	Pl. see table A	07	30	
4	AC Surge Protection	No	As per bidder specified	Pl. see table A	07	30	
5	DC Surge Protection	No	As per bidder specified	Pl. see table A	07	30	
6	DC/AC switch gears	No	As per bidder specified	Pl. see table A	07	30	
7	Cable, Connection Box and required system components	No	As per bidder specified	Pl. see table A	07	30	
7	Mounting Structure	Set	As per bidder specified	Pl. see table A	07	30	
8	Monitoring System	Set	01	Pl. see table A	07	30	
9	Broachers/Manuals	Set	01	Pl. see table A	07	30	

Selected bidder should install the system within 30 days.

.....
Signature of the Bidder & Common Seal

.....
Name of the Bidder

Date

List of relative services - Table 4

No	Description of service	Requirement	Bidder's response
01	Free of-charge maintenance	3 years	
02	Maintenance after 3 years	Signing the agreement	
03	Spare parts available	12 Years	
04	Training/Demonstration	Introduced officers	
05	Digital Smart Energy Meter	Compulsory (include the bid price)	

Experience in quoted products - Table 5

No	Item	Trade Name	Model	Country of origin	Country of manufacture	Experience
01	Solar Module					
02	Solar Inverter					
03	DC SPD					
04	AC SPD					
05	MCB					
06	MCCB					
07	RCB					
08	DC Switch disconnecter					
09	Disconnecter					
10	AC Cable					
11	DC Cable					
12	Digital Energy Meter					
13	DC/AC Combiner box (IP65)					
14	MC4					

TECHNICAL SPECIFICATIONS

Solar Panel - Provided original data sheet with bid submission

Table: 06

	Descriptions	Required Specification	Bidders Response	Bidders response (Yes/No)	If 'No' indicate the bidders offered
1	Solar PV Module Product Name	Mention			
2	Manufacture	Mention			
3	Model number(s)	Mention			
4	Wattage (Wp)	Wp (450 - 600Wp)			
5	No. of Cells	Mention			
6	Panel technology	Mono/ N-type /P-type			
7	Country of manufacture	Mention			
8	Company origin	Mention			
9	Panel efficiency	22%			
10	Panel weight (Mx)	28Kg -below			
11	Protection Rating	IP67 or +			
12	Number of busbars	Mention			
13	Operating temperature	%/°C			
14	Temperature coefficient (Pmax)	- 0.35%/°C - below			
15	IEC Test Standard	IEC 61730 : 2016			

		IEC 61215 : 2016			
16	IEC Salt mist corrosion level	IEC 61701			
17	IEC Anti PID Test	IEC 62804			
18	IEC Ammonia - Test	IEC 62716			
19	Name of testing agency for IEC certification	Mention			
20	Date and year test certificate	Date and Year			
21	Front load resistance	Pa			
22	Rear load/wind resistance	Pa			
23	Product warranty length	12 Year			
24	Warranted annual performance degradation year 2-25 (%)				
25	Power output warranted at year 25 (%)	85%			
26	Performance Warranty	85% or More			
27	Expected Life time	30 Year or More			
28	Does warranty include labor costs for removal and reinstallation of panels?	Mention			
29	Datasheet supplied?	Yes			
30	Manufacture Warranty supplied?	Yes			
31	Quality Management	ISO 9001: 2008, ISO 14001:2004 or Equivalent			
32	PV Module Re-cycle certificate	Mention			

33	Insurance cover provided	Mention			
----	---------------------------------	---------	--	--	--

Inverter - Provided original data sheet with bid submission

Table: 07

No	Description	Specified	Particulars	
1	Model No	Mention		
2	Country of Origin	Mention		
3	Country of Manufacture	Mention		
4	Name of Manufacture	Mention		
5	Name of Certificate Holder	Mention		
6	Is an accredited agency	Mention		
7	(a) Inverter Type (b) Inverter Technology	String Inverter Transformer less		
8	Operating Temperature Range	Mention		
9	Cooling Method	Mention		
10	Protection Rating	IP 65 or Grater		
11	Grid Connection Method	3 Phase		
12	Surge Protection	AC/DC Yes		
13	Voltage Range	Mention		
14	DC Switch disconnecter	Yes		
15	Relative Humidity	0% - 100%		
16	Maximum Efficiency	Minimum 98%		
17	Maximum input DC power	Mention		
18	Maximum output AC power	Mention		
19	Rated Grid Voltage	AC 230 V /400V		
20	Rated Grid Frequency	50 Hz		
21	Maximum AC Output Apparent Power	Mention		
22	Power Factor	Mention		
23	Short Circuit Proof	Mention		
24	Internal Consumption at Night	Mention		
25	Ground Fault Monitoring	Mention		
26	Reverse Polarity Protection	Mention		
27	Display	Mention		
28	Arc fault protection	yes		

29	Protection class	Class 1		
30	Grid Code	IEEE 1547 or Equivalent		
31	Number of MPPT Trackers	Mention		
32	MPPT Voltage Range	Min and Max		
33	PV Module Anti - PID	Mention		
34	Safety Regulation	IEC 62109		
35	Apply standard	See table 18		
36	DC surge protection	TYPE II protection		
37	AC surge protection	TYPE II protection		
38	Residual current monitoring	Yes		

Cables & Mounting Components Table: 08

No	DC / AC Cables	Bidder's Response	
		DC	AC
1	Make		
2	Country of Origin		
3	Standards	SLS 1542	SLS
4	Application Range		
5	Design		
6	Product Feature		
7	Minimum Bending Radius		
8	Nominal Voltage		
9	Temperature Range		
10	UV protected		
	Mounting Structure	Requirements	Bidder's Response
i	Standard PV Mounting Railings	Aluminum - Resist to corrosion	
ii	Nuts & Bolts	Resist to corrosion (SS)	
iii	Other fixing components	Resist to corrosion and UV Resist	
iv	Cable Tie	Stainless Steel / UV Resist	

Monitoring System

Table: 09

No	Required Feature	Bidder's Response		Remarks
		Yes	No	
1	Real Time data			
2	Past Data			
3	Peak Power			
4	Cumulating Power			
5	CO ₂ Emission			
6	Power & Energy Graphs			
8	Fault & Safety Event			

Surge Protector Device

Table: 10

No	Feature	AC	DC
1	Model/Trade name		
2	Country of origin		
3	Manufacture		
4	Type of design		
5	Type		
6	Maximum Current		
7	Maximum Energy		
8	Maximum number of surge		
9	Response Time		
10	Case Material		
11	Warranty		
12	Standards	IEC	SLS 1473 /IEC

Switch Gear - Table: 11

No	Feature	AC	DC	String Fuses
1	Trade name			
2	Model			
3	Country of origin			
4	Manufacture			
5	Type			
6	Standards (SLS 1554)	IEC 60947-2:2016	IEC 60947-3:2015	
7	Maximum Current(Amp)			
8	Warranty			

Earth System - Table: 12

Description	Wire	Rod	Strip
Material			Copper
Withstand Maximum Current(A)			
Cross Section(mm ²)			A(mm ²) - W(mm) -
Lenth(ft)	-----		

Digital Smart Energy Meter - Table: 13

A solar smart meter is a bidirectional meter added to a solar power system to measure the energy production of the system and energy consumption in a house .

No	Feature	Response
1	Trade name	
2	Model	
3	Country of origin	
4	Manufacture	
5	Type	
6	Data Store Capacity	
7	Voltage	
8	Current	
9	Power (W/kW)	
10	Energy generated(kWh)	
11	Online monitoring / WIFI	
12	Warranty	5 years

PV DC Combiner Box - Table: 14

No	Feature	AC – combiner Box	<u>PV DC Combiner Box</u>
1	Trade name		
2	Model		
3	Country of origin		
4	Manufacture		
5	Type		
6	Standards (SLS / IEC)		
7	Maximum Current(Amp)		
8	IP 65 or More		
9	Resist to corrosion and UV Resist		
10			

MC4

1	Manufacture	
2	Type	
3	Standards (SLS / IEC)	
4	Maximum Current (Amp)	
5	IP 67 or More	
6	Resist to corrosion and UV Resist	
7	20 Warranty	

List of main items (Pl. indicate no of quantity in the following table according to the bidder’s designing)

Table: 14

Designed Capacity(Kw _p)	Solar Module	Inverter	DC SPD	AC SPD	DC Switch disconnect	disconnect	Circuit Breaker	PV String	Average proposed Units(kWh /Year)

Table: 15

QUALIFICATION INFORMATION

(To be completed and submitted by the bidder with the Bid)

Registered PV service provider at Sri Lanka Sustainable Energy	<i>(attached Registration certificate)</i>
Registration Number	
Expiry Date	
Blacklisted Contractors	
Have you been declared as a defaulted contractor by NPA or any other Agency? (Yes/No)	
If yes provide details	
VAT Registration Number	
Income Tax File Reference Number	
Project Program	<i>(attach as annex)</i>
Legal Status (Sole Proprietor, Partnership, Company, etc.)	<i>(attach a certified copy of registration as annex)</i>
Authentication of Signatory	<i>(attach a certified copy of Power of Attorney, as annex)</i>
Availability of Liquid assets/credit facilities	<i>(attach copies of supporting documents)</i>
Total monetary value of similar nature performed contracts for each of the last 3 years	Year 20..... Year 20..... Year 20.....
Work in hand	<i>(attach as annex using Format I)</i>
Works of similar nature and size completed during last 03 years	<i>(attach as annex using Format II)</i>
Qualification and experience of Key site management and technical personnel proposed for the contract	<i>(attach as annex using Format III)</i>
Audited Financial Statements for last 3 years	<i>(attach as annex)</i>
Arbitration/Litigation history	<i>(attach as annex)</i>
Method Statement	<i>(attach as annex)</i>

Technical Capacity Required

Table: 16

No.	Position	No of personals	Total Work Experience	Experience In solar Work [years]
-----	----------	-----------------	-----------------------	----------------------------------

1	Project Manager	1	05	02
2	Design Engineer	1	02	02
3	Construction supervisor	2	05	02
4	Field staff	6	05	02

Technical Capacity of the bidder - Table 17

No.	Position	No of personals	Qualification	Experience In Solar Work [years]
1	Project Manager			
2	Design Engineer			
3	Construction supervisor			
4	Field staff			

Format – I

QUALIFICATIONS AND EXPERIENCE OF KEY SITE MANAGEMENT AND TECHNICAL PERSONNEL PROPOSED

(a) **Professional Staff**

Table 18

Name	Proposed Position	Qualification	Post Qualification Experience	Engagement With Company (Permanent/Part Time)	Proposed Period for this Project

(b) **Technical Staff**

Table 19

Name	Proposed Position	Qualification	Post Qualification Experience	Engagement With Company (Permanent/Part Time)	Proposed Period for this Project

--	--	--	--	--	--

Drawings

These bidding document is not included the drawings.

Line diagram, sketch of panel layout or any relevant drawing need not to scale.

Test Report format : Table 20

Item No	Description of Goods	Serial No	Physical Condition		Working Condition	
			Good	Bad	Good	Bad
1	Solar Panels					
2	Inverters					
3	DC Cables					
4	AC Cables					
5	DC Protection (SPD)					
6	AC Protection (SPD)					
7	Isolator (AC)					
8	DC Switch disconnecter					
9	Disconnecter					
10	Switches					
11	Circuit Breakers					
12	PV String Fuse					
13	Lightning Surge Protection					
14	Communication System					
15	Structure					
16	Mounting Accessories					
17	Requested certificates					
18	Conduit					
19	Manuals/Broachers					
20	MC 4					
21	DC /AC Combiners box					

Technical Examination

Physical Checked by : (Signature of technical person level 1)
 Technically inspected by : (Signature of technical person level 2)
 Certified by : (Signature of relevant Engineer)

Contact completion report should be submitted after commissioning of the systems.

Section VII: Contract Data

The following Contract Data shall supplement and / or amend the Conditions of Contract (CC). Whenever there is a conflict, the provisions herein shall prevail over those in the CC.

CC 1.1(i)	The Purchaser is Provincial Director , Department of Animal Production & Health , Welisara
CC 1.1 (m)	Final Destination is Provincial Director
CC 7.0	Eligibility See Section III
CC 8.1	For notices , the Purchaser's address shall be: Attention: Address : Telephone: Fax : E- mail :
CC 12.1	Details of Shipping and other Documents to be furnished by the Supplier are -Not Applicable-
CC 15.1	The method and conditions of payment to be made to the Supplier under this Contract shall be as follows: t (a) First Payment: 20% of the contract value will be paid after submitting the advance payment guaranty. (b) Second Payment: 50% of the contract value will be released after completion of the whole works of the system installation on technical recommendation. (c) Third Payment: 20% of the contract value will be released after connected to the CEB / LECO grid and on technical recommendation for good working condition. (d) Finally, 10% of the contract price will be retained by during 12-month period (365 Days) from date of the CEB / LECO grid connected. Retained amount will be released if the system is operating successfully.
CC 17.1	N/A

CC 25.1	The inspections and tests shall be required. Commissioning report should be submitted after completion the system.
CC 25.2	The Inspections and tests shall be conducted by professional specialized Engineers
CC 26.1	The liquidated damage shall be: 0.05% per week
CC 26.1	The maximum amount of liquidated damages shall be: 10 %

Services

Table: 21

Item. No	Descriptions	Bidders Response
1	Availability of stocks	
2	Validity of offer from closing date	
3	Taxes (Pl. attached copy of VAT certificate of registration)	
4	<p>After sale service(Maintenance)</p> <p>(i). How many dates/hours require attending from the failure notified date?</p> <p>(ii). How do you arrange to sign the service agreement after warranty period?</p> <p>(iii). How many dates spend to repair the item from notified date?</p>	

.....

Signature of the Bidder & Stamp Common Seal

Table: 22

No	Bidder's Description	Detail
1.	Company Name	
2.	Office Address	
3.	Authorize Officer Position /Capacity Name Contact Tele No	
4	Technical Person /Engineer for Clarification Name Contact Tele No	
5	No of similar system installed	
6	Total number of system installed	
7	Total Installed Capacity (kWp)	
8	Years of experience regarding net-metering	

Apply Standards

Table 23

Standards Code	Specification	Description	International Standards	Mandatory requirement
SLS 1522 (2016)	Sri Lanka Standards Code of Practice for Grid Connected PV Power Systems.	<p>This Technical Standards defines the minimal information and documentation required to be handed over to a customer following the installation of a grid connected PV system. This standard also describes the installation, testing and commissioning procedure and documentation expected to verify the safe installations and correct operation of the system.</p> <p>It is for use by system designers and installers of grid connected net energy metered solar PV systems as a template to provide effective documentation to a customer. By detailing the expected installation, testing & commissioning procedure, it is also intended to assist in the verification / inspection of a grid connected PV system after installation and for subsequent re-inspection, maintenance or modifications.</p> <p>Additional, it is written for grid connected net energy metered solar PV systems only and not for AC module systems or systems that utilize energy storage (e.g. batteries) or hybrid systems.</p>	None	Yes
SLS 1542 (2016)	Electric Cable for Photovoltaic System.	<p>This Technical Standard specifies cables for use in PV System, for installation at the Direct Current (DC) side. These cables are suitable for permanent outdoor use for many years under variable demanding climate conditions. Relatively stringent requirements are set for these products in line with the expected harsh usage conditions. It is applies to low smoke halogen free, flexible, single core power cables with cross link insulation and sheath.</p> <p>In particular for use at the DC side of photovoltaic system, with a nominal DC voltage of 1.5kV between conductors and between conductor and earth. The cables are suitable to be used with Class II equipment. The cable are design to operate at a nominal maximum conductor temperature of 90 °C, but for a maximum of 20 000 hours a maximum conductor temperature of 120 °C at a maximum ambient temperature of 90 °C is permitted.</p>	EN 50818 (2014)	Yes
SLS 1543	Safety of Power Converts for Use in Photovoltaic Power System	This Sri Lanka Standard Specification is published in two parts.	IEC 62109	Yes

Standards Code	Specification	Description	International Standards	Mandatory requirement
	Part 1 (2016) General Requirements	Applies to the power conversion equipment (PCE) for use in Photovoltaic (PV) systems where a uniform technical level with respect to safety is necessary. This standard defines the minimum requirements for the design and manufacture of PCE for protection against electric shock, energy, fire, mechanical and other hazards. This standard provides general requirements applicable to all types of PV PCE.	IEC 62109-1 (2010) Edition 1.0	Yes
	Part 2 (2016) Particular Requirements for Inverters	Covers the particular safety requirements relevant to DC to AC (Alternating Current) inverter products as well as products that have or perform inverter functions in addition to other functions, where the inverter is intended for use in photovoltaic power systems. Inverters covered by this standard may be grid-interactive, stand-alone, or multiple mode inverters may be supplied by single or multiple photovoltaic modules grouped in various array configurations, and may be intended for use in conjunction with batteries or other forms of energy storage.	IEC 62109-2 (2011) Edition 1.0.	Yes
SLS 1544	Terrestrial Photovoltaic Design Qualification and Type Approval	This Sri Lanka Standard Specifications for is published in different parts although only part of it has been used	IEC 61215	Yes
	Part 1 (2016) Test Requirements	Lays down requirements for the design qualification and type approval of terrestrial photovoltaic (PV) modules suitable for long-term operation in general open-air climates, as defined in IEC 60721-2-1 (unwritten in this document).	IEC 61215-1 (2016) Edition 1.0	Yes
	Part 1-1 (2016) Special Requirements for Testing of Crystalline Silicon Photovoltaic Modules.	This part of IEC 61215 lays down IEC requirements for the design qualification and type approval of terrestrial photovoltaic (PV) modules suitable for long-term operation in general open-air climates, as defined in IEC 60721-2-1. This standard is intended to apply to all terrestrial flat plate module materials such as crystalline silicon module types as well as thin-filmCdTemodules. This standard does not apply to modules used with concentrated sunlight although it may be utilized for low concentrator modules (1 to 3 suns). For low concentration modules, all tests are performed using the current, voltage and power levels expected at the design concentration. This standard does not address the particularities of PV modules with integrated electronics, nit may however be used as a basis for testing such PV modules. The objective of this test sequence is to determine the electrical and thermal characteristics of the module and to show, as far as possible within reasonable constraints of cost and time, that the module is capable of withstanding prolonged exposure in climates described in the scope. The actual lifetime expectancy of modules so qualified will depend on their design, their environment and the conditions under which they are operated.	IEC 61215-1-1 (2016) Edition 1.0.	Yes

Standards Code	Specification	Description	International Standards	Mandatory requirement
		The standard defines PV technology dependent modifications to the testing procedures and requirements per IEC 61215-1:2016 and IEC 61215-2:2016.		
	Part 2 (2016) Test Procedures	This is similar to the above standard, therefore is intended to apply to all terrestrial flat plate module materials such as crystalline silicon module types as well as thin-film modules. The objective of this test sequence is to determine the electrical and thermal characteristics of the module and to show, as far as possible within reasonable constraints of cost and time, that the module is capable of withstanding prolonged exposure in general open-air climates. The actual lifetime expectancy of modules so qualified will depend on their design, their environment and the conditions under which they are operated.	IEC 61215-2 (2016) Edition 1.0.	Yes
SLS 1545	Photovoltaic Modules Performance Testing and Energy Rating	This Sri Lanka Standard Specification for is published in two parts		
	Part 1 (2016) Irradiance and Temperature Performance Measurements and Power Rating.	This part of IEC 61853 describes requirements for evaluating PV module performance in terms of power (watts) rating over a range of irradiances and temperatures. IEC 61853-2 describes test procedures for measuring the performance effect of angle of incidence; the estimation of module temperature from irradiance, ambient temperature and wind speed; and impact of spectral response on energy production. IEC 61853-3 describes the calculations of PV module energy (watt-hours) ratings. IEC 61853-4 describes the standard time periods and weather conditions that can be utilized for calculating standardized energy ratings. The object of this part of IEC 61853 is to define a testing and rating system, which provides the PV module power (watts) at maximum power operation for a set of defined conditions. A second purpose is to provide a full set of characterization parameters for the module under various values of irradiance and temperature. This set of measurements is required in order to perform the module energy rating described in IEC 61853-3.	IEC 61853-1 (2011) Edition 1.0.	Yes
	Part 2 (2017) Spectral Responsivity, Incidence Angle and Module Operating Temperature Measurements.	The IEC 61853 series establishes IEC requirements for evaluating PV module performance based on power (watts), energy (watt-hours) and performance ratio (PR). It is written to be applicable to all PV technologies, but may not work well for any technology where the module performance changes with time (e.g. modules change their behaviour with light or thermal exposure), or which experience significant non-linearities in any of their characteristics used for the modelling. The purpose of this part of IEC 61853 is to define measurement procedures for measuring the effects of angle of incidence of the irradiance on the output power of the device, to determine the operating temperature of a module for a given set of ambient and mounting conditions and measure spectral responsivity of the	IEC 61853 (2016) Edition 1.0	Yes

Standards Code	Specification	Description	International Standards	Mandatory requirement
		module. A second purpose is to provide a characteristic set of parameters which will be useful for detailed energy predictions. The described measurements are required as inputs into the module energy rating procedure described in IEC 61853-3.		
SLS 1546	Photovoltaic System Power Conditioners – Procedure for Measuring Efficiency	Describes guidelines for measuring the efficiency of power conditioners used in stand-alone and utility-interactive photovoltaic systems, where the output of the power conditioner is a stable AC voltage of constant frequency or a stable DC voltage	IEC 61683 (1999) Edition 1.0	Yes
SLS 1547 (2016)	Photovoltaic System – Characteristic of the Utility Interface	Applies to utility-interconnected photovoltaic (PV) power systems operating in parallel with the utility and utilizing static (solid-state) non-islanding inverters for the conversion of DC to AC. Lays down requirements for interconnection of PV systems to the utility distribution system. It describes specific recommendations for systems rated at 10 kVA or less, such as may be utilized on individual residences single or three phases. This standard applies to interconnection with the low voltage utility distribution system.	IEC 61727 (2004) Edition 1.0	Yes
SLS 1553	Photovoltaic Module Safety Qualification	This Sri Lanka Standard Specification for is published in two parts		
	Part 1 (2017) Requirements for construction	Specifies and describes the fundamental construction requirements for photovoltaic (PV) modules in order to provide safe electrical and mechanical operation. Specific topics are provided to assess the prevention of electrical shock, fire hazards, and personal injury due to mechanical and environmental stresses. This part 1 of SLS 1553 (IEC 61730) pertains to the requirements of construction. PV modules covered by this standard are limited to a maximum DC system voltage of 1500 V.	IEC 61730-1 (2016) Edition 2.0.	Yes
	Part 2 (2017) Requirements for Testing	Defines the requirements of testing. This International Standard series lays down IEC requirements of terrestrial photovoltaic modules suitable for long-term operation in open-air climates. The sequence of tests required in this standard may not test for all possible safety aspects associated with the use of PV modules in all possible applications. This standard utilizes the best sequence of tests available at the time of its writing. There are some issues, such as the potential danger of electric shock posed by a broken PV module in a high voltage system, which should be addressed by the system design, location, restrictions on access and maintenance procedures. The objective of this standard is to provide the testing sequence intended to verify the safety of PV modules whose construction has been assessed by IEC 61730-1. The test sequence and pass criteria are designed to detect the potential breakdown of internal and external components of PV modules that would result in fire, electric shock, and/or personal injury. The standard defines the basic safety test requirements and additional tests that are a function of the PV module end-use applications. Test categories include general inspection, electrical shock hazard, fire hazard, mechanical stress,	IEC 61730-2 (2016) Edition 2.0	Yes

Standards Code	Specification	Description	International Standards	Mandatory requirement
		and environmental stress.		
SLS 1554	Low-Voltage Switchgear and Control gear	This Sri Lanka standard specification for is published in three parts:		
	Part 1 (2017) General Rules.	The purpose of this standard is to harmonize as far as practicable all rules and requirements of a general nature applicable to low-voltage switchgear and control gear to obtain uniformity of requirements and tests throughout the corresponding range of equipment and to avoid the need for testing to different standards. All those parts of the various equipment standards which can be considered as general have therefore been gathered in this standard together with specific subjects of wide interest and application, e.g. temperature-rise, dielectric properties, etc.	IEC 60947-1 (2014) Edition 5.2	Yes
	Part 2 (2017) Circuit-Breakers	This part of IEC 60947 series applies to circuit-breakers, the main contacts of which are intended to be connected to circuits, the rated voltage of which does not exceed 1000 V AC or 1500 V DC; it also contains additional requirements for integrally fused circuit-breakers. Circuit-breakers rated above 1000 V AC but not exceeding 1500 V AC may also be tested to this standard. It applies whatever the rated currents, the method of construction or the proposed applications of the circuit-breakers may be.	IEC 60947-2 (2016) Edition 5.0	Yes
	Part 3 (2017) Switches, Disconnectors, Switch-Disconnectors and Fuse-Combinations Units.	This part of IEC 60947 applies to switches, disconnectors, switch-disconnectors and fuse combination units to be used in distribution circuits and motor circuits of which the rated voltage does not exceed 1000 V AC or 1 500 V DC. The manufacturer shall specify the type, ratings and characteristics according to the relevant standard of any incorporated fuses. This part does not apply to equipment coming within the scope of IEC 60947-2, IEC 60947-4-1 and IEC 60947-5-1. However, when switches and fuse-combination units coming into the scope of this part are normally used to start, accelerate and/or stop an individual motor they shall also comply with other additional requirements,	IEC 60947-3 (2017) Edition 3.2. IEC 60947-4-1 IEC 60947-5-1	Yes
SLS-IEC 62446-1 (2017):	Photovoltaic System Requirements for Testing, Documentation and Maintenance.	This Technical Standards is published in one part for grid connected system, documentation, commissioning tests and inspection.	IEC 62446-1 (2017) Edition 1.0.	Yes
IEC 61701	Salt mist corrosion testing of photovoltaic (PV) modules	Describes test sequences useful to determine the resistance of different PV modules to corrosion from salt mist containing Cl- (NaCl, MgCl ₂ , etc.).		Yes
IEC 60068-2	Environmental testing	This part of IEC 60068 deals with cold tests applicable to both non heat-dissipating and heat dissipating specimens. For non heat-dissipating specimens, Tests Ab and Ad do not deviate essentially from earlier issues. Test Ae has been added primarily for testing equipment that requires being operational throughout the test,		Yes

Standards Code	Specification	Description	International Standards	Mandatory requirement
		including the conditioning periods. The object of the cold test is limited to the determination of the ability of components, equipment or other articles to be used, transported or stored at low temperature.		
IEC 60227	Polyvinyl chloride insulated cables of rated voltages up to and including 450/750 V - Part 1: General requirements	Applies to rigid and flexible cables with insulation, and sheath if any, based on polyvinyl chloride, of rated voltages U ₀ /U up to and including 450/750 V used in power installations of nominal voltage not exceeding 450/750 V a.c		YES
SLS IEC 60364	Low Voltage Electrical Installation Part 6 (2018) verification	This Sri Lanka standard specification for is published in one part:	(IEC 60364-6 (2016) Edition 1.0.	YES
SLS IEC 62548: 2018	Photovoltaic (PV) array- Design Requirements		(IEC 62548(2016) Edition 1.0.	YES
SLS 1473	Low voltage surge protective devices Part 5 (2019) Requirements and test methods for SPDs for photovoltaic installations Part 6 (2019) Surge protective devices connected to the d.c. side of photovoltaic installations – Selection and application principles	This Sri Lanka standard specification for is published in six parts:		yes YES YES
SLS 1637 (2019)	Connectors for DC-application in photovoltaic systems – Safety requirements and tests			Yes

System documentation check list

Basic system information											
Customer Name	Contact No:										
Installation address:	e-mail:										
Rated system power (kW DC or kVA AC)	Project identification reference:										
Installation date:	Commissioning date:										
Inverter Manufacturer: Model: Quantity:	PV modules Manufacturer: Model: Quantity:										
System Designer information											
System designer, company	Contact person										
Postal address	Telephone number & e mail										
System Installer information											
System designer, company	Contact person										
Postal address	Telephone number & e mail										
Wiring Diagram											
Single Line Diagram	Detailed SLD provided Yes <input type="checkbox"/> No <input type="checkbox"/>										
Array Specifications	<table style="width: 100%; border: none;"> <tr> <td style="padding: 2px 10px 2px 20px;">Module type(s)</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">Total number of modules</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">Number of strings</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">Number of modules per string</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">String connection to inverter</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> </table>	Module type(s)	Yes <input type="checkbox"/> No <input type="checkbox"/>	Total number of modules	Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of strings	Yes <input type="checkbox"/> No <input type="checkbox"/>	Number of modules per string	Yes <input type="checkbox"/> No <input type="checkbox"/>	String connection to inverter	Yes <input type="checkbox"/> No <input type="checkbox"/>
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Number of modules per string	Yes <input type="checkbox"/> No <input type="checkbox"/>										
String connection to inverter	Yes <input type="checkbox"/> No <input type="checkbox"/>										
PV string information	<table style="width: 100%; border: none;"> <tr> <td style="padding: 2px 10px 2px 20px;">Cable make & type</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">Cable size</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">OC protective device type</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">OC protective device ratings</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px 10px 2px 20px;">Blocking diode type</td> <td style="padding: 2px 20px 2px 20px;">Yes <input type="checkbox"/> No <input type="checkbox"/></td> </tr> </table>	Cable make & type	Yes <input type="checkbox"/> No <input type="checkbox"/>	Cable size	Yes <input type="checkbox"/> No <input type="checkbox"/>	OC protective device type	Yes <input type="checkbox"/> No <input type="checkbox"/>	OC protective device ratings	Yes <input type="checkbox"/> No <input type="checkbox"/>	Blocking diode type	Yes <input type="checkbox"/> No <input type="checkbox"/>
Cable make & type	Yes <input type="checkbox"/> No <input type="checkbox"/>										
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OC protective device type	Yes <input type="checkbox"/> No <input type="checkbox"/>										
OC protective device ratings	Yes <input type="checkbox"/> No <input type="checkbox"/>										
Blocking diode type	Yes <input type="checkbox"/> No <input type="checkbox"/>										

Section VIII

1. Contract Agreement

**DESIGN, SUPPLY, DELIVERY, INSTALL, COMMISSION AND MAINTENANCE OF
..... kW_{AC} GRID TIED SOLAR ROOFTOP SYSTEMS
PROCUREMENT NO:**

This Agreement made and entered into on this.....day of **2020**, between (hereinafter called and referred to as “the Employer”), of the one part, and **Messrs (Pvt) Ltd** (hereinafter called and referred to as “the Contractor”), of the other part:

Whereas the Employer desires that the Contractor execute **Design, Supply, Delivery, Install, test, Commission and maintenance (total capacity-.....kW_{AC}) of Grid Tied Solar Rooftop Systems to and Procurement no: (hereinafter called and referred to as “the Works”)** and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract hereinafter referred to.
2. The following documents shall be deemed to form, be read with and construed as part and parcel of this agreement:
 - (a) The tender aforesaid
 - (b) Conditions of contract
 - (c) Bidding documents
 - (d) Specifications
 - (e) The bid document of selected bidder **(Pvt) Ltd**
 - (f) The letter of acceptance
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execute and complete the Works and remedy any defects therein, the Contract Price or such other sum as may become

payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

5. The contractor shall be paid for the said works a sum of **rupees**(Rs.....) or such other sums as may be found to be due to the contractor on the basis of measurements subject to such additions or deductions as may be decided by the Employer to be necessary.
6. The date of commencement of the contract is
7. The whole works of the system installation shall be completed and handed over to the Employer or any other officer authorized by him **on or before** within 7 days of the Engineer's issue in a certificate of completion.
8. The contractor shall pay to the Employer by way of liquidated damage the rate of 0.05% of the initial contract price per day. The total amount of liquidated damages shall not exceed 10% of Contract Price. The Employer may deduct liquidated damages from payments due to the Contractor.
9. Employer shall pay to the contractor within fourteen days (14) of delivery of each certificate by the engineer for the interim payments (second, third & retention payment) after receiving the invoice.
10. If the employer makes a late payment the contractor shall be paid interest on the late payment in the next payment. Interest shall be calculated from the day by which the payment should have been made up to the date when the late payment is made at the prevailing rate of 1% over the lending rate of the central bank to commercial banks.
11. For a period of (06) six calendar months (from the date of CEB / LECO grid connected) commencing from the date given in the completion certificate which will be issued by the employer at the end of contract, the contractor shall be required to maintain the works and he shall be liable for the replacement of any part of the works or the whole found to be defective from causes arising from faulty materials or workmanship. The contractor will further be held responsible for and called upon to make good at his own expenses all damages to works and/or materials.
12. The contractor shall indemnify the employer any claim or by respect of any employees of the contractor, under the workmen's compensation ordinance.
13. The following persons responsible for the this contract
The Employer is
Engineer is,
Engineer's Representative is

14. Payment shall be made by the employer to the contractor to extent of 90% of the appropriate value of work executed by him subjected to any deductions. The balance shall be retained by the employer until the expiration of the period of maintenance for the work.

No	Payment Step	Payment(LKR) %	Remarks
1	First Payment	Contract Pricex20/100	20% of the contract value will be paid on submitting the advance payment guaranty.
2	Second payment	Contract Pricex50/100	50% of the contract value will be released after completion of the whole works of the system installation on technical recommendation.
3	Third payment	Contract Pricex20/100	20% of the contract value will be released after connected to the CEB / LECO grid and on technical recommendation for good working condition.
4	Releasing Retention - 365 Days from date of grid connected	Contract Pricex10/100	On technical recommendation.

15. The contractor agrees that any sum of money that may be due to the contractor from the employer under this agreement or otherwise may be appropriated by the employer in full or part settlement of any sum of money that may become payable by the contractor as indemnity charges or otherwise under this agreement.

In Witness whereof the parties hereto have caused this Agreement to be executed the day and year first before written in accordance with laws of Sri Lanka.

.....

Authorized signature of Contractor/Date

.....

Authorized signature of Employer/Date

COMMON SEAL

COMMON SEAL

In the presence of:

Witnesses:

(Contractor)

(Employer)

1. Name and NIC No.

Signature

Address

Date.....

2. Name and NIC No

Signature

Address.....

Date.....

2. Performance Security

[The issuing agency, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

----- *[Issuing Agency's Name, and Address of Issuing Branch or Office]*

Beneficiary:

Date: -----

PERFORMANCE GUARANTEE No.: -----

We have been informed that ----- *[name of Contractor]* (hereinafter called "the Contractor ") has entered into Contract No. ----- *[Reference number of the contract]* dated----- with you, for the supply of ----- *[name of contract and brief description of works]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we ----- *[name of Agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----- *[amount in figures]* (-----) *[amount in words]*, such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the day of, 20..... *[insert date, 28 days beyond the intended completion date including the warranty period]* and any demand for payment under it must be received by us at this office on or before that date.

[signature(s)]

3. Form of Advance Payment Security

[The issuing agency, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

----- *[Name and Address of Agency, and Address of Issuing Branch or Office]*

Beneficiary:

Date: -----

ADVANCE PAYMENT GUARANTEE No.: -----We have been informed that -----
----- *[name of Contractor]* (hereinafter called "the Contractor ") has entered into
Contract No. ----- *[Reference number of the contract]* dated----- with you, for the
supply of ----- *[name of contract and brief description of works]* (hereinafter
called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment
in the sum ----- *[amount in figures]* (-----)
[amount in words], is to be made against an advance payment guarantee.

At the request of the Contractor, we ----- *[name of issuing Agency]*
hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of -----
----- *[amount in figures]*(-----) *[amount in words]*, upon
receipt by us of your first demand in writing accompanied by a written statement stating that the
Contractor is in breach of its obligation(s) in repayment of the Advance payment under the Contract.

The maximum amount of this guarantee shall be progressively reduced by the amount of the
advance payment repaid by the Contractor.

This guarantee shall expire on ----- *[insert date, 28 days beyond the intended
completion date]*.

Consequently, any demand for payment under this guarantee must be received by us at this office on
or before that date.

[signature(s)]

4. Form of Retention Money Guarantee

[The issuing agency, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]

----- *[Issuing Agency's Name
and Address of Issuing Branch or Office]*

Beneficiary:
.....

Date: -----

RETENTION MONEY GUARANTEE No.: -----

We have been informed that ----- *[name of Contractor]* (hereinafter called "the Contractor ") has entered into Contract No. ----- *[Reference number of the contract]* dated-----
--- with you, for the execution of ----- *[name of contract and brief description of works]*
(hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, when works have been taken over and the first half of the Retention Money has been certified for payment, payment of the second half of the Retention Money may be made against a Retention Money guarantee.

At the request of the Contractor, we ----- *[name of Agency]* hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----- *[amount in figures]*(-----) *[amount in words]*, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor has not attended to the defects in accordance with the Contract.

This guarantee shall expire on, at the latest, ----- *[insert date, 28 days after the end of the Defects Liability Period]*. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

[signature(s)]

5. Form of Letter of Acceptance

..... [Date]

To:
[name and address of the contractor]

This is to notify you that your bid dated [insert date] for the Procurement of [name of the contract and identification number] for the contract price of [name of currency] [amount in figures and words] as corrected in accordance with Instructions to Bidders, is hereby accepted.

You are hereby instructed to proceed with the execution of the said works in accordance with the Contract documents.

The Commencement Date shall be(fill the date as per Conditions of Contract)

The amount of Performance Security is: (fill the amount as per Conditions of Contract)

The Performance Security shall be submitted on or before (fill the date as per Conditions of Contract)

The Performance Security shall be submitted on or before (fill the date as per Conditions of Contract)

Authorized Signature:
.....

Name and title of Signatory:
.....

Name of Agency:
.....

Check List for Bidder

No	Item	Yes (tick)	Reference
1	Table 01		
2	Table 02		
3	Table 03		
4	Table 04		
5	Table 05		
6	Table 06		
7	Table 07		
8	Table 08, 09, 10, 11, 14, 15, 16, 17		
9	Product Test Certifications		
10	Business Registration Certificate		
11	Manufacture Authorization letters PV Module, Invert, SPD, Cable and Mounting material)		
12	Brochures/Manuals		
13	VAT certificate of registration(if any)		
14	SLSEA Registration		
15	Relevant Experience		
16	Previous Client List with including (Name/Address/Tele No/Date/Capacity)		
17	Technical Capacity Detail		
18	Blacklisted	Yes/No	

Abbreviations

SLSEA	-	Sri Lanka Sustainable Energy Authority
CEB	-	Ceylon Electricity Board
LECO	-	Lanka Electricity Company (Pvt) Limited
kW	-	Kilo Watt
kWh	-	Kilo Watt Hour
VAT	-	Value Added Tax
PV	-	Photovoltaic
Ph	-	Phase
DG	-	Diesel Generator
DCDB	-	DC distribution board
IP	-	Ingress Protection