National Institute of Solar Energy

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Notice Inviting E-Tender (NIT)

NIT NO. 04/10/01/2019-20/MEA/Mongolia

Design, Procurement, Supply, Installation,and Commissioning of:

(i) **25 kW_pgrid-tied Rooftop Solar PV Power Plant,**
(ii) **20 kW_pgrid-tied Solar Power Plant on Carport, and**
(iii) **PV Street lights: 24 Nos.** **(12 Nos Standard and 12 NosSmart)**

on the ten floor Building of Ministry of Foreign Affairs, Ulaanbaatar,Mongolia

Date of Publishing of Bids : - 28/08/2025

Last Date of Submission of Bids : - 18/09/2025

Tender Submission at: https://nise.ewizard.in

Contents

NIT NO. 04/10/01/2019-20/MEA/Mongolia

VOL – 1: General Conditions of the Tender

Tender Submission at: https://nise.ewizard.in

1.1 E-TENDER NOTICE

(NIT NO. 04/10/01/2019-20/MEA/Mongolia)

On behalf of the Director-General, National Institute of Solar Energy, Gurugram, competitive e-tenders in two cover system with Earnest Money Deposit (EMD) and Bid documents (Price bid + Technical Bid) are invited from eligible bidders for Design, Procurement, Supply, Installation, Commissioning and Maintenance of (i) 25 kWp grid tied Rooftop Solar PV Power Plant, (ii) 20 kWp grid tied Solar Power Plant on Carport (Car Parking Lot), and (iii) 24 Nos. PV Street lights (12 Nos Standard and 12 Nos Smart) on the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia,as per technical specifications mentioned in the tender document. The e-tender documents can be downloaded from the e-tendering website of https://nise.ewizard.in

For the implementation of the above-mentioned work, Bidders should submit their bid proposal/application along with all supporting documents complete in all aspects on or before the closing date to the address of communication.

Bidder shall submit a bid proposal complete in all respect as per the bid Information sheet. Techno-Commercial bids will be opened in the presence of authorized representatives of bidders/applicants who wish to be present. Bid proposals received without or lesser than the prescribed EMD amount and supporting documents will not be considered.

Any amendment (s)/corrigendum/clarifications concerning this bid shall be uploaded on the above website or NISE only. The bidder should regularly follow up for any Amendment/Corrigendum/Clarification on the above website.

Director-General

NISE, Gurgaon

1.2 TENDER ABSTRACT

Ref. No.	NIT NO. 04/10/01/2019-20/MEA/Mongolia
Name of Work	Design, Procurement, Supply, Installation, Commissioning and Maintenance of (i) 25 kWp grid-tied Rooftop Solar PV Power Plant, (ii) 20 kWp grid-tied Solar Power Plant on Carport (Car Parking Lot), and (iii) 24 Nos. PV Street lights (12 Nos Standard and 12 Nos Smart)
Project Site	PV power plant: Roof of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia. Carport and Street lights: Ground mount in Ulaanbaatar, as suggested by Government of Mongolia.
Additional Scope of Work	a) One-week online training on Installation and commissioning aspects in a Solar PV Power Plant, for at least 5 officials from Mongolia. (to be conducted by successful bidder). b) Onsite training at Mongolia, while during installation and commissioning, preferably to the same 5 officials who had undergone online training.
Download of Tender Form	https://nise.ewizard.in
Pre-bid Conference/ Clarification Meeting	08/09/2025 @ 2.00 PM at Surya Bhawan, NISE, Gurugram. Any amendment (if required) in the tender document will be done after the pre-bid meeting. It is desired that all the prospective bidders need to attend the pre-bid meeting. However, in case of absence from the pre-bid meeting, bidders must comply with the points discussed in the pre-bid meeting.
Last date of Submission of Tender	18/09/2025 @ 17.00 (Note: In case of holiday, then next working day shall be the last date for Submission of Bids)
Date and Time of Bid opening (Techno-Commercial)	19/09/2025 @ 11.00
Date and Time of Bid opening (Financial)	Conveyed through auto-online message system by the tender portal to qualified/shortlisted bidders

Earnest Money Deposit (EMD)	₹ 8,00,000/- (Rupees Eight Lakh Only) (refundable to the unsuccessful Bidders without any interest) through online to the account of NISE, Gurugram. Applicable relaxation as per GoI norms.
Warranty period	One year warranty from the date of commissioning of the system
Estimated Project Cost (ECPT)	Rs. 1.73 Crores inclusive of all applicable taxes.
Bid Validity	Bids shall be valid for at least 180 days from the date of technical bid opening.
Project Completion Period	6 months from the date of the award of the project
Declaration by the Bidder:	The bidder needs to submit a "Declaration"on the letter head as per the format provided at **Annexure-A4.**
Address for Communication	The Deputy Director General (Consultancy), National Institute of Solar Energy, Gurugram - Faridabad Road, Gwal Pahari, Gurugram - 122 003, Haryana, India. E-mail: consultancy@nise.res.in Ph: +91 124-285 3129
Important Note: Prospective Bidders are requested to remain updated for any notices/amendments/clarifications etc. to this document through the website. No separate notifications will be issued for such notices/amendments/clarification etc. in the print media or individually.	

1.3 DISCLAIMER

1. Though adequate care has been taken while preparing the NIT document, the Bidders shall satisfy themselves that the materialis complete in all respect. Intimation regarding any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within Ten (10) days from the date of notification of NIT/issuance of e-Tender documents, it shall be considered that the document is complete in all respect and has been received/acknowledged by the bidder (s).
2. National Institute of Solar Energy (NISE) reserves the right to modify, amend, or supplement this document.
3. While this tender document has been prepared in good faith, neither NISE nor their employees or advisors make any representation or warranty, express or implied, or accept any responsibility or liability, whatsoever, in respect of any statements or omissions herein, or the accuracy, completeness or reliability of the information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this document, even if any loss or damage is caused by any act or omission on their part. NISE doesn't take any responsibility for any technical snag or failure that has taken place during document upload.

1.4 GENERAL TERMS AND CONDITIONS FOR E-PROCUREMENT

1.4.1 ONLINE REGISTRATION PROCESS

a) The scopes of work to be tendered are available in the complete bid documents, which can be viewed /downloaded from the e-tender portal of https://nise.ewizard.in . The bid should be submitted along with complied specifications concurrently duly digitally signed on the website https://nise.ewizard.in No claim shall be entertained on account of disruptions of internet service being used by bidders. Bidders are advised to upload their bids well in advance to avoid last-minute technical snags.

b) All Corrigendum/Amendment/Corrections, if any, will be published on the website https://nise.ewizard.in

c) All the applicants must have a Class-III Digital Signature Certificate (in the name of the person who will sign the bid document) from any of the licensed certifying.

d) The applicants should get registered their firm with the e-tendering portal of **https://nise.ewizard.in** to have user ID & Password from M/s ITI Ltd.

1.4.2 ONLINE TENDERING PROCESS

The tender process shall consist of the following stages:

a) Downloading of tender document: Tender document will be available for free of cost at https://nise.ewizard.in

b) Pre-bid meeting: A pre-bid cum clarification Meeting will be arranged for the prospective bidders at NISE / online mode at the date mentioned above.

c) Publishing of Corrigendum: All corrigendum shall be published on https://nise.ewizard.in website.

d) Bid submission: Bidders have to submit their bids along with supporting documents to support their eligibility, as required in this tender document on https://nise.ewizard.in . No manual submission of bid is allowed, and manual bids shall not be accepted under any circumstances.

e) In case bidder encounters any technical issues pertaining to e-Procurement system while acting on the tender, computer screenshot of the error message with date & time stamp

on the web-browser along with the query shall be e-mailed by the bidder to the help desk No. +91-8800591742 for resolution of the problem. At the same time, the problem must be intimated to the concerned Tender Inviting Authority via e-mail.

f) The time is taken to ascertain, evaluate, and suggest a solution for the problem reported by bidder may vary from case to case. Hence bidders are advised to submit the bid at least two working days before the due date and time of bid submission to avoid any last-minute issues that may come up.

g) Opening of Bid and Bidder short-listing: The single cover bids will be opened, evaluated, and shortlisted as per the eligibility. Failure to submit the required documents online will attract disqualification. Price bids of the qualified bidders will open on the day to be intimated to all bidders.

1.4.3 DOCUMENTS COMPRISING BID:

All the documents to be submitted along with this bid is provided in the check list , in the Formats and Annexures.

1.4.4. TENDER DOCUMENT FEES AND EARNEST MONEY DEPOSIT (EMD)

a) The bidder shall pay Earnest Money Deposit of Rs. 8 lakhs in the form of Insurance Surety Bonds, Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the Commercial Banks or payment online in an acceptable form. The EMD is required to protect the purchaser against the risk of bidder's conduct, which would warrant the forfeiture of the security. Applicable relaxation as per the prevailing GoI rules, prevails.

b) Online Payment modes: The EMD can be paid in through the e-Payment facility provided by the e-Procurement system. Bidders can also submit a Bank Guarantee for EMD. Bidders can make payment via Internet banking.

1.4.5. VALIDITY OF THE BID

a) The tender offer shall be kept valid for acceptance for a period of 180 days from the date of opening of offers. The offers with lower validity period are liable for rejection.

b) Further, the tenderer may extend the validity of the bids without altering the substance and prices of their bid for further periods, if so required.

1.4.6. DEVIATIONS

The offers of the bidders with deviations in commercial terms and technical terms of the tender document are liable for rejection.

1.4.7. BLACK LIST

All the intending tenderers shall agree that in the event of the documents furnished with the offer being found to be bogus or the documents contain false particulars, they shall be blacklisted for future tenders/ association with NISE and EMD shall be forfeited against any losses incurred by NISE.

1.4.8 BIDDER'SLOCATION

i. The tenderers are requested to furnish the exact location of their factories/facilities with a completepostal address and pin code, telephone and fax nos. etc., in their tenders to arrange an inspection by NISE, if considered necessary.

ii. All communication shall be made to the registered e-mail of the bidder in the e-tendering systems and NISE shall not be responsible for non-receipt or delay of any such communication.

NIT NO. 04/10/01/2019-20/MEA/Mongolia

VOL – 2: SCHEDULE AND SCOPE OF WORKS

Tender Submission at: https://nise.ewizard.in

2.1 ELIGIBILITY OF BIDDERS

a) The bidder must be legally registered as a company in India [The bidder should be a firm /company registered/ incorporated under Companies Act, 1956 or Companies Act, 2013/ and further amendment(s)] or the bidder must be legally registered as a company in Mongolia.

b) The bidder must be engaged in the solar PV business for at least last three (03) years based in India.

   a. The company should have experience of at least three years in supply installation, commissioning, and maintenance of Solar Photovoltaic (PV) Systems in India (or abroad), as on the last date of Submission of the bid.
   b. The proof of the list of clients (with project details) shall be submitted with the technical bids.
   c. The bidder shall be equipped and be able to carry out the maintenance, repairs, and supply of spare parts.

c) Bidder will assume total responsibility for the fault-free operation and maintenance of equipment during the warranty period.Bidder shall provide a comprehensive maintenance of 1 year for the smooth operation of the system. This duration will be the defect liability period.

d) Bidder should have valid test Certificates of Solar Street lights/ other components as per Specification from MNRE/NABL accredited Lab/international certificate. Latest BIS standard/equivalent as per MNRE guidelines may be followed.

e) Bidder should have ISO 9001 and ISO 14001 Certificates.

f) The bidder should have the requisite infrastructure, experience, and qualified manpower for supply/installation /operation and maintenance of Solar Photovoltaic (PV) Systems.

g) The bidder will submit supporting documents for the claims made by them in the offers to be submitted to NISE.

h) Bidders who are debarred/Blacklisted from business by Govt. /Govt. Agency, State Government, PSUs or any Government body in India in any state would not be eligible to participate in this bid.

i) Bidders who don't meet the criteria given above or make an untrue or false representation in the forms, statements, and attachments submitted in proof of the qualification requirements or have a record of poor performance, don't correctly complete the contract, cause inordinate delays in completion or financial failure, etc. are subject to disqualification and would be black listed.

Note: Submission of the bid only does not suffice for deeming the order to the bidder; all

bidders will undergo a strict scrutiny process to evaluate the bids received by the committee.

2.2 FINANCIAL ELIGIBILITY OF BIDDERS

a) **Average Annual Financial Turnover** of the company during the last three financial years (2022-23, 2023-24, and 2024-25) should be at least *ONE CRORE INR in Solar Business (CA certificate should be attached).*

b) ***Cumulative: The bidder must have successful executed at least (either of three):***

- ***01 purchase orders/contracts/agreements of the value of 80% of ECPT***

  or

- ***02 purchase orders/contracts/agreements of the value of 50% of ECPT each***

  or

- ***03 purchase orders/contracts/agreements of the value of 40% of ECPT each of similar work during last 3 years***

2.3 TECHNICAL ELIGIBILITY OF THE BIDDERS

a) Bidder should have Installed & Commissioned at least 10 nos. of grid-tied Rooftop/ground mount solar PV power plants with capacity **of minimum 40 kWp each**

Or

b) Bidder should have Installed & Commissioned at least 2 nos. of grid-tied Rooftop/ground mount solar PV power plants with a cumulative capacity **of 400 kWp.**

Note:

- Submission of the bid only does not suffice for deeming the order to the bidder;all bidders will undergo a strict scrutiny process to evaluate the bids received by the committee.
- Bidder's experience should be in supply, installation/commissioning (contracts executed, completed and handed over) of Solar Photovoltaic Systems for: MNRE supported Schemes / Programme, OR Any Government Organization/ Agency/ SNA/PSU). - CA certificate is required.

2.4 SCOPE OF WORK

Design, manufacture, supply, transportation**,** installation, and commissioning of Solar PV Power Plants and solar PV Street Lights, at the 10th-floor building of 'Ministry of Foreign Affairs, Ulaanbaatar in Mongolia, as directed/ordered by NISE on contract basis as per the following specifications, terms and conditions:

a) 25 kWp grid-tied Rooftop, Solar PV Power Plant,
b) 20 kWp grid-tied Solar Power Plant on Carport, (PV panels with the suitable structure, to be installed in Car Parking Area to serve as shade for parked cars), and
c) 24 Nos. PV Street lights (12 Nos of Standard and 12 Nos of Smart)
d) Spares for five-year trouble-free operation & Maintenance of the above PV Systems.
e) One-week online training on Installation and commissioning aspects in a Solar PV Power Plant, for at least 5 officials from Mongolia.
f) Onsite training at Mongolia, while during installation and commissioning, to the same 5 officials who had undergone online training officials.
g) Warranty of the PV power plant and street lights for one year.

The successful bidder is supposed to visit the site in Mongolia, to check the exact available space on the rooftop of the building and the car parking area to design and fabricate the support structures for the PV Arrays.

Detailed Scope in Technical Specifications are provided in **Volume 3.**

2.5 GENERAL CONDITIONS OF CONTRACT SCOPE

a) Inspections and Tests: All routine tests & acceptance tests as per relevant standards and specifications of MNRE shall be carried out by thevendor

b) Packing: The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their destination, as indicated in the contract. The packing shall be sufficient to with stand, without limitation,rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points intransit.

c) Delivery and Documents: The goods should be dispatched within **three (03) months** period from the date of placement of Work Order. The consignment would be sent in full containers (no part shipment is allowed) with prepaid freight and insurance to the

'**Ministry of Foreign Affairs, Ulaanbaatar, Mongolia'.**

d) The 'Project' must be executed within 06 months from the date of placing the Work Order. In case of extension due to unforeseen reasons, the written permission to be sought from the tendering agency with justified reasons for delay.

e) Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by telephone/fax/e mail the full details of the shipment including contract number,'Bill of Lading'etc.and date, description of goods, quantity, name of the consignee, invoice etc.

The supplier shall mail the following documents to the purchaser with copy to the insurancecompany:

i) Copies of the Supplier invoice showing contract number, goods' description, quantity, and unit price, totalamount;
ii) Acknowledgment of receipt of goods from the consigneeby thetransporter;
iii) Insurance certificate, ifany.
iv) Manufacturer's/Supplier's warrantycertificate;
v) Inspection Certificate issued by the Competent Authority, and the supplier's factory inspection report; and Certificate ofOrigin.
vi) Two copies of the packing list identifying the contents of eachpackage.

The above documents should be received by the designated Officer of **Ministry of Foreign Affairs, Ulaanbaatar, Mongolia**before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the supplier will be responsible for any consequent expenses.

f) **Insurance**:For delivery of goods at the purchaser's premises, the insurance shall be obtained by the supplier to an amount equal to 110% of the value of the goods from "warehouse to warehouse" (final destinations) on "All Risks" basis including War Risks andStrikes.

g) **Transportation:** Where the Supplier is required under the contract to transport the Goods to a specified place of destination including insurance, as shall be specified in the contract, shall be arranged by the supplier, and the related cost shall be included in the ContractPrice.

h) **Warranty/Maintenance**: The vendors must provide full comprehensive warranty and Maintenance for a period of 12 months (Twelve months) from the date of commissioning. During this period, they should provide all spare parts required for repair and maintenance.

i) **Performance Bank Guarantee (PBG):** a)The supplier shall submit a 'PBG' @ 3% of the accepted tendered cost, valid for 60 days beyond the completion of the Defect Liability period (12 months from the date of commissioning). The PBG shall be submitted within one month from the date of award of the contract.

j) **Payment Terms:**

Sl No	Milestone	Instalment Release	Cumulative Payment
1	On successful supply of all the system components to the proposed site premises as per the BOQ, on receipt of the certification from the respective competent authority in Mongolia and on successful completion of introductory online training capsule.	20% of the tendered cost	20%
2	After successful completion of installation / commissioning and on-site training on Solar PV Systems by the vendor and certification from respective competent authority in Mongolia and India.	70% of the tendered cost	90%
3	60 days after completion of Defect Liability Period subjected to the satisfactory report.	10% of the tendered cost	100%

Note: NISE shall release the payment to successful bidder after the receipt of the respective milestone payment from MEA.

k) Taxes and Duties: Bidder shall be entirely responsible for all taxes, applicable GST, license fees, custom duty, interconnection charges, local regulatory fees, any other taxes , all other applicable duties, demurrage charges (if any), road permits, etc., incurred until delivery of the contracted goods at the destination premises i.e.,**Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia**. In this respect, the bidders must ascertain all their doubts, if any, from NISE before Submission of their bid.

l) Customs Clearance and Transportation to Site: Mongolian authorities have agreed to facilitate support for the Customs clearance (including customs duty exemption, if any) at Mongolia Port., transportation to site, and storage at Ulaanbaatar. However, in case of any difficulty, the same shall be intimated to NISE to resolve the matter.

m) Penalty Clause: If the Supplier fails to deliver the goods or to perform the services within the period specified in the contract,the Purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as penalty 0.5% of contract price per week of delay subject to a ceiling of 10% of final contract price).

n) Applicable Law: The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction in Gurugram,Haryana.

o) Rejection of Tender: Incomplete, conditional, fax ,late tenders and tenders without EMD will be summarily rejected. Director General, National Institute of Solar Energy reserves the right to reject any or all the tenders at his discretion without assigning any reasonthereafter.

p) Interested bidders mayinspect the work site at the address above mentioned and get

them acquainted with the nature of work and local conditions that may have a bearing on the rates.

q) Other Points to be noted:

Assistance would be provided by Mongolian side. However,

- Civil Works related to execution of the Work shall be carried out by the bidder.
- Bidder has to bear expenses for accommodation, local travels and other facilities in Mongolia for their Staff while during the installation.
- The training (online + onsite) for the officials shall be in the Mongolian language. The necessary transaltional charges to be included in the tender. The training should include the proper installation/ commissioning, operation/ maintenance and troubleshooting of the supplied systems.
- Bidder scope also includes the deputation of its engineers to Mongolia for the installation , commissioning and Maintenance , and handing over of the systems.
- Liasoning with the Mongolian authorities for proper co-ordination till the handing over of the systems.
- Obligation for warranty of the complete systems.

r) Mongolian authorities have agreed to provide the following:

a) Advisory support for the customs clearance in Ulaanbaatar, Transportation to site and storage.
b) Nomination of five people for training.
c) Assistance in installation at site, by the team trained in India.
d) Will identify an agency at Mongolia for helping the vendor.

Extra Notes:

- NISE, Gurugram reserves the right to accept or reject any or all applications without assigning anyreasons.
- Offers with incomplete information are liable to be rejected.

NIT NO. 04/10/01/2019-20/MEA/Mongolia

VOL – 3: Technical Specifications

Tender Submission at: https://nise.ewizard.in

The proposed projects shall be commissioned as per the technical specifications given below.

3.1 DEFINITION

A Grid-tied Solar Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables and switches and meter. Components and parts used in the SPV power plants, including the PV modules, metallic structures, cables, junction boxes, switches, PCUs, etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. These systems generate power during the day time, which is utilized by powering captive loads and feed excess power to the grid. In case, when power generated is not sufficient, the captive loads are served by drawing power from the grid.

3.2 GRID TIED 25 kW_P ROOFTOP SOLAR PV POWER PLANT

- A Solar Array of 25 kWp capacity would be installed on the rooftop of the 10-floor building of "Ministry of Foreign Affairs of Mongolia, Ulaanbaatar". The proposed rooftop SPV system mustbe fed to the local grid of 440V three phase line depending on the local regulatory and technical requirements.

- SPV comprises of the following equipment and components:

  a) Solar PV Array of 25 kWp capacity.
  b) Module mounting structure (suitable for roof top mounting).
  c) Power Conditioning Unit total capacity of 25 kW (PCU)…(with one hot standby)
  d) String combining and monitoring Units / Array Junction Box
  e) DCDB /ACDB with necessary protections.
  f) IR/UV protected PVC Cables, connectors, pipes& Accessories.
  g) Lightning arrestor and other protective equipments.
  h) Energy Meters / Other Metering
  i) Remote Monitoring System / Data Acquisition System
  j) Weather monitoring system
  k) Any other required components as per the design.

3.2.1 DETAIL TECHNICAL SPECIFICATIONS

3.2.1.1 SPV MODULES (25kWp):

a) All the PV modules used should be made in India and from the ALMM list published by MNRE.

b) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power as required in this bid.

c) Adequate protective devices against surges at the PV module shall be provided.

d) Low voltage drop bypass diodes shall be provided.

e) The PV modules must be tested and approved from any one of the NABL/IEC/ MNRE Accredited Testing Laboratories. The PV modules used must qualify to the latest edition of the IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Modules IEC 61215:2021/. In addition, the modules must conform to IEC 61730:2023 Part-1 &2, for safety qualification, IEC 61853 for energy rating, IEC 62804 for PID testing, IEC 61701 – severity 1 or for salt mist test.

f) PV module should be able to withstand heavy snowfalls / frequent hailstorms.

g) The rated output power of any supplied module shall have positive tolerance within +3%.

h) The efficiency of the individual PV module should be a minimum of 20%. The fill factor of the PV module should be more than 75%.

i) The SPV module shall be made up of high transitivity glass & front surface shall give high encapsulation gain, and the module shall consist of impact resistance, low iron, and high transmission toughened glass. The module frame shall be made of corrosion-resistant material, which shall be electrically and mechanically compatible with the structural material used for mounting the modules.

j) The terminal box on the module should have a provision for opening it for replacing the Cable if required.

k) The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series-connected modules) shall not vary by more than 2 (two) percent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.

l) The module shall be provided with a junction box (with bypass diode) with either provision of external screw terminal connection or sealed type and with arrangement for the provision of the bypass diode. The box shall have hinged, weatherproof lid with captive screws and cable gland entry points or maybe of sealed type and IP-65 rated.

m) IV curves of the individual PV module at STC should be provided by bidder.

n) Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each module (This can be inside or outside the laminate, but must be able to withstand harsh environmental conditions).

- ✓ Name of the manufacturer of the PV module
- ✓ Name of the manufacturer of Solar Cells.
- ✓ Month & year of the manufacture (separate for solar cells and modules)
- ✓ Country of origin (separately for solar cells and module)
- ✓ I-V curve for the module Wattage, Im, Vm, and FF for the module
- ✓ Unique Serial No and Model No of the module
- ✓ Date and year of obtaining IEC PV module qualification certificate.
- ✓ Name of the test lab issuing IEC certificate.
- ✓ Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.

o) Warranties:

Material Warranty:

- ✓ Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than ten (10) years from the date of sale to the original customer ("Customer")
- ✓ Defects and/or failures due to manufacturing .
- ✓ Defects and/or failures due to the quality of materials
- ✓ Non-conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar module (s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option

Performance Warranty:

- ✓ The supplier shall provide a performance guarantee for the PV modules used in the power plants must be warranted for their output peak watt capacity, which should not be less than 90% of the peak watt at the end of 10 years and 80% of the peak watt at the end of 25 years.

3.2.1.2 MODULE MOUNTING STRUCTURE:

a) Modules shall be mounted on supporting mounting structure made from galvanized MS angle of required structural strength.

b) The mounting structure steel shall be as per the latest IS 2062: 1992, and galvanization of the mounting structure shall be in compliance of the latest IS 4759.

c) Hot-dip galvanized MS mounting structures may be used for mounting the modules/ panels/arrays. The minimum thickness of galvanization should be at least 80 microns. Each structure should have an angle of inclination / and orientation as per the site conditions to take maximum insolation. However, to accommodate more capacity, the angle inclination may be reduced until the plant meets the specified performance ratio requirements.

d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts, and bolts. Necessary protection towards rusting need to be provided either by coating or anodization. Aluminium may not be used as a structural material.

e) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to NISE. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.

f) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

g) Regarding civil structures, the bidder needs to take care of the load-bearing capacity of the roof and need to arrange suitable structures based on the quality of roof.

h) Regarding civil structures, the bidder needs to take care of the snow load of the roof and need to arrange suitable structures based on the quality of the roof. It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit the loading calculation sheet to NISE.

i) The total load of the structure (when installed with PV modules) on the terrace should be as per roof conditions.

j) The minimum clearance of the structure from the roof level should be 300 mm.

k) The mounting structure steel shall be as per the latest IS 2062: 1992, and galvanization of the mounting structure shall comply withthe latest IS 4759.

3.2.1.3 PCU/ARRAY SIZE RATIO:

a) The combined wattage of all inverters should not be less than the rated capacity of the power plant under STC.

b) The maximum power point tracker shall be integrated into the PCU/inverter to maximize energy drawn from the array.

3.2.1.4 GRID-TIED INVERTERS (Power Conditioning Unit):

Typical technical features of the Grid-Tied/String Inverter / PCU shall be as follows:

a) The wattage of a single inverter should not be less than 25 kWp with three MPPT.
b) 415 VAC± 10% (phase to phase), 3 phase Inverter.
c) Switching devices: MOSFET/ IGBT based MPPT charging.
d) Control: DSP/Microprocessor.
e) Wave Form Sine wave.
f) Minimum Efficiency at 100% load > 97% as IEC- 61683(Efficiency).
g) Output frequency: 50 Hz± 1 Hz
h) Power Factor 0.9 leading …0.9 lagging.
i) Nominal AC Output voltage: 415VAC + 10% (phase to phase)/ pure sine wave in case of the above capacity power plant.
j) Ambient temperature: -30° to 45°
k) Ambient Humidity: Less than 95% non-condensing.
l) Current THD: less than 3%.
m) No-load losses: Less than 1% of rated power
n) Degree of Protection: IP65 for outdoor as per IEC 60529 .
o) Inverter shall be capable of complete automatic operation, including wake-up, synchronization & shutdown.
p) In-built data logger to monitor plant performance through external computer shall be provided.
q) The PCU / inverters should be tested from the MNRE approved test centers / NABL / BIS / IEC accredited testing- calibration laboratories on relevant standards.
r) Grid frequency and voltage tolerances shall be as per the local regulatory requirements.
s) Protections:
    i. Over voltage (automatic shutdown) of grid.
    ii. Under voltage (automatic shutdown) of grid.
    iii. Overload protection.

iv. AC Short circuit (circuit breaker & electronics protection against sustained fault).

v. Auto/Manual re-connects provision.

vi. Reverse polarity protection for PV Array (DC).

vii. Protection of Enclosure: IP-65(Min) for outdoor

t) Indications:

i. Overload

ii. Inverter ON

iii. Input &output voltage

iv. Input & output current

v. Frequency

vi. Power output

LCD Display parameters

- DC power input
- DC input voltage.
- DC Current.
- AC Power output.

vii. AC voltage (all the 3 phases and line)

viii. AC current (all the 3 phases and line)

ix. Power factor

x. Grid voltage

xi. Output frequency

xii. Cooling: Air cooled

u) Dimension and weight of the PCU shall be indicated by the Contractor in the offer.

v) <u>Others:</u>

i) PCU/inverter shall be capable of complete automatic operation, including wake-up, synchronization & shutdown.

ii) The output of the power factor of the PCU inverter is suitable for all voltage ranges or sink of reactive power. The inverter should have an internal protection arrangement against any sustainable fault in the feeder line and against the lightning on the feeder.

iii) Built-in meter and data logger to monitor plant performance through external computer shall be provided.

iv) The power conditioning units/inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683, IEC 62116/IS 16169, IEC 61727 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.

v) The charge controller (if any) / MPPT units environmental testing should qualify IEC 62509, IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

w) The output power from SPV would be fed to the inverters, which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be out of synchronization and shall be disconnected from the grid.

3.2.1.5 Remote Monitoring System / Data Acquisition System

a) Data Acquisition System shall be provided for the 25 kWpgrid-connected rooftop Solar power plant.

b) Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. It should have features to display the real-time parameters on the display screen of the data monitoring device and should be downloadable from the Cloud server using a suitable PC.

c) Weather monitoring station

i) Solar Irradiance: Two thermopile based Pyranometer (along with calibration certificate) provided. With one sensor mounted in the plane of the array, and other sensor mounted in horizontal position. The readings/measurements shall be integrated with the data logging system.

ii) Temperature probes for recording the Solar panel temperature and ambient temperature to be provided complete with readouts integrated with the data logging system.

iii) Ultrasonic wind sensor for wind speed and direction

iv) Humidity sensor for measuring relative humidity

d) The following parameters should be accessible via the operating interface display in real-time. They should be downloadable through Cloud server separately for a solar power plant based on data recorded by the grid-connected inverter:

- AC Voltage (all phases)
- AC Output current. (all phases)
- Output Power
- Power factor.
- DC Input Voltage.
- DC Input Current.
- Time Active.
- Time disabled.
- Time Idle.
- Power produced
- Energy export.
- Weather parameters.
- Protective function limits (Viz-AC Overvoltage, AC Under voltage, over frequency, under frequency ground fault, PV starting voltage, PV stopping voltage.

e) The following parameters should be accessible via the operating interface display in real time and should be downloadable through Cloud server separately for solar power plant based on data recorded by energy meter ("Solar Generation Meter"- installed in between the solar Grid-tied inverter and the building distribution board to measure gross solar AC energy production)

   - AC Voltage for all three phases
   - AC Output current for all three phases
   - Energy Export

f) Provision for instantaneous remote monitoring and download of historical data shall be also incorporated.

g) Remote Monitoring system should be tested and certified by competent certifying authority for above functions.

h) The software and associated components of the monitoring shall bevendorindependent, and also the provision of data charges and other cost for the next 20 years shall be the part of costing.

i) Integration of logged data to NISE server through APIs. This feature need to be supported by the concerned Inverter manufacturer.

j) A desktop PC with a battery back-up at the client location should be provided.

3.2.1.6 JUNCTION BOXES (JBs)

a. The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.

b. Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP65 standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry. Single/double compression cable glands. Provision of earthing. It should be placed at 5 feet height or above for ease of accessibility.

c. Each Junction Box shall have High-quality Suitable Capacity Metal Oxide Varistors (MOVs) / SPDs, suitable Reverse Blocking Diodes. The Junction Boxes shall have properarrangement monitoring and disconnection for each of the groups.

d. Suitable markings shall be provided on the bus bar for easy identification, and the cable ferrules must be fitted at the cable termination points for identification.

3.2.1.7 DC Distribution Box:

a) A DC distribution box shall be mounted close to the solar inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations-IEC 60529:
b) Incoming positive and negative DC cables from the modules.
c) The DCDB will have suitable cable entry points fitted with the cables. Propermarkings shall be provided on the lugs or bus-bars for easy identification at cable ferrules that will be fitted at the cable terminations points for identification.
d) DC circuit breaker/Fusestwopoles (the cables from the modules will be connected to this circuit breaker on the incoming side);
e) DC surge protection device (SPD), class 2 as per IEC 60364-5-53;
f) General safety requirements for connectors, fuses, switches, circuit breakers (AC/DC) - IS/IEC 60947 (Part 1, 2 & 3), EN 50521.

3.2.1.8 AC Distribution Box:

a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid-tied mode.
b) An AC distribution box shall be mounted close to the solar Grid-tied inverter.

c) All the Panels shall be metal clad, totally enclosed, rigid, and floor mounted, air-insulated, cubical type suitable for operation on three-phase / single phase, 415 or 230 volts, 50 Hz

d) The panels shall be designed for the minimum expected ambient temperature of -30degrees Celsius, 80 percent humidity and dusty weather.

e) All indoor panels will have the protection of IP54 or better. All outdoor panels will have the protection of IP65 or better.

f) Should conform to the local Electricity Act and rules (till the last amendment).

g) The AC distribution box shall be of the thermos-plastic IP65 DIN rail mounting type and shall comprise the following components and Cable terminations-IEC 60529.

h) The changeover switches, cabling work, should be undertaken by the bidder as part of the project.

i) Incoming 3-core / 5-core (single-phase/three-phase) cable from the solar Grid-tied inverter.

j) AC circuit breaker, 4-pole

k) AC surge protection device (SPD), class 2 as per IEC 60364-5-53.

l) General safety requirements for connectors, switches, circuit breakers (AC/DC) -IS/IEC 60947 (Part 1, 2 & 3), EN 50521.

m) Outgoing Cable to the building electrical distribution board.

n) All the 415 AC or 230 volts'devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions:

o) Variation in supply Voltage: +/- 10 %

p) Variation in supply Frequency: +/- 3 Hz

3.2.1.9 Connecting Cables:

a. Cables of appropriate size, as per the design, to be used in the system shall have the following characteristics:

b) All cables shall be supplied conforming to IEC 60227/ IS 694, Voltage rating: 1,100V, Temp, range: -30°C to +80°C.

a. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation and Flexible.

b. For the DC cabling, XLPE insulated and sheathed, UV-stabilized single core flexible copper cables shall be used, Multi-core cables shall not be used. Multi-Strand, annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armored cable for underground laying. All cable trays, including covers to be provided. All cables conform to the latest edition of IEC/ equivalent BIS Standards as specified below: BOS item/component Standard

c. The Cable should be so selected that it should be compatible up to the life of the solar

PV panels, i.e., 25years.

d. For the AC cabling, XLPE insulated, and PVC sheathed single or multi-core flexible copper cables shall be used. Outdoor AC cables shall have a UV-stabilized outer sheath.
e. The total DC voltage drop on the cable segments from the solar PV modules to the inverter shall not exceed 1.0%.
f. The total AC voltage drop on the cable segments from the inverter to the building mains distribution board and the meter shall not exceed 1.0%.
g. The DC cables from the SPV module array shall run through a UV-stabilized PVC conduit pipe of adequate diameter with a minimum wall thickness of 1.5mm.

c) Cables and wires used for the interconnection of solar PV modules shall be provided with solar PV connectors (MC4) and couplers.
d) All cables and conduit pipes shall be clamped to the rooftop, walls, and ceilings with thermo-plastic clamps at intervals not exceeding 50 cm.
e) The minimum DC cable size shall be copper as per design cable calculations considering the safety factor of 1.25.
f) The minimum AC cable size shall be copper or aluminum as per design cable calculations considering safety factor of 1.25. In three-phase systems, the size of the neutral wire size shall be equal to the size of the phase wires.
g) Cable Routing / Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with the proper manner by good quality ferrule or by other means so that the Cable easily identified. Also, cable drum no. / Batch no. to be embossed/ printed at every one meter.
h) The following color coding shall be used for cable wires:
    - DC positive: red (the outer PVC sheath can be black with a red line marking).
    - DC negative: black
    - AC single phase: Phase: red; neutral: black
    - AC three-phase: Phases: red, yellow, blue; neutral: black
i) Cables and conduits that have to pass through walls or ceilings shall be taken through a PVC pipe sleeve.
j) Cable conductors shall be terminated with tinned copper end-ferrules to prevent fraying and breaking of individual wire strands.
k) The termination of the DC and AC cables at the Solar Inverter shall be done as per instructions of the manufacturer, which in most cases, will include the use of special connectors.
l) Sizes of cables between array interconnections, array to junction boxes, junction boxes to inverter,etc. shall be so selected to keep the voltage drop (power loss) of the entire

solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.

m) The ratings given are approximate. Bidder to indicate size and length as per system design requirement and site survey carried out. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings should be approved prior to installation.

3.2.1.10 Lightning protection:

a) The SPV power plants shall be provided with lightning & overvoltage protection.
b) The main aim in this protection shall be to reduce the overvoltage to a tolerable value before it reaches the PV or other sub-system components.
c) The source of overvoltage can be lightning, atmosphere disturbances, etc.
d) The entire space occupying the SPV array shall be suitably protected against lightning by deploying the required number of Lightning Arrestors.
e) Lightning protection should be provided as per IEC 62305 standard.
f) The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.
g) The power plant should have separate LA arrangements, and the design document of the same shall also be submitted.

3.2.1.11 Earthing Protection:

a) Each array structure of the PV yard should be grounded/appropriately earthed as per IS:3043-1987.
b) Also, the lighting arrester/masts should also be earthed inside the array field.
c) Earth Resistance shall be tested in the presence of the representative of the Department as and when required after earthing by calibrated earth tester.
d) Inverter, ACDB, and DCDB should also be appropriately earthed.
e) Earth resistance shall not be more than 5 ohms.
f) It shall be ensured that all the earthing points are bonded together to make them at the same potential.
g) Proper color coding/labeling needs to be done.
h) The making of earth pits is also under the scope of thevendor.

3.2.1.12 Surge protection

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and –ve terminals to earth (via Y arrangement)

3.2.1.13 Meters:

a) An energy meter shall be installed between the solar Grid-tied inverter and the building distribution board to measure gross solar AC energy production (the "Solar Generation Meter"). The Solar Generation Meter shall be of the same accuracy class as the DISCOM service connection meter or as specified by local regulatory requirements.
b) The bidder must take approval/NOC from the Concerned DISCOM for the connectivity, technical feasibility, and synchronization of SPV plant with distribution network before commissioning of SPV plant.
c) The existing service connection meter needs to be replaced with a bidirectional (import kWh and export kWh) service connection meter (the "Solar Service Connection Meter") for the purpose of net-metering. Installation of the Solar Service Connection Meter will be carried out by the DISCOMS Utility side.
d) Reverse power relay shall be provided by the bidder (if necessary), as per the local DISCOM requirement.
e) AC Static direct connected watt-hour Smart Meter Class 1 and 2 — Specification (with Import & Export/Net energy measurements)-
f) IS 16444 or as specified by the DISCOMs.

3.2.1.14Grid islanding:

a) In the event of a power failure on the electric grid, it is required that any independent power-producing inverters attached to the grid turn off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as "islands."Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection), disconnection due to under and overvoltage conditions shall also be provided as per IEC 62116/IS 16169.
b) A manual disconnect 4pole isolation switch beside automatic disconnection to the grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

3.2.1.15Connectivity and Equipment

All the necessary connectivity requirements, voltage levels, and necessary equipment requirements shall be as per the local regulatory requirements. 'Liasoning with local Electricity authorities for connectivity' (as per the local regulatory requirements) shall be the responsibility of the Vendor.

3.2.1.16 The vendor shall include the details in the design document.

3.2.1.17 List of Spares:

For trouble-free operation and easy servicing, the following list of (but not limited to) spares isto be included. The list of spares should be sufficient for fiveyears of O&M.

a) After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided by the bidder for maintenance purposes sufficient for fiveyears of O&M. List of tools and tackles to be supplied by the bidder for approval of specifications and make from NISE.

Sl. No.	Description	Qty.
1.	PV Module	10%
2.	PCU	1 No.
3.	Mounting structure components	As per design
4.	DC String Fuse	50
5.	DC Surge Protector Device	5
6.	DC Combiner Box	2
7.	Single-core, 6mm2 / the size used by the vendor, DC cable	300 m
8.	Single-core, 70mm2/ the size used by the vendor, armored Cu cable	300 m
9.	Single-core, 400mm2/ the size used by the vendor Al AC (Inverter to the grid)	300 m
10.	Accessories for Lightning Arrestors	3 set
11.	Accessories for Earthing strip	3 set
12.	Energy Meter	2 set
13.	Accessories for Monitoring system	1 set
14.	control logic cards, IGBT driver cards	1 set each
15.	Pyranometer	1
16.	Temperature sensor	5
17.	Wind sensor	1
18.	Humidity sensor	1

3.2.1.18 DANGER BOARDS AND SIGNAGES:

Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be offered one each at, solar array area and main entry from the administrative block. The text of the signage may be finalized in consultation with the NISE/ owner.

3.2.1.19 FIRE EXTINGUISHERS:

The firefighting system for the proposed power plant for fire protection shall be consisting of:

a) Portable fire extinguishers in the control room for fire caused by electrical short circuits
b) Sand buckets in the control room
c) The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards. The fire extinguishers shall be provided for control room housing, PV array installation site.

3.2.1.20 DRAWINGS & MANUALS:

a) Two sets of Engineering, electrical drawings, and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical datasheets for each equipment giving details of the specifications along with make/makes in their bid along with the basic design of the power plant and power evacuation, synchronization, along with protection equipment.
b) Approved ISI and reputed make for equipment be used.
c) For complete electro-mechanical works, bidders shall supply perfectdesign, details, and drawings for approval to NISE before progressing with the installation work.
d) Operation and Maintenance manual.
e) All test and calibration certificates, whereever applicable.

3.2.1.21 PLANNING AND DESIGNING:

a) The bidder should carry out Shadow Analysis at the site, and accordingly design strings & arrays layout considering optimal usage of space, material, and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to NISE for approval.

b) NISE reserves the right to modify the landscaping design, layout and specification of sub-systems and components at any stage as per local site conditions/requirements.

c) The bidder shall submit a preliminary drawing for approval & based on any modification or recommendation if any. The bidder submits three sets of hard copy and soft copy via email of final drawing for formal approval to proceed with construction work.

3.2.1.22 Drawings to be furnished by bidder after awarding of the contract

The Contractor shall furnish the following drawings Award/Intent and obtain approval

a) General arrangement and dimensioned layout
b) Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters, etc.
c) Structural drawing along with foundation details for the structure with STADD analysis
d) Itemized bill of material for complete SV plant covering all the components and associated accessories.
e) The layout of solar Power Array
f) Shadow analysis of the roof

3.2.1.23 Solar PV system for meeting the annual energy requirement

Key Performance Indicators

The following KPIs would be monitored by the Engineer / Owner throughout the contract tenure, and the Contractor shall furnish monthly reports on above, without fail.

- PV Array Energy Yield
- Final System Yield
- PV System Efficiency (DC/AC)
- Performance Ratio (PR): The performance ratio test, as per IEC 61724, has to be carried out at the site by the agency in the presence of authorized officials from the Employer. They will be deriving sample data within seven consecutive days sufficient to provide operational data representing insolation and ambient conditions as desired by the agreement authority to prove the Performance ratio as provided in the DPR. If a Solar Plant achieves the Minimum Performance Ratio, then the Employer will issue Commercial Operation Date Certificate.
- Capacity Utilization Factor (CUF)

- Plant uptime
- Reactive Power Consumption
- Auxiliary Energy Consumption
- CO2 Savings
- Environment, Health & Safety

3.2.1.24 SAFETY MEASURES:

The bidder shall take entire responsibility for the electrical safety of the installation(s) and personnel, including connectivity with the grid and follow all the safety rules & regulations applicable as per local guidelines and regulations, etc. Insurance of the installers (of thevendor) working abroad is mandatory.

3.2.1.25 INPUTS TO DESIGN

After the award of the work order, the concernedvendor may interact with the nominated agency at Mongolia to gather more inputs to prepare and optimize the design. Also, this helps withthe preparation of the detailed project report.

Note: For those clauses which mentions Indian standards, use of equivalent international standards is also allowed.

3.3 GRID TIED 20 KWP ROOFTOP SOLAR PV POWER PLANT ON CARPORT OF MINISTRY OF FOREIGN AFFAIRS OF MONGOLIA, ULAANBAATAR

- A Solar Array of 20kWp capacity would be installed on the carport of "Ministry of Foreign Affairs of Mongolia, Ulaanbaatar."the proposed rooftop SPV system mustbe fed to the local grid of 440V three phase line depending on the local regulatory and technical requirements.

- SPV comprises of the following main equipment and components:

  l) Solar PV Array of 20kWp capacity
  m) Module mounting structure (suitable for rooftop mounting)
  n) Power Conditioning Unit total capacity of 20 kW (PCU)(with one hot standby)
  o) String combining and monitoring Units / Array Junction Box
  p) DCDB /ACDB with necessary protections.
  q) IR/UV protected PVC Cables, connectors, pipes& Accessories.
  r) Lightning arrestor and other protective equipment's

s) Energy Meters / Other Metering

t) Remote Monitoring System / Data Acquisition System

u) Weather monitoring system

v) Any other required components

3.3.1 DETAIL TECHNICAL SPECIFICATIONSOF CARPORT

Except for 3.2.1.2 (Module mounting structure), **all other specifications in 3.2.1 shall be applicable here as well . list of spares shall be saperatly provide as below.**

Sl. No.	Description	Qty.
1.	PV Module	10%
2.	PCU	1 No.s
3.	Mounting structure components	As per design
4.	DC String Fuse	50
5.	DC Surge Protector Device	5
6.	DC Combiner Box	2
7.	Single-core, 6mm^2/ the size used by the vendor, DC cable	300 m
8.	Single-core, 70mm^2/ the size used by the vendor, armored Cu cable	300 m
9.	Single-core, 400mm^2/ the size used by the vendor Al AC (Inverter to the grid)	300 m
10.	Accessories for Lightning Arrestors	3 set
11.	Accessories for Earthing strip	3 set
12.	Energy Meter	1 set
13.	Accessories for Monitoring system	1 set
14.	control logic cards, IGBT driver cards	1 set each

MODULE MOUNTING STRUCTURE:

Modules shall be mounted on supporting structure made from galvanized MS angle of required structural strength. Hot-dip galvanized MS mounting structures should be used for installing the modules/panels/arrays. The minimum thickness of galvanization should be at least 80 microns. Each structure should have an angle of inclination as per the site conditions to take maximum insolation.

a) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts, and bolts. Aluminum structures also can be used, which can withstand the wind speed of the respective

wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.

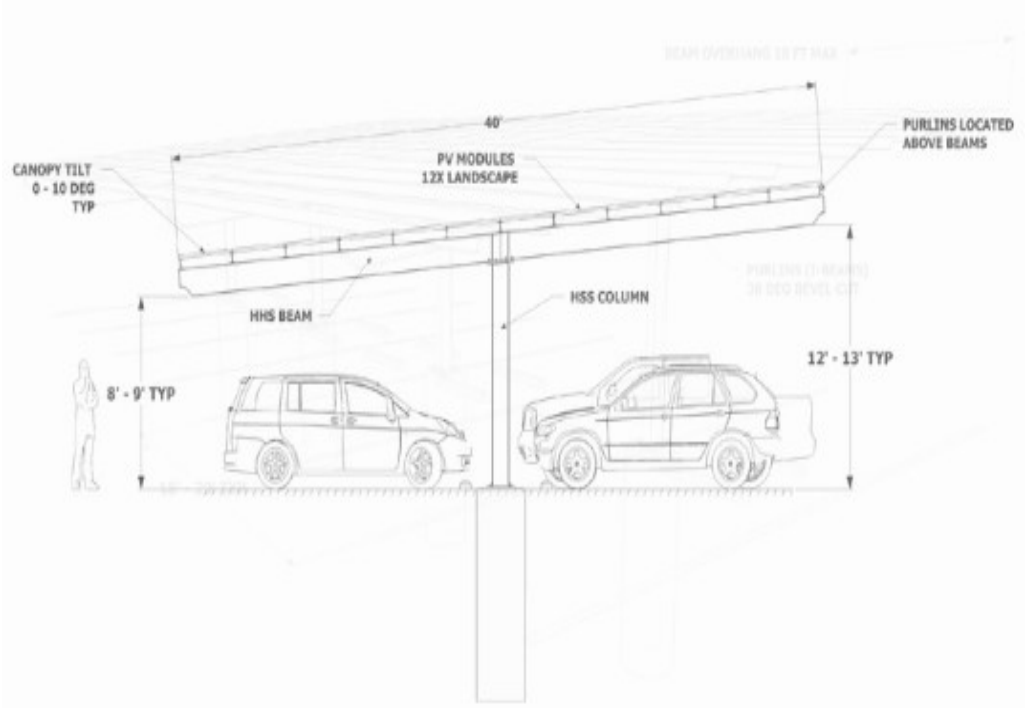
b) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

c) Regarding civil structures, the bidder needs to take care of the load bearing capacity of the carport and need to arrange suitable structures based on the quality of the roof.

d) Regarding civil structures, the bidder needs to take care of the Snow Load of the carport and need to arrange suitable structures based on the quality of the roof.

e) The mounting structure steel shall be as per the latest IS 2062: 1992, and galvanization of the mounting structure shall comply withlatest IS 4759.

f) The PV modules to act as the roof of the structure, and hence needful sealing should be provided in between to avoide the seapage of the water.



Indicative

3.4 SOLAR STREET LIGHTING SYSTEM TECHNICAL SPECIFICATIONS:

SN	Components	Specification for Solar street light
1.	PVmodule	Minimum 120Wp under STC Conforming IEC 61215:2021 IEC 61730-1& 61730-2: 2023 or equivalent BIS / MNRE approved standards.
2.	Battery	Minimum 12.8V, 54 AH capacity. Lithium Ferro Phosphate Battery. Conforming IEC 62133-2: 2017 IEC 61427-1: 2013
3.	Light Source	White Light Emitting Diode (W-LED) 20Watt, W-LED luminaire, dispersed beam, soothing to eyes with the use of proper optics and diffuser. LED Chip should comply with IES: LM-80 (Approved Method for Measuring Lumen Maintenance of LED Light Sources and LED lumen depreciation time to L70). Test reports for the same should be submitted. IS 16102 (Part 1): 2012,IS 16102 (Part 2): 2017

4.	Light Output	The luminaire must use high efficiency W-LED with minimum 125 lumens per watt (and UV free). [A certificate to be submitted by the System supplier to theTest Lab during certification. **Single light level:** Minimum 24Lux when measure data point 4-meters below the light. The illumination should be uniform without dark bands or abrupt variations, and soothing to the eye. Higher light output will be preferred. **Multiple Light levels:** The lamp should have two levels of light to take care of different lighting needs during the night, with providion for automatic on and off control. • Dusk to dawn (First 6 hours): Minimum 24 Lux when measured at the periphery of 4-meter diameter from a height of 4-meters (at "High" illumination level). The illumination should be uniform without dark bands or abrupt variations. • Rest of the time: Minimum 12 lux at lower illumination level (Higher light output will be preferred) The luminaire shall be tested for Electrical, Photometry and Color parameters as per IES LM-79:2008 or IS: 16106: 2012 for following performance parameters like: 1) Total luminous flux: ≥2500lm. 2) Luminous efficacy (i.e., system efficacy): ≥125lm/W. 3) Color Temperature: Between 5500K to 6500K. 4) CRI≥70 5) Luminous intensity distribution should follow the batwing pattern sin polar curves. 6) Require validation report using. Ies file, which is generated during the luminous intensity distribution test and using maintenance factor 0. 9 and pole height of 4m., Road width 5m and Pole span 15m. The average illuminance level and uniformity should comply with requirements as per IS 1944, wherever applicable. 7)The luminaire should be tested for all type tests as per IS 10322 Part 5 Sect 3 or IEC 60598-2-3 standards.
5	Mounting of light	Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5 m above the ground level.
6	Electronics Efficiency	Over all total Efficiency of the Electronics should be Minimum 90%
7	DutyCycle	Dusk to dawn: Automatic on and off control, (Higher light output will be preferred)

8	Autonomy	Three days or Minimum 36 operating hours per permissible Discharge with fully charged Lithium-Ferro Phosphate Battery.
9	Ingress Protection–IP	Optical and Control gear compartment-IP 65/IP66
10	Impact resistance of	≥IK08
11	Radiated EmissionTest	As per CISPR-15
12	ESD (Electro Static Discharge) and Radiated	As per IEC 61547
For SMART Street Light (12 No.s)		
13	• Integerated USB port Type B and C for mobile charging. • 10 inches digital display.	This Additional (including S.No. 1 to 12) requirement Only for of smart street light system. IP.

3.4.1 DETAIL TECHNICALDETAILS OF STREET LIGHT:

3.4.1.1 PV MODULE

- An indigenously manufactured PV module should be used.
- The PV module should have crystalline silicon solar cells and must have a certificate of testing conforming to latest edition of the IEC 61215 EditionII/ BIS14286; IEC 61730-1, 2; IEC 61701 or equivalent BIS standard from a NABL accredited Laboratory.
- The module efficiency should not be less than14%.
- The terminal box on the module may have a provision for opening it for replacing the Cable if required.
- There should be a Name Plate fixed inside the module which will give:
    a. Name of the Manufacturer or Distinctive Logo.
    b. Model Number
    c. Serial Number
    d. Year of manufacture
- A distinctive serial number starting with NSM will be engraved on the frame of the module or screen printed on the tedlar sheet of the module.

3.4.1.2 BATTERY

- Minimum 12.8V, 54 AH capacity Lithium Ferro Phosphate Battery.
- The battery pack should have a proper 'Battery Management System' (BMS) for cell balancing, overcharge, and over-temperature protection.
- Battery should conform to the latest BIS / International standards.

3.4.1.3 LIGHT SOURCE

- The light source will be a white LED type.
- The color temperature of the white LED used in the system should be in the range of 5500°K–6500°K.
- W-LEDs should not emit ultra violet light.
- The light output from the white LED light source should be constant through out the duty cycle.
- The lamps should be housed in an assembly suitable for out door use.
- The temperature of the heats ink should not increase more than 20°C above ambient temperature during the dusk to dawn operation.

3.4.1.4 ELECTRONICS

- The total electronic efficiency should be at least 90%.
- The charge controller should be MPPT Type and comply the requirement as IEC 62509.
- Electronics should operate at an appropriate voltage suitable for the proper charging of the battery.
- No Load current consumption should be less than 20mA.
- The PV module it self should be used to sense the ambient light level for switching ON and OFF the lamp.
- The PCB containing the electronics should be capable of solder-free installation and replacement.
- Necessary lengths of wires / cables, switches suitable for DC use, and fuses should be provided.

3.4.1.5 ELECTRONIC PROTECTIONS

- Adequate protection is to be incorporated under "No Load" conditions, e.g., when the lamp is removed, and the system is switched 'ON.'

- The system should have protection against battery over charge and deep discharge conditions.
- The system should have protection against short circuit conditions.
- Protection for the reverse flow of current through the PV module(s) should be provided.
- Adequate protection should be provided against reverse battery polarity.
- Load disconnect should be provided at 80% of the battery capacity status.

3.4.1.6 MECHANICALCOMPONENTS

- A corrosion-resistant metallic frame structure should be fixed on the pole to hold the SPV module.
- The frame structure should have provided so that the module can be oriented at a suitable tilt angle.
- Pole should be Hot dip galvanized pipe as per IS 1161 & IS4736, i.e., Class B.
- Pole height 5m above the ground level and 1m below the ground. Luminaire shall be at least 4.5m above the ground level.
- The pole should have the provision to hold the luminaire.
- The battery shall be either included in the luminaire enclosure, which should be water proof (IP65) and corrosion-resistant or outside the luminaire enclosure inavented, acid-proof, and corrosion resistant, hot-dip galvanized metallic box (IP65) with anti-theft locking arrangement for outdoor use.

3.4.1.7 INDICATORS

- The system should have two indicators, green and red.
- The green indicator should indicate the charging under progress and should glow only when the charging is taking place. It should stop glowing when the battery is fully charged.
- Red indicator should indicate the battery "Load Cut Off" condition.

3.4.1.8 QUALITY AND WARRANTY

- The street lighting system (including the battery) will be warranted for a period of one year from the date of commissioning.
- The PV module(s) will be warranted for a minimum period of 25 years from the date of supply. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty-five (25) years.

The Warranty Card to be supplied with the system must contain the details of the system.

3.4.1.9 LIST OF SPARES

For trouble-free operation and easy servicing, the following list of (but not limited to) spares are to be included. The list of spares should be sufficient for 5 years of O&M.

Item	**Qty.**
PV Modules	10
Luminaire (complete with electronics etc.)	24
Junction / Combiner Box	10
Cables/ wires /switches	10 set
Other hardware - Fuses	1 set
10 inch LCD Display monitor	1 No.
Pole	10

3.4.1.10 DRAWINGS & MANUALS

- Two sets of Engineering, electrical drawings, and Installation and O&M manuals are to be supplied. Bidder shall provide complete technical datasheets for each equipment giving details of the specifications along with make/makes along with the basic design of the power plant and power evacuation, synchronization, along with protection equipment.
- Approved ISI and reputed make for equipment be used.
- For complete electro-mechanical works, the bidder shall supply complete design, details and drawings for approval to owners before progressing with the installation work.

3.4.1.11 DOCUMENTATION

The Installer shall supply the following documentation:

a) System description with working principles.
b) Solar Datasheets and IEC Certificates of the solar PV panels, Hybrid Inverter, DC & AC Cables.
c) A system operation and maintenance manual.
d) Name, address, mobile number, and e-mail address of the service center to be contacted in case of failure or complaint.
e) Warranty cards.
f) Maintenance PV Array Layout.
g) System Single Line Diagram showing the requirement of SV panel, , Junction Boxes, AC and DC Distribution Boards, meters etc.
h) Structural drawing along with foundation details for the structure.
i) Routing diagram of cables and wires.
j) Lighting Arresters Layout.
k) Earthing Layout.
l) Shading Analysis report & layout of the roof.
m) Module Inter-row Spacing calculations.
n) Supply data monitoring system.
o) Itemized bill of material for complete SV plant covering all the components and associated accessories.

3.4.1.12 Test Certificates and Reports to be Furnished:

- Test Certificates / Reports from IEC / NABL accredited Laboratory/ MNRE approvedfor relevant IEC / equivalent BIS standard for quoted components shall be furnished. Type Test Certificates shall be provided for the solar modules, solar Hybrid inverter, and DC & AC Cables to provide evidence of compliance with standards as specified above of this Technical Specification. In case of unavailability of IS standards, equivalent international standards may also be used.
- The customer reserves the right to ask for additional test certificates or (random) tests to establish compliance with the specified standards.

S. N. **(1)**	**Product** **(2)**	**Indian Standard Number or Equivalent** **(3)**	**Title of Indian Standard** **(4)**

1.	PV Module (Si wafer and Thin film)	IS/IEC 61730 (Part 1) IS/IEC 61730 (Part 2)	Photovoltaic (PV) Module Safety Qualification Part 1 Requirements for Construction Photovoltaic (PV) Module Safety Qualification Part 2 Requirements for Testing
2.	Power converters for use in photovoltaic power system	IS 16221 (Part 1) IS 16221 (Part 2)	Safety of Power Converters for use in Photovoltaic Power Systems Part 1- General Requirements Safety of Power Converters for Use in Photovoltaic Power Systems Part 2- Particular Requirements for Inverters
3.	Utility –Interconnected Photovoltaic inverters	IS 16169	Test Procedure of Islanding Prevention Measures for Utility-Interconnected Photovoltaic Inverters

NIT NO. 04/10/01/2019-20/MEA/Mongolia

Annexure and Formats

Tender Submission at: https://nise.ewizard.in

(NIT No. 04/10/01/2019-20/MEA/Mongolia) **A1**

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

Sir,

I/We hereby e-tender to execute, under annexed terms and conditions of contract, the whole of the articles referred to and described in the attached scope, specification and quantity mentioned by the National Institute of Solar Energy
(NISE), at the rates quoted against each item. The scope of requirements will be delivered and installed/commissioned within the time and at the place(s) specified in the schedule.

I am/We are remitting herewith the required amount of Rs. ..... towards the Earnest Money Deposit by electronic payment vide transaction No ..... dtd.....

Yours faithfully,

Signature, Name and Designation

Place with Full Address:

Date:

(Office Seal)

Agreement(Annexure A2)

ARTICLES OF AGREEMENT executed on this the . . . . . day of . . . . . Two thousand and . . . . . ……between the **National Institute of Solar Energy** (hereinafter referred to as **NISE**) of the one part and Sri . . . . (Name and Address of the tenderer) hereinafter referred to as "the Bounden") of the other part. WHEREAS in response to the Notification No. . . . . ……. dated . . . . the bounden has submitted to NISE an e-tender for the [Title] specified therein subject to the terms and conditions contained in the said e-tender. AND WHEREAS the bounden has furnished to NISE a sum of Rs. . . . . .. as Earnest Money Deposit for execution of an agreement undertaking the due fulfilment of the contract in case his e-tender is accepted by NISE. NOW THESE PRESENTS WITNESS and it is hereby mutually agreed as follows: -

In case the e-tender submitted by the bounden is accepted by NISE and the contract for . . . . is awarded to the bounden, the bounden shall within thirty working days of acceptance of this e-tender, execute an agreement with NISE incorporating all the terms and conditions under which NISE accepts this e-tender.

In case the bounden fails to execute the agreement as aforesaid incorporating the terms and conditions governing the contract, NISE shall have power and authority to recover from the bounden any loss or damage caused to NISE by such breach as may be determined by NISE by appropriating the moneys inclusive of Earnest Money deposited by the bounden and if the Earnest Money is found to be inadequate the deficit amount may be recovered from the bounden and his properties movable and immovable in the manner hereinafter contained.

In witness whereofSri . . . . . (Name and Designation) for and on behalf of the NISE and Sri . . . . the bounden have hereunto set their hands the day and year shown against their respective signature.

Signed by Sri	Signed by Sri . . . . .
. .	. .
(Date)	(Date) . . . .
in the presence of witnesses	in the presence of witnesses
1.	1.
2.	2.

Eligibility Statement Form (A3- (i))

(NIT No. 04/10/01/2019-20/MEA/Mongolia)

(For the last five years)

Sub: Supply, Installation and Commissioning of (i) 25kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia.

Name of Bidder: _____

Order No. & Date (In chronological order)	***Client***	***Contact person with phone no.***	***Description & quantities of ordered items***	***Value of order (in Rs Lakhs)***	***Date of completion***		***Remarks***
					As per contract	**Actual**	

To be attached:

a. Documentary evidence for the above. Copy of the work order/agreement/ Invoice.
b. Certificate of incorporation of the company.

_____ _____

Signature and seal of the Bidder Date

Eligibility Statement Form (A3- (ii))

(NIT No. 04/10/01/2019-20/MEA/Mongolia)

(For the last three years)

Sub: Supply, Installation and Commissioning of (i) 25kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia.

Name of Bidder: _____

S.No.	Particulars	Response from bidder	Supporting Documents* Enclosed (Yes/No)?
1.	Minimum Average Annual Turnover of the company during the last three financial years (2024-25, 2023-24, and 2022-23)		
2.	Number of purchase orders/contracts/agreements of the value of 80% of ECPT during last 3 years.		
3.	Number of purchase orders/contracts/agreements of the value of 50% of ECPT during last 3 years.		
4.	Number of purchase orders/contracts/agreements of the value of 40% of ECPT during last 3 years.		

S.No.	Particulars	Response from bidder	Supporting Documents Enclosed (Yes/No)
1.	Number of grid-tied Rooftop solar power plants with capacity of minimum 40 kWp each, installed and commissioned in past years.		

*To be attached: Documentary evidence for above claims/responses. It may include Copy of the work order/agreement.

_____ _____

Signature and seal of the Bidder Date

Self-Declaration-1 by the Bidder (A4)

NIT No. 04/10/01/2019-20/MEA/Mongolia

We hereby confirm that we are interested to work with **National Institute of Solar Energy (NISE), Gurugram** for the above tender for "**Supply, Installation, Commissioning and Maintenance of (i) 25 kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia and additional scope of works"** and all the information provided herewith is genuine and accurate to the best of our knowledge. We have read the bid document thouroughly. We have read all the scopes, terms etc. in the tender document, and we confirm to work, as per the norms and requirements specified in the tender document.

We also confirm that our company/firm has not been black listed by the Government of India, State Government, PSUs, and Government bodies in India. If this information is found to be incorrect subsequently, the tender submitted by us shall not be considered at all and our company/firm can be debarred from participating in any future activities of NISE.

_____

Signature of the Authorized Person

Name :

Designation:

Place :

Date :

Note: This declaration is to be furnished on the letter head of the organization.

Self-Declaration-2 by the Bidder (A5)

NIT No. 04/10/01/2019-20/MEA/Mongolia

We hereby confirm that we are interested to work with **National Institute of Solar Energy (NISE), Gurugram** for the above tender for "**Supply, Installation, Commissioning and Maintenance of (i) 25 kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia and additional scope of works". We, here by, also confirm the following:**

i. We have enough resources to facilitiate the completion of the scopes as per the bid requirements. We are equipped and be able to carry out the maintenance, repairs, and supply of spare parts as per the bid requirements.

ii. We assume total responsibility for the fault-free operation and maintenance of equipment during the warranty period.Bidder shall provide a comprehensive maintenance of 1 year for the smooth operation of the system. This duration will be the defect liability period.

iii. We shall provide all the valid certificates, drawings, and supporting documents as a part of the execution of this project.

iv. We shall submit a 'PBG' @ 3% of the accepted tendered cost, valid for 60 days beyond the completion of the Defect Liability period (12 months from the date of commissioning). The PBG shall be submitted within one month from the date of award of the contract.

_____

Signature of the Authorized Person

Name :

Designation:

Place :

Date :

Note: This declaration is to be furnished on the letter head of the organization.

ON LINE PRICE BID FORMAT (B1)

(NIT No. 04/10/01/2019-20/MEA/Mongolia)

The Director General
National Institute of Solar Energy (NISE)
Gurugram – Faridabad Highway
Gwal Pahari; Gurugram – 122 003, Haryana

Sub: Supply, Installation and Commissioning of (i) 25 kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kW Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia. (NIT No. 04/10/01/2019-20/MEA/Mongolia)

Sl.No.	Description of the System (as per the Scope and Specs)	Price (in ₹)
1.	25 kWp Rooftop (Grid Tied) Solar PV Power Plant	
2.	20 kWp Solar Power Plant on Carport	
3.	12 Nos. PV Street lights (Standard)	
4.	12 Nos. PV Street lights (Smart)	
5.	Spares (All together as per the requirement)	
6.	Packing, Forwarding, Freight and Insurance for S.No. 1 to 5. [including freight up to Ulaanbaatar, Mongolia and all Taxes / insurance custom clearance other applicable charges etc. as per the bid document]	
7.	Training of Mongolia Team [05 Mongolian officers / Staff] Online and Offline	
8.	Installation, Commissioning, Handing Over of Various Systems (includes deputation of technical manpower to Mongolia)	
9.	1 year CMC**	
10.	Others, (Mention the head)	
Tax and Fees components if any:		
Total out lay (Rs.)		

** All charges shall be inclusive of one-year Post commissioning Warrantee and Mainteance.
*** Cost in S.No. 1 to 4, should be excluding installation and commissioning (I&C). The I&C cost should be separately mentioned in S.No. 8

Amount (in words) Rupees …… **Annexure B2**

Bank Guarantee Format for Bid Security / EMD

(NIT No. 04/10/01/2019-20/MEA/Mongolia)

Bank Guarantee No.

Bank Guarantee Amount: **Rs /-**

Bank Guarantee Cover from: / / 202_ to / / 202_

Last Date of lodgment of Claim: / / 202_

FINIANCIAL BANK GUARANTEE

To

The Director General
National Institute of Solar Energy
Gurgram – Faridabad Road
Gwal Pahari; Gurugram – 122 003
Haryana

Subject: Tender Document for Supply, Installation and Commissioning of (i) 25kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia. (NIT No: 04/10/01/2019-20/MEA/Mongolia)

`

Dear Sir / Madam,

Whereas M/s …… (hereinafter called the "Tenderer") has submitted their offer dated …… for the **Supply, Installation and Commissioning of (i) 25 kWp Rooftop (Grid Export) Solar PV Power Plant, (ii) 20 kWp Solar Power Plant on Carport, with Battery back-up, and (iii) PV Street lights (12 Nos of Standard and 12 Nos of Smart) in the Building of Ministry of Foreign Affairs, Ulaanbaatar, Mongolia** (hereinafter called the "**Tender**") against the Purchaser's Tender enquiry No. **04/10/01/2019-20/MEA/Mongolia.** KNOW ALL MEN by these presents that WE ……. of …….. having our registered office at……. are bound unto **M/s National Institute of Solar Energy, Gurugram** (hereinafter called the "**Purchaser**") in the sum of **Rs _____/- (Rupees _____ Only)** for which payment will and truly to be made to the said Purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this …… day of ……. 202_.

THE CONDITIONS OF THIS OBLIGATION ARE:

1) If the tenderer withdraws or amends, impairs or derogates from the tender in any respect within the period of validity of this tender.

2) If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-
   a) If the tenderer fails to furnish the performance security for the due performance of the contract.

   b) Fails or refuses to accept/execute the contract.

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing the occurrence of one or both the two conditions, specifying the occurred condition or conditions. This guarantee will remain in force up to and including 45 days after the period of tender validity and any demand in respect thereof should reach the bank not later than the above date. Signature of the authorized officer of the bank Name and designation of the officer Seal, name and address of the Bank and address of the Branch.

"Not withstanding anything contained herein;

- Our liability under this Bank Guarantee shall not exceed **Rs. _____/-** (Rupees _____ Only).
- This Bank Guarantee shall be valid up to / / **2020.**
- We are liable to pay the guarantee amount or any part thereof under this Bank Guarantee only if you serve upon us a written claim or demand on a before / / **2020**(date of expiry of Guarantee)."

Banker's Authorized Representative(s)

Date:

Place:

Bank Details for the purpose of issuing EMD in the form of FDR / BG

Account Holder Name: National Institute of Solar Energy (NISE)
Gurugram - Faridabad Highway, Gwal Pahari
Gurugram - 122 003, Haryana
Tel: +91 124 285 3056; 3060

Bank Name: **State Bank of India**
Branch: State Bank of India – Sector 56, Gurgaon

Address: 45-49 Centum Plaza, Sector 53
Gurgaon - 122 002, Haryana

SB Account No. **33843408697**
IFSC Code: **SBIN0006604**
MICR Code: 110002460
SWIFT Code: SBININBB
Branch Code: 6604

DOCUMENT CHECK LIST:

During the Bidding Process:

a) Covering Letter as per the Annexure A1.
b) The tender document duly signed with seal.
c) Summary of Bid documents submitted along with this check list.
d) Pre-Agreement in the prescribed format (Annexure A2) on Government stamp paper worth Rs. 200/-.
e) Copy of Registration Certificate of the bidder firm.
f) Copy of GST Certificate of the bidder firm.
g) Copy of the PAN card of the firm.
h) Copy of PAN card of the authorized signatory.
i) Annexures A2 to A5 with all supporting documents.
j) Annexures B1 and B2 with all supporting documents..
k) The Price Schedule as per Annexure for this tender to be downloaded from e-tender website, duly digitally signed by the tenderer/authorized signatory of the tender.
l) Proof of payment of EMD.
m) Detail Project Report with all the necessary with all the drawings, simulations reports, specifications, supporting documents, Bill of Materials, pertaining to the project, PVsyst report, STADD analysis

After the Award of Contract

- MoA and PBG agreement.
- Detail Project Report and Execution Plans.
- Design Drawing and Diagrams – All Technical.
- Copies of the permissions and material delivery.
- Pre- Commissioning and Post Commissioning Checks and Report.
- Detail execution plan for Training program.
- EL Images of the PV module, after the supply at site and before the installation.

End of Document