SELCO Foundation – Call for Vendors

The Supply, Installation and Commissioning & Comprehensive maintenance for 5 years of Solar Photovoltaic (SPV) Off-grid Systems.

SELCO Foundation – Procurement Officer
690, 15th Cross Rd, Jeewan Griha Colony, 2nd Phase,
J P Nagar, Bengaluru, Karnataka 560078
procurement@selcofoundation.org

SELCO Foundation hereby invites bids for the Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems for 5 years – for 550 health centers across Bodoland (Assam) during the year 2023-2024.

The detailed tender document which can be downloaded from 17-09-2023.

https://selcofoundation.org/tender/

Bids, as per the terms and conditions herein should be submitted preferably through the online form (E-tender)

https://forms.gle/7sSFaqgN955MThXr7

or submitted to the undersigned, at the above-mentioned address

by 4 pm on or before 27-09-2023.

Chief Executive Officer – SELCO Foundation

SELCO FOUNDATION

TENDER NOTIFICATION

FOR

SUPPLY, INSTALLATION AND COMMISSIONING & COMPREHENSIVE MAINTENANCE OF SOLAR PHOTOVOLTAIC (SPV) OFF-GRID SYSTEMS FOR 5 YEARS - 550 HEALTH CENTERS ACROSS BODOLAND (ASSAM)

TENDER DOCUMENT

Address for Communication

SELCO Foundation
#690, 15th Cross Rd, J P Nagar – 2nd Phase
Bangalore, Karnataka – 560078
Telephone: 080-26493145
E-mail: procurement@selcofoundation.org

DISCLAIMER

NIT (Notice Inviting Tender) No: 07/2023-2024

This tender by SELCO Foundation is for selection of vendors (hereinafter "**Organization**" or "**Bidder**") for the work of Supply, Installation, and Commissioning and Comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems for 5 years for 550 health centers across Bodoland (Assam)

NOTE:

1. Though adequate care has been taken while preparing the Notice Inviting Tender (NIT) document, each Organization shall satisfy themselves that the document is complete in all respects. Intimation of any discrepancy shall be given to the Procurement Team at procurement@selcofoundation.org. If no intimation is received from any Organizations within seven (07) days from the date of notification of Request for solution (RfS)/ Issue of the RfS documents, it shall be considered that the RfS document is complete in all respects and has been received by the Organizations.
2. SELCO Foundation has the right to award the works under this tender to single or multiple Organizations and in multiple tranches based on the best Technical specifications and lowest quote ascertained through this tender.
3. The implementation of Solar Solutions at the said Health centers is subject to receiving the approval for installation from the local health authorities.
4. SELCO Foundation reserves the right to cancel/ withdraw this invitation for bids without assigning any reason and shall bear no liability whatsoever consequent upon such a decision
5. SELCO Foundation reserves the right to modify, amend or supplement this document.
6. While this RfS has been prepared in good faith, neither SELCO Foundation 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 RfS, even if any loss or damage is caused by any act or omission on their part.

CONTENTS OF BID DOCUMENT

1. List of Documents to be Submitted in First Cover (In Technical bid)

2. List of Documents to be Submitted in Second Cover (In Financial bid)

SELCO FOUNDATION
#690 15th Cross J P Nagar 2nd Phase
Bangalore - 560078
Telephone: 080-26493145
E-mail: procurement@selcofoundation.org

Tender: 07/2023-2024 Dated: 17-09-2023

NOTICE INVITATION TENDER

Chief Executive Officer of SELCO Foundation, Karnataka State, India hereby invites bids for Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems for 5 years - For 550 Health Centers across Bodoland-Assam.

1.	Tender Ref No.	07/2023-2024
2.	Last date & time for the bid submission	27-09-2023, 4:00 PM
3.	Opening date of Technical bid –first cover	28-10-2023, 11:00 AM
4.	Opening date of Financial bid – second cover	29-10-2023, 11:00 AM
5.	Venue of acceptance and opening of tenders.	SELCO Foundation, Bangalore
6.	Link for e-tender	https://forms.gle/7sSFaqgN955MThXr7

Interested and eligible Organizations may furnish the Technical & Commercial Bids for supply, installation and commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems for 5 years - 550 Health centers across Bodoland (Assam) preferably through the online form (E-tender) :

https://forms.gle/7sSFaqgN955MThXr7

Or;
Furnish the same to the below-mentioned address:

Procurement Officer - Tender NO 07/2023-2024
#690 15th Cross J P Nagar 2nd Phase
Bangalore - 560078
Telephone: 080-26493145

Any further information or clarification may obtain either in person or through phone during office hours from the office of the SELCO Foundation Ph: 080-2649 3145 or through the email – procurement@selcofoundation.org

sd/-
Chief Executive Officer
SELCO Foundation

INSTRUCTION TO ORGANIZATION

1. Schedule of Supply, installation and commissioning:

Bidder must confirm the schedule of supply, installation and commissioning which is indicated below and the same has to be confirmed through duly enclosing "Annexure 7".

Sl. No.	Scheduled activity	Within days (no. of days)
1.	Supply starts	15 days
2.	Supply ends	45 Days
3	Installations begins	15 Days
4.	Commissioning of all the system	60 days

Note: Equipment supply can start individually and earlier than scheduled deadline. Grouting the array mount, earthing pit, and Lightning arrester work can start as early as possible. So that installation and commissioning time schedule is reduced and closure of the tender is on time. The Bidder shall complete the supply schedule as per "Annexure 7" enclosed in this Bidding Documents. If the bidders wish to visit the site, they may request the same to the Procurement Officer (Selco Foundation).

2. Eligibility to Organizations:

I. The organization should be in operation for the last Five (05) years in the field of supply, installation and maintenance of Solar Energy Solutions.
II. Organization registration certificates or any other proof of incorporation to be submitted to establish the legal status.
III. The organization should be able to provide excellent service. Complaints on the system should be attended within 03 days and should be resolved within 10 working days of reporting.
IV. The organization should have its own local office, service center and technicians in Bodoland or in Assam State.
V. Solar panels used by the organization should be of a supplier in India and should have manufacturer valid license and evidence for the same has to be provided.
VI. Audited Financial Statements Certified by Auditor for the last 02 years.
VII. Income Tax returns for the last 02 financial years should be submitted.
VIII. Organization should submit the valid PAN card & Bank Details.
IX. The organization should submit the self-declaration certificate to declare that the organization is not blacklisted by any entity.
X. Documents to establish that the organization has implemented projects of worth Rs. 4 Crores or more in the last financial year. In case of organizations not meeting this requirement of implementing projects worth of Rs 4 Crores in the previous financial year, SELCO Foundation may decide to give a portion of the order to such entities subject to the fact that all other criteria are met. The decision of SELCO Foundation in this regard will be final and binding on such a bidder.
XI. The quote should include AMC (ANNUAL MAINTENANCE CONTRACT) for 5 years with a minimum of 2 scheduled services every year.

7. Cost of bidding:

The Organizations shall bear all costs associated with the preparation and submission of Bid to the Chief Executive Officer, SELCO Foundation (hereinafter referred to as "the Foundation"). The Foundation will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

The technical proposal shall contain:

I. Confirmation on Components as per ***Annexure - 4***

II. Particulars of the Firm as per ***Annexure - 5***

III. Checklist of Documents to be submitted in First cover as per ***Annexure - 6***

IV. The Organizations has to submit an acceptance letter of guarantee for 5 years for the total performance of the Solar Energy Systems

V. The bidder should have a service center facility in Bodoland or in Assam State.

VI. The Organizations have to sign all the pages of the documents as acceptance of all terms and conditions.

8. The financial bid shall contain:

The rate quoted for Solar Energy Solutions in different geographies. The rate quoted should include all taxes levied by the State & Central Govt. Packing, and forwarding charges including transportation, loading & unloading, installation & commissioning and annual maintenance contract for 5 years.

9. Price schedule:

The Organizations shall complete the price schedule as per **Annexure 8 - PRICE SCHEDULE** furnished in the Bidding Documents, indicating the total cost towards supply and installation. The SELCO Foundation will not pay any extra charges over and above the rate quoted by the Organizations. SELCO Foundation will only accept the budget in the exact format outlined in Annexure 8.

10. Fixed price:

Prices quoted by the Organizations are firm and final and binding and not subject to variation on any account. A bid submitted with an adjustable price quotation will be treated as non-responsive and rejected.

11. Period of Validity of Bids:

Bids shall remain valid for a period of 12 months from the date of opening of the Second cover (Financial Bid). A Bid valid for a shorter period shall be rejected by the Foundation as non-responsive.

12. Format and Signing of Bid:

The Organizations **shall give a set of hard copies of all the documents** on the sealed cover. The Bids could be submitted preferably through the online form (E-tender)

https://forms.gle/7sSFaqgN955MThXr7

or submitted by hand or post/courier to the below-mentioned address

Procurement Officer - Tender No 07/2023-2024
SELCO Foundation, #690, 15th Cross, 2nd Phase,
JP Nagar, Bengaluru- 560078.
Email id: procurement@selcofoundation.org

13. Deadline for Submission of Bids:

Bids must be received by the Foundation no later than the time and date specified in the **Invitation for Bids**. The Foundation may, at its discretion, extend this deadline for submission of the bid by amending the bid Documents in which case all rights and obligations of the Foundation and Organizations previously subject to the deadline will thereafter be subject to the deadline as extended.

14. Tender Opening:

The Technical & Financial bids will be opened separately as per the date and time mentioned above. The Financial bids (Second Cover), of only technically qualified Organizations, will be opened. The Organizations Names, Bid Modifications, or Withdrawals, bid prices, Discounts and the presence or absence of the requisite details as the Foundation, at its discretion, may consider appropriate will be recorded by the Purchasing Committee of SELCO Foundation. No Bid shall be rejected at bid opening, except for late bids, which will be rejected.

15. Clarification of Bids:

During evaluation of Bids, SELCO Foundation may, at its discretion, ask the Bidder for a clarification of its bid. The request for clarification and the response shall be in writing only.

16. Preliminary Examination:

The Foundation will examine the Bids to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are generally in order.

Arithmetical errors will be rectified on the following basis. If there is a discrepancy between words and figures, the lowest of the two shall prevail and the bid shall stand corrected to that effect. The Foundation may waive any minor infirmity or non- conformity or irregularity in a bid, which does not constitute a material deviation, provided such a waiver does not prejudice or affect the relative ranking of any Organizations.

17. Acceptance or rejection of bids:

CEO, SELCO Foundation reserves the right to accept or reject any bid and to annul the bidding process and reject all bids at any time prior to award of contract, without thereby incurring any liability or any obligation to inform the affected Organizations or Organizations of the grounds for the said action.

Any Bid with incomplete information is liable to be rejected.

18. Selection of Technical Specifications, Decision on quality:

The rights of selection of technical design/ specifications and evaluation of the quality of products will be done by a team of technical experts appointed by the Procurement Committee of SELCO Foundation and their decision will be final and binding.
Bidders must submit technical information in accordance with Annexure 4 in order for their bid to be accepted. Submissions that are missing/incomplete information or have blank fields will not be considered.

19. Terms and Conditions of the Contract

19.1 **Duration**: The agreement will be valid from the date of signing the Contract and for a period 5 years (60 months) from the date of completion of the supply, installation, commissioning of Solar Photovoltaic (SPV) off-grid systems. The maintenance and service will commence from the date of completion of installation of the solar system and will be effective for a period of 5 (five) years. The end date of this agreement will be sixty (60) months after the date

mentioned in supply, installation and commissioning reports that will be subsequently annexed to this agreement and will form an integral part of this agreement.

19.2 Prices: Prices provided by the Bidder, and accepted by the Foundation shall be considered as final and firm and will not be subject to escalation due to any variations in the prices of materials, labour and/or any other reasons which may occur while the order is being carried out (except any increase in costs due to a change in applicable taxes). The Project Costs are inclusive of taxes, transport, installation and 5 years maintenance service which will include minimum two visits to the sites per year. The costs mentioned here do not include replacement of spares while servicing.

19.3 Payment Terms:

For the supply, installation, commissioning and comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems payment will be released in 04 tranches under each contract.

a. The 1st tranche of payment will be 30% paid along with the work order.
b. The 2nd tranche of payment will be 20% and will be paid against the supply of materials to 50 % of the health Centers or in local godown with evidence of delivery note certified by the Health Center Authority/Foundation representative.
c. The 3rd tranche of payment will be 20% and will be paid against the supply of materials to 100% of the health Centers with evidence of delivery note certified by the Health Center Authority/Foundation representative.
d. The 4th and final tranche of payment will be 30% and will be paid on receipt of Installation & Handing Over Report along with location wise/system wise duly certified by Heath Centre authority and Foundation representative along with hand over letter (in SELCO Letterhead) from the Health center authority of the solar system by Heath Centre authority along with Photographs of Installations mentioned Installation report.
e. The Bidder shall furnish a bank guarantee valid for the term of this Agreement, i.e., 5 years for a total AMC cost or 5% of the project cost whichever is higher, before the release of final payment tranche towards the service and maintenance of Solar Energy Solutions (Bank guarantee format to be verified by SELCO Foundation).
f. Any taxes and charges such as TDS that will have to be deducted from the WO amount as per the rules in force at the time of release of payment will be done by the Foundation and the Bidder will be paid only the net amount.
g. The Bidder should submit the progress report to the Associate Director – Scale Programs, SELCO Foundation who will approve the invoice for payments based on the project performance and stages of completion.
h. The Bidder has to provide installation certificate for each location mentioning the date of commissioning make & serial no. of each material (Solar panels, PCU, Battery etc.), and Photographs of the system installed before disbursal of the final installment.

19.4 Insurance:

a. Required insurance shall be arranged and maintained by the Bidder till the products/components are delivered in full to the end point and installation is completed.
b. Material safety after delivery: Arrangement of transport, warehouse for stocking and safekeeping of the material till the handover is within the bidder ’s scope of work and

Foundation will not be responsible for any missing item or damage that is incurred before the system is handed over to the Health Center authority.

c. Accidental damage for supplied items or to delivery staff or installation staff is the responsibility of the bidder and the bidder will ensure required insurance coverage and damage to service staff in case of any accidents during the course of this engagement with the Foundation.

19.5 Inspection, Checking, Testing:

The products covered by the Work order shall be subject to inspection within a reasonable time after arrival at the place of delivery and the bidder must facilitate this process by fixing time informing Foundation in writing in advance and making bidder representative available at the location. Besides, the Foundation is also entitled to do a preliminary inspection at the manufacturing site of the Bidder by giving prior notice.

The Bidder shall provide free access to the Foundation during normal working hours at Bidder's or its sub-Bidder's works and place at their disposal, internal test reports, material/component test certificates and approved drawings. Even if inspections and tests are fully carried out, Bidder shall not be absolved to any degree from their responsibilities to ensure that products supplied, comply strictly with requirements of the Work order and technical specification at the time of delivery, inspection on arrival at site, installation and commissioning and warranty/guarantee period.

In any case, the products supplied must be strictly in accordance with the Work order and the technical specification specified by the tender failing which the Foundation shall have the right to reject goods and hold the Bidder liable for non-performance of contract.

19.6 Packing:

Bidder is fully responsible for adequately packing products/components mandated in the tender and ensuring appropriate packing suitable for inland carriage and ensuring complete safety of goods from any kind of damage during transport and subsequent storage at the Heath Centre authority.

19.7 Assembly, Pre-installation survey, Installation, after sales service and training:

a. The Bidder shall be fully responsible for the assembly of the product at the destination site and completeness of the Project as per the Work order.
b. The successful bidder must carry out a pre installation survey at his own cost so that the bidder will have a clear idea on logistics to reach materials, estimating the ease of material movements, pre installation preparations etc.
c. The bidder must ensure proper insulators, appropriate height and necessary grout for lightning arresters up to grounding. Any deviation has to be brought to the notice of the foundation and written/ email acceptance must be availed before adopting the deviation.
d. The Bidder shall be fully responsible for getting the materials for grouting/preparation for foundation wherever required, curing of the grouting before installing. Bidder cannot hand over this part of the work to an unskilled labourer or person in charge at the health center.
e. Bidder should provide training on basic maintenance of the solar system to the designated Health center staff.

f. Danger Boards should be provided as and where necessary as per Indian Electricity Act, 2003 and Rules, posters for DOs and DON'Ts need to be provided. At array, battery bank, distribution box, Inverter/PCU etc.
g. The Bidder shall provide necessary "After Sales Service" at site for a period of 5 years. Bidder must keep a log book at each site /to be maintained at each system location and the bidder representative must record the service done/complaint recorded /resolution done /instructions if any.
h. Bidder is solely responsible for the any type of complaints to the supplied system and complaints have to be resolved within 5 to 10 working days after lodging.
i. Complaints will be lodged using SMS/WhatsApp messenger app/email or a phone call and the bidder must provide the appropriate active contacts like phone number/email ID/WhatsApp number for lodging complaints.
j. Active contact numbers will be displayed at the site prominently for registering any complaints on the performance of the product.
k. The Bidder has to submit a plan of servicing to the Foundation before the release of final payment. The bidder will arrange a minimum of two (2) visits per year to the site for maintenance for a period of five (5) years and submit a written report to the Foundation on the servicing with a functioning status of each site every six months.

19.8 Delivery terms:

a. Successful bidder will be provided a detailed written communication on site address, system to be installed and a brief site profile for installation and necessary contacts.
b. The delivery of the said products will be to the Health Center authority as per the list provided by the Foundation in writing. No variation shall be permitted, except with prior authorization in writing from the Foundation.
c. Delivery Schedule and terms will be as per the WO. In case of a delay solely attributed to the bidder in meeting the said deliverables, the Bidder shall be liable to pay a late fee at the rate of 2% per week beyond a period of 30 days and up to a maximum of 10% of the value of this Agreement.

19.9 Risk Purchase on Default:

In case of default on the part of the Bidder to supply all the products or part thereof covered by the contract as per the standard/specifications within the contractual delivery period stipulated in the contract, the Foundation shall have the right to purchase such products or other of similar description at the risk and cost of the Bidder. Bidder shall be liable to pay the cost of such purchase products and also the penalty under clause 8 above for resultant delay.

19.10 Delay due to force majeure:

If any time during the continuance of the Agreement the performance in whole or part by either party on any obligation under the contract shall be prevented or delayed by reason of any war, hostility, explosions, epidemics, quarantine restrictions, or other acts of God, then provided, notice of the happening of any such event is given by either party to the other within fifteen (15) days from the date of occurrence thereof. Either party shall be entitled to terminate this contract if such Force Majeure event persists for a period of ninety days and neither party has any claim for damages against the other in respect of such non-performance and delay in performance and deliveries under the contract. All duties and responsibilities of the Parties shall be resumed as soon as practicable after such event has come to an end or

ceased to exist. Force Majeure conditions shall not affect the payment obligations of the Foundation which shall be made as per clause 3 of this Agreement.

19.11 Rejection, Removal of Rejected Goods and Replacement:

In case the testing and inspection at any stage by inspectors reveal that the product, material and workmanship do not comply with the agreed specifications and requirements, the same shall be removed by the Bidder at his/its own expenses and risk within 15 to 20 working days of written information of rejection by the Foundation. The Foundation shall be at liberty to dispose of such rejected goods in such manner as they may think appropriate, in the event the Bidder fails to remove the rejected goods within the period as aforesaid. All expenses incurred by the Foundation for such disposal shall be payable by the account of the Bidder. The freight paid by the Foundation, if any, on the inward journey of the rejected material shall be reimbursed by the Bidder to the Foundation before the rejected materials are removed by the Bidder. The Bidder will have to proceed with the replacement of that product or part of the product without claiming any extra payment if so, required by the Foundation, within 2 weeks of notification.

19.12 Warranty:

The Bidder shall warrant that every material/product to be supplied shall be in accordance with the specifications agreed upon by both parties. The items should be consistent with the established, recognized or stipulated standards for material of the type usually used for the purpose and in full conformity with the specifications and drawings or samples, if any, outlined by the Foundation in the tender documents and agreed upon by the Bidder by the virtue of acceptance of the WO by the bidder. Products offered must withstand normal operating conditions. The warranty shall continue notwithstanding inspection, payment, acceptance of tendered product and shall expire except in respect of complaints notified to Bidder prior to such date within 60 months from the date of commissioning. The warrant will be according to manufacturer's warranty policies.

19.13 Performance Guarantee:

The Bidder shall guarantee that any/all material used in execution of the Work Order shall be in strict compliance with characteristics requirements and specifications agreed upon. The Bidder shall guarantee that all material and products shall be repaired or replaced, as the case may be, at his own expense in case the same have been found to be defective in respect of material, workmanship for smooth and rated operation within a period of 60 months from the date of commissioning. Acceptance by the Foundation of any product and materials or their replacement will not relieve the Bidder of his/its responsibility concerning the above guarantee. In case of any legal case against the Foundation by any ultimate user of the product with respect to the performance of the system (during the warranty period), the Foundation shall not be held liable in such cases and the Bidder should support the Foundation with required and relevant technical testing and reports supporting the performance of the product and to defend that the non-performance of the product is not because of any manufacturing defect.

The warranty replacements will be made within 15 to 20 working days from the date of receipt of the Complaint at the site.

19.14 Indemnity:

The Bidder shall at all times indemnify the Foundation against all claims which may be made in respect of stores for infringement of any right protected by patent, registration of design or

trademark or other intellectual property, whether registered or not. Provided always that in the event of any claim in respect of alleged breach of patent, registered designs or trademark and other intellectual property whether registered or not, being made against the Foundation, the Foundation shall notify the Bidder of the same and the Bidder shall indemnify and hold the Foundation harmless at his own expense either settle any such dispute or conduct any litigation that may arise there from.

The Bidder shall, indemnify, defend and hold the Foundation and its officers, directors, representatives and assigns harmless from and against any liability or any other loss that may occur, arising from or relating to a breach of any of the terms or obligations under this Contract or any acts, errors, representations, fraudulent acts, misrepresentations, willful misconduct or negligence of the Bidder its employees, sub bidders and agents in performance of its obligations under this Contract.

19.15 Other Clauses:

a. The Bidder will treat all information disclosed to it by the Foundation under this agreement as information with proprietary value and will not disclose the same to any outsiders or use any such information, either directly or indirectly, in whole or in part, for any commercial or non-commercial purposes. Bidder will not at any time, except under legal process, divulge any trade or business secret relating to the Foundation or any customer or agent of the Foundation, which may become known by virtue of the position as Bidder.
b. All information that is developed during the Term in relation to the Project which shall include but not be limited to information collected through the remote monitoring system and other information, shall solely belong to the Foundation.
c. Either party may terminate this contract forthwith in the event of any fraud or misconduct on part of the other party by providing a thirty-day written notice to such other Party. The Foundation may terminate this contract in the event of delay in supply/ installation of the products by the Bidder beyond 15 days from what is stipulated in the WO or the Bidder may terminate in the event of 3 consecutive delays of 15 days from what is agreed to between the parties in making payment to the Bidder in the absence of justifiable reasons intimated by writing. Any notice to be given hereunder shall be sufficiently given to the other party if forwarded by registered post or by Courier Service to the registered address of the other party mentioned in this agreement or the last known postal address of the other party or is send to the other Party's provided email. Upon the termination of this contract, the Bidder shall refund the entire amount paid by the Foundation. The Bidder shall deliver all deeds, documents and paper in his possession relating to the business of the Foundation and further certify the same in writing.
d. Both the Foundation and the Bidder fully and freely intend to create an independent Bidder relationship under this Agreement. Nothing herein shall be deemed to establish a partnership, joint venture, association or employment relationship between the parties. Both parties agree that the Bidder has the right to control the manner and means employed in performing their activities under this Agreement. The Bidder shall update and inform the Foundation in writing of the various methods used to perform such activities in a timely manner. The Foundation shall further have the right to suggest and direct the Bidder to use other methods or refrain from using certain methods when performing such activities.
e. The Foundation represents and warrants that (a) it has the full right and authority to enter into this Agreement, and no consent or authorization not obtained prior to the Effective Date is necessary to be obtained, (b) the Foundation is a charitable trust registered under the laws of India and is authorized to do business to the extent necessary to fulfill its obligations hereunder.

f. Except as specifically set forth in this Agreement, neither party makes any representation or warranty of any kind, express or implied, including without limitation any warranty of merchantability, any warranty of fitness for a particular purpose or use, any warranty of non-infringement, or any other statutory warranty. Each party expressly disclaims any and all implied warranties.

g. This agreement shall not be amended or renewed, except in writing mutually agreed by both parties. The project shall be fully completed as agreed in the above-mentioned terms and conditions.

h. Notwithstanding anything else to the contrary: -
   - Bidder ’s total aggregate liability under this Agreement shall not in any case exceed 100% of the value of this Agreement;
   - neither party shall be liable for any indirect, consequential, special, remote, exemplary, punitive or speculative losses or any losses or damages for loss of profits or business even if such party has been advised of the possibility of such costs or damages; and
   - The Bidder shall have no liability for matters outside of its own scope of works.

i. In the event that any or any part of the provisions contained in this Agreement is determined to be invalid, unlawful or unenforceable to any extent, such provision shall be severed from the remaining provisions which shall continue to be valid and enforceable to the fullest extent permitted by law.

j. The Foundation shall not either directly or indirectly assign, transfer, charge or in any manner make, offer or purport to assign, transfer or charge this Agreement or any rights herein or any part thereof without the previous consent in writing of the Bidder.

k. Neither Parties shall during the term of this Agreement and for a period of one (1) year thereafter, either directly or indirectly, through any Third Party (ies) recruit, solicit, discuss employment with, hire, employ or induce any such individual to leave the employment of the other Party, unless prior written consent is obtained from the Party.

l. Neither Party shall make any announcement relating to this Contract or any matter arising in respect of this or its relationship with the other Party, without the prior written consent of the other Party, which consent will not be unduly withheld.

m. Parties shall not use any trademark, trade name, service mark, service name, copyright, logo or other intellectual property of the other Party without the prior written consent of such Party. For avoidance of doubt, Parties shall seek prior written consent each time when it intends to use trademark, trade name, service mark, service name, copyright, patent, or logo of the other Party.

n. Governing Law and Arbitration:
   The Parties agree that this Agreement shall be governed and construed in accordance with the laws of India. The Parties hereto agree that they shall use all reasonable efforts to resolve between themselves any disputes, controversy or claim arising out of or relating to this Agreement. If the Parties fail to resolve the matter within the 60 days of occurrence of any dispute, such dispute, controversy or claim shall be settled by binding arbitration under the Indian Arbitration and Conciliation Act, 1996. There shall be one arbitrator mutually appointed by the Parties. The place of arbitration shall be Bangalore and the arbitration proceedings shall be in English. The courts at Bangalore alone shall have the jurisdiction to entertain and, or try any dispute arising out of or in connection with or in relation to the terms of this Agreement.

ANNEXURE 1: TECHNICAL SPECIFICATIONS OF SOLUTIONS

1. SUB CENTRES (Without Delivery): Option 1

Sl.No	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 1 kWp (Mono or Polycrystalline Silicon)	1 Set.
2	Solar Battery	Flooded Battery of Total Minimum Capacity 3.6 kWh @ C10, 12 Volt. (Battery terminal caps used, must be big enough to cover the entire terminal area and the nut bolt assembly. Also, spring washers to be used at each battery terminal).	1 Set.
3	Module Mounting Structure (MMS*)	Solar PV Module support structure. **It should be suitable for available solar module** - As per Sl.No. 1	1 Set.
4	Solar Inverter/PCU - 230 Vac, 50 Hz	Total Minimum Capacity 1 kVA for 1-Phase Supply, With Data Port (RS 485/RS 232/MODBUS) Output	1 No.
5	Load Bypass Switch / Changeover Switch.	**16 A, 230 Vac** (Single Phase)	1 No.
6	Copper Cable Red+Black (Module - Module) - PV1-F (Solar Cables)	**6 sq.mm** UV Protected Cable	12 m
7	Copper Cable (Battery -Battery & Battery - Inverter) - (DC Cables)	**16 Sq.mm** (Tin-coated copper lugs with insulation to be used at each battery terminal).	8 m
8	Copper Cable Red + Black (AJB - Inverter) - (DC Cables)	**6 sq.mm**	10 m
9	DC Earthing (Panels + MMS + AJB)	**Panel to Panel** - Grounding Lugs with 4 sq.mm earthing cable should be used. **Panels to Purlin, Purlin to Rafter, Rafter to Legs** - Grounding Clamps should be used **MMS Leg to AJB** - 10 sq.mm earthing cable	As per Requirement
10	Earthing Cable (AJB, GIPB & Inverter)	**10 Sq.mm** (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	30 m
11	Earthing Strip for Lightning Arrestor	GI strip of size 25 x 3 mm to be used. Each joint should consist of 2 - hexagonal nut and bolt assembly. UPVC Capping & casing insulation should be done for the earthing strip. UV resistant cable ties should be used to keep the insulations intact.	10 m

12	Earthing Kit	Chemical earthing powder (50 kg per pit), solid copper electrode, tin-coated copper lugs with insulation, clamps with nut-bolts assembly. protective concrete construction (Chamber) to earthing pit (L x B x H - 1.5 x 1.5 x 1.5 feet) with Metallic/FRP lid should be made.	4 Set
13	Lightning Protection System	Lightning arrester kit: (All Copper - Lightning arrester and base plate). Solid Lightning arrestor of 10 mm diameter and 1.5 m long should be used. Ceramic insulation to be provided at the lightning arrestor base plate. Elevation pipe (Anodized aluminum) to be of 3- meter height.	1 Set
14	Grid Input Protection Box with SPD and MCB	MCB Rating : **230 Vac, 16 A (2 Pole)** SPD Rating : **320 Vac, Type 2, 40 kA (2 Pole)**	1 No.
15	Battery rack with acid absorbent + Insulation mat and Battery terminal rubber caps.	**As per Solar Battery Sl. No. - 2** (Each leg should be given a base plate)	1 Set.
16	Inverter Elevation Leg	Elevation rack with insulation Mat (or) 3 inch Leg Bush	1 No (or) 4 Nos.
17	Solar Array Junction Box with MCB and SPD and String Fuse.	**MCB Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **SPD Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **Inline Fuse rating:** (+ve Strings): As per Solar Module Rating (Sl.No - 1 & 4)	1 No.
18	Double Pole MCB (load Side) with Conduit box	**6A, 230 Vac**	1 No.
19	Marking for AC earthing with Elevated Plaques (GIPB and Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 Nos.
20	Marking for DC earthing with Elevated Plaques (AJB+MMS+Panels)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.
21	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.
22	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 3 ft x 3 ft	1 No.
23	Do's and Don'ts Practices Poster (Solar Panels, Battery and Inverter)	Foam Plaque - A4 Size for each	1 No.
24	I/P and O/P wiring of Grid Connection- ac cable	**4 Sq. mm.**	As per Requirement
25	Fire Extinguisher	Multi Purpose - ABC Dry powder extinguishing agents (or) CO2 type - 3 kg	1 No

26	Switch disconnectors to be included for PV, Battery & grid I/Ps to inverter	"1st Switch for PV Input – Switch rating should be calculated according to the number of parallel strings made along with the Isc of the panel. 2nd Switch for Grid Input – 16 A (per pole), AC 3rd Switch for Battery Input – Switch rating should be calculated according to the number of parallel strings of the batteries made along with the capacity of the battery (Ah)" (Consider factor of safety (FOS) - 1.5)	1 Set
27	Remote Monitoring System - Wifi Based, Cloud Based Monitoring	Cloud based remote monitoring system with dashboard along with WIFI router (GSM based network with all the brands)	1 Set
28	Consumables		1 Set

Bill of materials for luminaries & Fans:

Sl.no	Products	Capacity	Qty
1	LED Tube light	20 W, 230 Vac	4 Nos.
2	LED Bulb	9 W, 230 Vac	3 Nos.
3	LED Bulb	5 W, 230 Vac	2 Nos.
4	Ceiling fan with regulators - Two Modular	32 W, 230 Vac	5 Nos.
5	Outdoor Light with automatic control switch (For dusk-to-dawn operation)	20 W, 230 Vac	1 No.
5.1	Outdoor Light Arm - Rust Free (GI Material)		1 No.

2. SUB CENTRES (With Delivery): Option 2

Sl.No	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 2 kWp (Mono or Polycrystalline Silicon)	1 Set.
2	Solar Battery	Flooded Battery of Total Minimum Capacity 7.2 kWh @ C10, 12 Volt. (Battery terminal caps used, must be big enough to cover the entire terminal area and the nut bolt assembly. Also, spring washers to be used at each battery terminal).	1 Set.
3	Module Mounting Structure (MMS*)	Solar PV Module support structure. **It should be suitable for available solar module** - As per Sl.No. 1	1 Set.
4	Solar Inverter/PCU - 230 Vac, 50 Hz	Total Minimum Capacity 2 kVA for 1-Phase Supply, With Data Port (RS 485/RS 232/MODBUS) Output	1 No.

5	Load Bypass Switch / Changeover Switch.	**16 A, 230 Vac** (Single Phase)	1 No.
6	Copper Cable Red+Black (Module - Module) - PV1-F (Solar Cables)	**6 sq.mm** UV Protected Cable	24 m
7	Copper Cable (Battery -Battery & Battery - Inverter) - (DC Cables)	**16 Sq.mm** (Tin-coated copper lugs with insulation to be used at each battery terminal).	10 m
8	Copper Cable Red + Black (AJB - Inverter) - (DC Cables)	**6 sq.mm**	10 m
9	DC Earthing (Panels + MMS + AJB)	**Panel to Panel** - Grounding Lugs with 4 sq.mm earthing cable should be used. **Panels to Purlin, Purlin to Rafter, Rafter to Legs** - Grounding Clamps should be used **MMS Leg to AJB** - 10 sq.mm earthing cable	As per Requirement
10	Earthing Cable (AJB, GIPB & Inverter)	**10 Sq.mm** (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	30 m
11	Earthing Strip for Lightning Arrestor	GI strip of size 25 x 3 mm to be used. Each joint should consist of 2 - hexagonal nut and bolt assembly. UPVC Capping & casing insulation should be done for the earthing strip. UV resistant cable ties should be used to keep the insulations intact.	10 m
12	Earthing Kit	Chemical earthing powder (50 kg per pit), solid copper electrode, tin-coated copper lugs with insulation, clamps with nut-bolts assembly. protective concrete construction (Chamber) to earthing pit (L x B x H - 1.5 x 1.5 x 1.5 feet) with Metallic/FRP lid should be made.	4 Set
13	Lightning Protection System	Lightning arrester kit: (All Copper - Lightning arrester and base plate). Solid Lightning arrestor of 10 mm diameter and 1.5 m long should be used. Ceramic insulation to be provided at the lightning arrestor base plate. Elevation pipe (Anodized aluminum) to be of 3- meter height.	1 Set
14	Grid Input Protection Box with SPD and MCB	MCB Rating : **230 Vac, 16 A (2 Pole)** SPD Rating : **320 Vac, Type 2, 40 kA (2 Pole)**	1 No.
15	Battery rack with acid absorbent + Insulation mat and Battery terminal rubber caps.	**As per Solar Battery Sl. No. - 2** (Each leg should be given a base plate)	1 Set.
16	Inverter Elevation Leg	Elevation rack with insulation Mat (or) 3 inch Leg Bush	1 No (or) 4 Nos.

17	Solar Array Junction Box with MCB and SPD and String Fuse.	**MCB Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **SPD Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **Inline Fuse rating:** (+ve Strings): As per Solar Module Rating (Sl.No - 1 & 4)	1 No.
18	Double Pole MCB (load Side) with Conduit box	**10 A, 230 Vac**	1 No.
19	Marking for AC earthing with Elevated Plaques (GIPB and Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 Nos.
20	Marking for DC earthing with Elevated Plaques (AJB+MMS+Panels)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.
21	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.
22	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 3 ft x 3 ft	1 No.
23	Do's and Don'ts Practices Poster (Solar Panels, Battery and Inverter)	Foam Plaque - A4 Size for each	1 No.
24	I/P and O/P wiring of Grid Connection- ac cable	**4 Sq. mm.**	As per Requirement
25	Fire Extinguisher	Multi Purpose - ABC Dry powder extinguishing agents (or) CO2 type - 3 kg	1 No
26	Switch disconnectors to be included for PV, Battery & grid I/Ps to inverter	"1st Switch for PV Input – Switch rating should be calculated according to the number of parallel strings made along with the Isc of the panel. 2nd Switch for Grid Input – 16 A (per pole), AC 3rd Switch for Battery Input – Switch rating should be calculated according to the number of parallel strings of the batteries made along with the capacity of the battery (Ah)" (Consider factor of safety (FOS) - 1.5)	1 Set
27	Remote Monitoring System - Wifi Based, Cloud Based Monitoring	Cloud based remote monitoring system with dashboard along with WIFI router (GSM based network with all the brands)	1 Set
28	Consumables		1 Set

Bill of materials for luminaries & Fans:

Sl.no	Products	Capacity	Qty
1	LED Tube light	20 W, 230 Vac	5 Nos.
2	LED Bulb	9 W, 230 Vac	3 Nos.

3	LED Bulb	5 W, 230 Vac	2 Nos.
4	Ceiling fan with regulators - Two Modular	32 W, 230 Vac	6 Nos.
5	Outdoor Light with automatic control switch (For dusk-to-dawn operation)	20 W, 230 Vac	1 No.
5.1	Outdoor Light Arm - Rust Free (GI Material)		1 No.

3. PRIMARY HEALTH CENTRES (Without Delivery): Option 1

Bill of Materials for Solar System:

Sl.No	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 5 kWp (Mono or Polycrystalline Silicon)	1 Set.
2	Solar Battery	Flooded Battery of Total Minimum Capacity 14.4 kWh @ C10, 12 Volt. (Battery terminal caps used, must be big enough to cover the entire terminal area and the nut bolt assembly. Also, spring washers to be used at each battery terminal).	1 Set.
3	Module Mounting Structure (MMS*)	Solar PV Module support structure. **It should be suitable for available solar module** - As per Sl.No. 1	1 Set.
4	Solar Inverter/PCU - 230 Vac, 50 Hz	Total Minimum Capacity 6 kVA for 1-Phase Supply, With Data Port (RS 485/RS 232/MODBUS) Output	1 No.
5	Load Bypass Switch / Changeover Switch.	**32 A, 230 Vac** (Single Phase)	1 No.
6	Copper Cable Red+Black (Module - Module) - PV1-F (Solar Cables)	**6 sq.mm** UV Protected Cable	60 m
7	Copper Cable (Battery -Battery & Battery - Inverter) - (DC Cables)	**16 Sq.mm** (Tin-coated copper lugs with insulation to be used at each battery terminal).	15 m
8	Copper Cable Red + Black (AJB - Inverter) - (DC Cables)	**10 sq.mm**	30 m
9	DC Earthing (Panels + MMS + AJB)	**Panel to Panel** - Grounding Lugs with 4 sq.mm earthing cable should be used. **Panels to Purlin, Purlin to Rafter, Rafter to Legs** - Grounding Clamps should be used **MMS Leg to AJB** - 10 sq.mm earthing cable	As per Requirement

10	Earthing Cable (AJB, GIPB & Inverter)	**10 Sq.mm** (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	45 m
11	Earthing Strip for Lightning Arrestor	GI strip of size 25 x 3 mm to be used. Each joint should consist of 2 - hexagonal nut and bolt assembly. UPVC Capping & casing insulation should be done for the earthing strip. UV resistant cable ties should be used to keep the insulations intact.	30 m
12	Earthing Kit	Chemical earthing powder (50 kg per pit), solid copper electrode, tin-coated copper lugs with insulation, clamps with nut-bolts assembly. protective concrete construction (Chamber) to earthing pit (L x B x H - 1.5 x 1.5 x 1.5 feet) with Metallic/FRP lid should be made.	5 Set
13	Lightning Protection System	Lightning arrester kit: (All Copper - Lightning arrester and base plate). Solid Lightning arrestor of 10 mm diameter and 1.5 m long should be used. Ceramic insulation to be provided at the lightning arrestor base plate. Elevation pipe (Anodized aluminum) to be of 3- meter height.	2 Set
14	Grid Input Protection Box with SPD and MCB	MCB Rating : **230 Vac, 32 A (2 Pole)** SPD Rating : **320 Vac, Type 2, 40 kA (2 Pole)**	1 No.
15	Battery rack with acid absorbent + insulation mat and Battery terminal rubber caps.	**As per Solar Battery Sl. No. - 2** (Each leg should be given a base plate)	1 Set.
16	DC Combiner Box	Busbar with HRC Fuse for Battery and Inverter Busbar and HRC fuse rating will be based on Inverter and Battery Capacity Metallic (or) Hard Plastic heat resistant enclosure open and close type (IP 67 Rating)	1 Set.
17	Inverter Elevation Leg	Elevation rack with insulation Mat (or) 3 inch Leg Bush	1 No (or) 4 Nos.
18	Solar Array Junction Box with MCB and SPD and String Fuse.	**MCB Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **SPD Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **Inline Fuse rating:** (+ve Strings): As per Solar Module Rating (Sl.No - 1 & 4)	1 No.
19	Double Pole MCB (load Side) with Conduit box	**20 A, 230 Vac**	1 No.
20	Marking for AC earthing with Elevated Plaques (GIPB and Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 Nos.
21	Marking for DC earthing with Elevated Plaques (AJB+MMS+Panels)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.

22	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 No.
23	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 3 ft x 3 ft	1 No.
24	Do's and Don'ts Practices Poster (Solar Panels, Battery and Inverter)	Foam Plaque - A4 Size for each	1 No.
25	I/P and O/P wiring of Grid Connection- AC cable	**6 Sq. mm.**	As per Requirement
26	Fire Extinguisher	Multi Purpose - ABC Dry powder extinguishing agents (or) CO2 type - 5 kg	1 No
27	Switch dis connectors to be included for PV, Battery & grid I/Ps to inverter	"1st Switch for PV Input – Switch rating should be calculated according to the number of parallel strings made along with the Isc of the panel. 2nd Switch for Grid Input – 32 A (per pole), AC 3rd Switch for Battery Input – Switch rating should be calculated according to the number of parallel strings of the batteries made along with the capacity of the battery (Ah)" (Consider factor of safety (FOS) - 1.5)	1 Set
28	Remote Monitoring System - Wifi Based, Cloud Based Monitoring	Cloud based remote monitoring system with dashboard along with WIFI router (GSM based network with all the brands)	1 Set
29	Consumables		1 Set

For detailed technical specifications refer Annexure-2
Separate Load Wiring to be done for all the considered loads under the solar system. Costing will be extra and will be considered based on actual installation

Bill of materials for luminaries & Fans:

Sl.no	Products	Capacity	Qty
1	LED Tube light	20 W, 230 Vac	16 Nos.
2	LED Bulb	9 W, 230 Vac	6 Nos.
3	LED Bulb	5 W, 230 Vac	7 Nos.
4	Ceiling fan with regulators - Two Modular	32 W, 230 Vac	16 Nos.
5	Outdoor Light with automatic control switch (For dusk-to-dawn operation)	20 W, 230 Vac	2 Nos.
5.1	Outdoor Light Arm - Rust Free (GI Material)		2 Nos.

4. PRIMARY HEALTH CENTRES (With Delivery): Option 2

Bill of Materials for Solar System:

Sl.No	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 6 kWp (Mono or Polycrystalline Silicon)	1 Set.
2	Solar Battery	Flooded Battery of Total Minimum Capacity 19.2 kWh @ C10, 12 Volt. (Battery terminal caps used, must be big enough to cover the entire terminal area and the nut bolt assembly. Also, spring washers to be used at each battery terminal).	1 Set.
3	Module Mounting Structure (MMS*)	Solar PV Module support structure. **It should be suitable for available solar module** - As per Sl.No. 1	1 Set.
4	Solar Inverter/PCU - 230 Vac, 50 Hz	Total Minimum Capacity 6 kVA for 1-Phase Supply, With Data Port (RS 485/RS 232/MODBUS) Output	1 No.
5	Load Bypass Switch / Changeover Switch.	**32 A, 230 Vac** (Single Phase)	1 No.
6	Copper Cable Red+Black (Module - Module) - PV1-F (Solar Cables)	**6 sq.mm** UV Protected Cable	72 m
7	Copper Cable (Battery -Battery & Battery - Inverter) - (DC Cables)	**16 Sq.mm** (Tin-coated copper lugs with insulation to be used at each battery terminal).	15 m
8	Copper Cable Red + Black (AJB - Inverter) - (DC Cables)	**10 sq.mm**	30 m
9	DC Earthing (Panels + MMS + AJB)	**Panel to Panel** - Grounding Lugs with 4 sq.mm earthing cable should be used. **Panels to Purlin, Purlin to Rafter, Rafter to Legs** - Grounding Clamps should be used **MMS Leg to AJB** - 10 sq.mm earthing cable	As per Requirement
10	Earthing Cable (AJB, GIPB & Inverter)	**10 Sq.mm** (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	45 m
11	Earthing Strip for Lightning Arrestor	GI strip of size 25 x 3 mm to be used. Each joint should consist of 2 - hexagonal nut and bolt assembly. UPVC Capping & casing insulation should be done for the earthing strip. UV resistant cable ties should be used to keep the insulations intact.	30 m

12	Earthing Kit	Chemical earthing powder (50 kg per pit), solid copper electrode, tin-coated copper lugs with insulation, clamps with nut-bolts assembly. protective concrete construction (Chamber) to earthing pit (L x B x H - 1.5 x 1.5 x 1.5 feet) with Metallic/FRP lid should be made.	5 Set
13	Lightning Protection System	Lightning arrester kit: (All Copper - Lightning arrester and base plate). Solid Lightning arrestor of 10 mm diameter and 1.5 m long should be used. Ceramic insulation to be provided at the lightning arrestor base plate. Elevation pipe (Anodized aluminum) to be of 3- meter height.	2 Set
14	Grid Input Protection Box with SPD and MCB	MCB Rating : **230 Vac, 32 A (2 Pole)** SPD Rating : **320 Vac, Type 2, 40 kA (2 Pole)**	1 No.
15	Battery rack with acid absorbent + Insulation mat and Battery terminal rubber caps.	**As per Solar Battery Sl. No. - 2** (Each leg should be given a base plate)	1 Set.
16	DC Combiner Box	Busbar with HRC Fuse for Battery and Inverter Busbar and HRC fuse rating will be based on Inverter and Battery Capacity Metallic (or) Hard Plastic heat resistant enclosure open and close type (IP 67 Rating)	1 Set.
17	Inverter Elevation Leg	Elevation rack with insulation Mat (or) 3 inch Leg Bush	1 No (or) 4 Nos.
18	Solar Array Junction Box with MCB and SPD and String Fuse.	**MCB Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **SPD Rating:** As per Solar Module Rating (Sl.No - 1 & 4) **Inline Fuse rating:** (+ve Strings): As per Solar Module Rating (Sl.No - 1 & 4)	1 No.
19	Double Pole MCB (load Side) with Conduit box	**25 A, 230 Vac**	1 No.
20	Marking for AC earthing with Elevated Plaques (GIPB and Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 Nos.
21	Marking for DC earthing with Elevated Plaques (AJB+MMS+Panels)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No.
22	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	2 No.
23	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 3 ft x 3 ft	1 No.
24	Do's and Don'ts Practices Poster (Solar Panels, Battery and Inverter)	Foam Plaque - A4 Size for each	1 No.

25	I/P and O/P wiring of Grid Connection- AC cable	**6 Sq. mm.**	As per Requirement
26	Fire Extinguisher	Multi Purpose - ABC Dry powder extinguishing agents (or) CO2 type - 5 kg	1 No
27	Switch dis connectors to be included for PV, Battery & grid I/Ps to inverter	"1st Switch for PV Input – Switch rating should be calculated according to the number of parallel strings made along with the Isc of the panel. 2nd Switch for Grid Input – 32 A (per pole), AC 3rd Switch for Battery Input – Switch rating should be calculated according to the number of parallel strings of the batteries made along with the capacity of the battery (Ah)" (Consider factor of safety (FOS) - 1.5)	1 Set
28	Remote Monitoring System - Wifi Based, Cloud Based Monitoring	Cloud based remote monitoring system with dashboard along with WIFI router (GSM based network with all the brands)	1 Set
29	Consumables		1 Set

For detailed technical specifications refer Annexure-2
Separate Load Wiring to be done for all the considered loads under the solar system. Costing will be extra and will be considered based on actual installation

Bill of materials for luminaries & Fans:

Sl.no	Products	Capacity	Qty
1	LED Tube light	20 W, 230 Vac	17 Nos.
2	LED Bulb	9 W, 230 Vac	8 Nos.
3	LED Bulb	5 W, 230 Vac	7 Nos.
4	Ceiling fan with regulators - Two Modular	32 W, 230 Vac	18 Nos.
5	Outdoor Light with automatic control switch (For dusk-to-dawn operation)	20 W, 230 Vac	2 Nos.
5.1	Outdoor Light Arm - Rust Free (GI Material)		2 Nos.

ANNEXURE 2- TECHNICAL SPECIFICATIONS OF COMPONENTS

The proposed project shall be commissioned as per the technical specifications given below. Any shortcomings or deviations may lead to the cancellation of the Letter of Award, and in such a case the Competent Authority's decision will be final and binding on the bidder.

1. SOLAR PV MODULE:

a. The PV modules used must qualify to the latest edition of the IEC PV module qualification test.
b. The total solar PV array capacity should not be less than the allocated capacity and should comprise solar crystalline modules of minimum Wp mentioned in the bill of materials. Module capacity less than minimum mentioned Wp in the BoM / Purchase Order shall not be accepted.
c. PV modules must be tested and approved by one of the IEC authorized test centres. The module frame shall be made of corrosion-resistant materials, preferably anodized aluminium of 10 microns thickness.

MODULE WARRANTY:

Module 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

a. Defects and/or failures due to manufacturing.
b. Defects and/or failures due to quality of materials
c. 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 supplier's sole cost

PERFORMANCE WARRANTY:

- The degradation of power generated by the module shall not exceed 20% of the maximum rated power over the 25-year period and not more than 8% after the first ten years period.
- Should have a positive power tolerance
- Should be Anti - L.eT.I.D & P.I.D Resistant
- Panel degradation should be linear over a period for 25+ years
- Should have temperature coefficient of power (Pmax) ≤ -0.38% /°C
- Should be able to withstand downward force ≥ 5400 pascals
- Should be able to withstand uplift force ≥ 2400 pascals
- Should have tempered/toughened solar glass of 3.2 mm thickness
- Should have anti-reflective surface treatment
- Should have optically clear glass with high transmittance

Additionally, modules should be certified with:

- PV module safety standards
- PID-d.
- Ammonia corrosion Resistance test
- Dynamic Mechanical Load
- Hailstone (35mm)
- Ignitability test
- FSI Tested.
- EL Tested.
- Enlisted Module Manufacturer of DGS&D.
- Application class - Class A (Electric hazard test - Operating voltage >50 Vdc & Modules area can be accessed by public)
- Module fire performance - Type 1 (Burning test & spread of flame test)

2. MODULE MOUNTING STRUCTURE (MMS):

a) Anodized Aluminium Structure (General mountings):

(Anodized aluminium with a minimum 70 micron's thickness.

For very low elevation & flat surface mounting (Coastal region/Very high wind loads - 200 - 250 km/hr):

- RCC roof ballast structure with wind deflectors (Dimensions as specified in the diagram)

For inclined sheet roofs (General purpose mounting):

- Mini rails to be incorporated
- Anodised mini rails of 70 microns thickness.
- Rail dimension should be of 300 mm X 100 mm X 2.6 mm
- Mini rails can be fastened to the purlins using self-driven screws. (Pop riveting can be incorporated as and when required.)
- EPDM strips to be used as sealant for waterproofing.

b) G.I. Structure

(Hot dip galvanized mild steel (M.S.) with a minimum of 80 microns galvanized thickness)

For lower elevation & flat surface mounting (Coastal Region/High Wind Zones):

- Lower elevation up to 7 feet height "L Angles" should be used.
- Size of the leg should not be less than 50 mm x 50 mm x 3.2 mm.
- Size of the rafters and purlins should not be less than 40 mm x 40 mm x 2.6 mm.

For Higher elevation & flat surface mountings:

- Higher elevation of more than 7 feet height, "Square Tubes" should be used.
- Size of the leg should not be less than 76 mm x 76 mm x 3.2 mm.
- Size of rafters should not be less than 60 mm x 60 mm x 3.2 mm and size of purlins should not be less than 40 mm x 40 mm x 3.2 mm.
- The civil works for each leg should be made both on ground and on roof

2.1 Civil works for on-ground, high elevation: Footing:

- A P.C.C layer of 4-inch thick, 3.5 ft X 3.5 ft by area should be provided
- Horizontal main bars (Bottom) of 16 mm diameter, TMT rods should be used with a 5-inch even spacing between them.
- The thickness of the concrete footing should be 3 ft X 3 ft by area
- The height of the main bars should be 22-inches.

Pedestal:

- The column should be of 1 ft X 1.5 ft by area.
- Vertical main bars of 16 mm diameter, TMT rods should be used
- 6 such rods should exist in the column.
- Column ties of 8 mm diameter should be used with a 5-inch even spacing between them.
- Height of the column should be 3 ft above the ground and 3 ft below the ground.
- 6 numbers of J-bolts of 20 mm diameter and 600 mm in length should be used to house base plates over them.

For roofs which are unfit for mounting panels:

Roofs that are not fit for installation due to less structural stability/very old roofs/rainwater leakage problem, then a suitable location on the ground may be preferred for the panel installation.

- The installation maybe a low elevation MMS with fencing protection around or may be a high elevation MMS (Approval and support from SELCO foundation should be taken prior to installation)

Orientation of the MMS:

- The orientation of the MMS should be due south in general case/flat mounting surfaces.
- If the roof orientation of the building is deviated away from the south (by less than 30 degrees), then the existing orientation of the building roof can be used for mounting the panels. If the deviation is more than 30 degrees, then action to correct the deviation should be taken only after consultation with SELCO Foundation.

NOTE:

- Approval from SELCO Foundation should be sought before finalizing the MMS design in case of any customisation required as per the existing site situations.
- Approval from SELCO Foundation should be sought to mount the panels on an alternate location if the existing roof is unfit for mounting of panels.

General guidelines:

- Each structure should have an angle of inclination as per the geographical location to receive maximum irradiation.
- For a Flat surface installation, the MMS should consist of a minimum 2-legged structure (1 front leg, 1 back leg) and many such leg pairs to exist along the length of the MMS (Maximum distance between each row pair/inter leg should be 6 ft) .
- Each leg of M.M.S shall have a base plate at its bottom. The base plate at each leg should be of the size 150*150*6 mm. The base plate should have four stiffeners. Each stiffener will be placed perpendicular to the side of the base plate. The base plate should house four wedge anchors at each corner. The steel wedge anchors used should be 1.5-2 inches long (Depending upon the RCC roof thickness.
- The M.M.S should be designed such, it safely not only withstands the total panel weight but also withstand the high wind loads acting over it.
- The PV panels should be clamped to M.M.S only at the allowable points along the panel frame, which is specified by the panel manufacturer. Each panel should be clamped to the purlins using 4 clamps (2 clamps on each opposite sides of the panel). The clamps used should be of minimum 35*3 mm size and that of anodized aluminum. The distance between the end clamp and the end of the rail (purlin end) should be minimum 50 mm long.
- All panels should be grounded together with grounding lugs and all the MMS structure should be grounded using grounding clips and should be connected to the respective earthing pit along with AJB.
- All nuts & bolts used should be made of G.I (> 120 microns) or of stainless steel.

<u>High altitude-high wind zones (Particularly for flat RCC roof):</u>

Additional measures should be taken to install PV panels at such high-risk zones. Installations at such sites should have a low-elevation panel set-up made, along with “landscape” orientation of PV panels (This would require a custom-made MMS viz triangular MMS frame/short legged MMS, preferably made with anodised aluminium). The PV panels should be mounted over the MMS using the “clamping” method only. Anodized aluminium clamps of 45*4 mm size should be used here. Wind deflectors should be incorporated at the back & sides of each panel.

The structure shall be designed to allow easy replacement of any module with walking space around the MMS. The array structure shall be so designed that it will occupy minimum space without

sacrificing the output from the SPV panels. Installation of solar structures should not damage the roof in any way. If any concrete or foundation is required, it should be precast type.

Bidders must follow above types of roof mounting options and the solution is dependent on the type of roof at the location. a) Flat roof, b) Tin roof. In all cases, considerations must be made for the roof's age, structural integrity, access to equipment, and necessary setbacks for fire and life safety requirements.

The MMS should be mounted to the RCC roof using wedge anchor fasteners and a concrete block of L x W x H = 1.5 x 1.5 x 0.25 feet respectively at each leg (Base clamps) of the MMS should be introduced. The sides of the cube and roof interface should be given a simple 1-inch filet construction. At the top side of the cubes, an upward taper should be formed from cube sides towards M.M.S leg. M15/M20 grade P.C.C should be used for the civil works with minimum 3 days of curing.

Also, each MMS triangle should be interconnected with the other at the rear base clamp (back leg) using rails. These rails should house nine concrete blocks over them. Additional three blocks should be placed under the rail to prevent the sagging of the rail.

3. ARRAY JUNCTION BOX/COMBINER BOXES:

- The junction box should have good resistances against mechanical stresses and external impacts.
- The junction boxes are to be provided in the PV array for termination of connecting cables.
- The Junction Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement.
- All wires/cables must be terminated through cable lugs. The boxes shall be such that input & output termination can be made through suitable cable glands.
- A.J.B should have segregated inputs for both positive and negative cables emerging from the respective arrays.
- Positive strings should have a self-blown in-line DC fuses
- All the glands provided under the junction box should be used and any unused glands should be sealed for ingress protection.
- Suitable markings shall be provided on the busbar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.
- The AJB should be placed in a shaded place, preferably at the inner side of the wall nearest to the roof.
- IP rating: IP-67.
- Proper cable lugs (Fork, pin type) with insulation should be provided for the cables connected with the boxes.
- Should comply with the R.oH.S. Directive 2002/95/EC
- Should be weatherproof & UV resistant.

4. BATTERY:

a. The battery chosen for the project should have the following characteristics:

- **Battery type:** Lead acid
- **Plate technology:** Tall tubular plate
- **Terminal type**: L - Type
- **Electrolyte:** Free flow electrolyte
- **Operating temperature**: -20^{o}C to +55^{o}C
- **Application** - Cyclic application, Float application above 1 hour discharge rate
- **Self-discharge @ STC** - Low self-discharge < 3.0 % per month

- **Life cycle @ 80% D.O.D @ 27°C** - 1500 cycles
- **Ah Efficiency**: >90 %
- **Wh Efficiency:** >80 %

b. Should have **additional characteristics of:**

- Low water loss
- Low water top up
- Should exhibit PSOC behavior
- Should have low fumes generation
- Should perform easy recovery after idle period.

c. All the batteries capacities mentioned are at a C/10 rate of discharge and the same should also be followed by the bidder. The preferred voltage of each battery is 12 V. However, bidders quoting for battery banks with 2V cells or other capacities should add a justification note as annexure to why the particular voltage was opted for. The technical committee will consider this and take a decision on the suitability of such an option. The decision of the technical committee/technical member of the buyer on this matter will be final and binding on the bidder.

d. Battery should conform to the latest B.I.S/ International standards. A copy of the relevant test certificate for the battery should be furnished.

e. The battery should be warranted for a minimum of 5 years.

f. The battery should be installed inside the premises of the end user on a battery rack. The rack material size should be able to easily bear the battery load. (Each leg should have a respective base plate.)

g. The rack's row length should be considered based on the size of the battery as well as the number of batteries placed per row including the 2-inch inter battery gap.

h. Support rails of 6-inch height should be provided at the shorter side of the racks to support batteries from fall due to accidental impacts.

i. In case of double row racks, the inter row height should be of a minimum 18-inch separation.

j. The battery rack should be of fireproof material and corrosion free (GI rack is preferable).

k. Acid absorbent mats should be provided below the battery (On the top row in case of 2-row rack). The non-reactive acid proof mat should be provided at the floor space of the battery bank.

l. Insulation mats should be provided below the acid absorbent mats.

m. Tin-coated copper lugs (Ring type) with insulation to be used at cable ends to connect each battery terminal.

n. Spring washers to be incorporated in the nut-bolt assembly at each battery terminal.

o. Battery terminal caps used, should be big enough to cover the entire terminal area and the nut bolt assembly.

p. At each battery terminal, petroleum-based Vaseline coating should be applied.

q. All cables connecting batteries should be provided "conduit pipe" protection and tied to the outer sides of the battery body using cable ties.

NOTE:

Active or passive ventilation in the room should be compulsorily incorporated for the following reasons:

- Safety of the system
- Safety of the end users
- Efficient performance of the system.

5. Grid Input Protection Boxes:

The GIP box should have good resistances against mechanical stresses and external impacts. The Box shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement.

- All wires/cables must be terminated through cable lugs.
- The boxes shall be such that input & output termination can be made through suitable cable glands.
- All the cables (Incoming & Outgoing) should be kept separated and should be given UPVC conduit pipe protection
- All the glands provided under the box should be used and any unused glands should be sealed for ingress protection.
- Preferably, the box should be placed in the PCU room.
- IP rating: IP-67.
- Proper cable lugs (Pin type) with insulation should be provided for the cables connected with the boxes.
- Should comply with the R.oH.S. Directive 2002/95/EC
- Should be weather-proof & UV resistant

6. SINGLE PHASE SOLAR PCU:

The power conditioning unit should be provided to convert DC power produced by SPV modules, into AC power. The power conditioning unit/inverter should be a hybrid type operating off-Grid.

Typical technical features of the PCU shall be as follows:

Power conditioning unit with inbuilt charge controller of capacity & ratings as specified in the below for various capacities of Solar Power Plants should convert DC power into AC power. Preference will be given to power conditioning units conforming to standards IEC 61683.

The PCU should be tested from the MNRE approved test centres / NABL /BIS accredited testing-calibration laboratories. In the case of imported power conditioning units, these should be approved by international test houses.

In case of inverters with low ground clearance (smaller capacity inverters), a minimum of 3-inch elevation for the same should be incorporated. The elevating means should be a fireproof material (Leg bushes are preferable).

6.1 The PCU will have the following features:

a. MPPT charging as per solar panel kWp connected
b. Inverter efficiency should be more than 85%
C. The inverter should be compatible with alternators / Generators.
c. Output voltage 230 V, +/-3% with pure sine wave.
d. Output frequency: 50 Hz, +/- 0.5 Hz
e. Capacity of PCU is specified at minimum 0.8 lagging power factor
f. THD: less than 3%
h. Ambient temperature 50 degree Celsius (max.)
i. Operating humidity 95% maximum
J. Shall be equipped with RS 485/RS 232/MODBUS data port output

6.2 Protections:

a. Over voltage (automatic shutdown)
b. Under voltage (automatic shutdown)
c. Overload - Short circuit (circuit breaker & electronics protection against sustained fault)
d. Over Temperature
e. Battery, PV reverse polarity

6.3 Indicators

a. Array on
b. MPPT charger on
c. Battery connected, charging
d. Inverter ON
e. Load on solar/ battery
f. Grid charger on
g. Load on Grid
h. Grid on
i. Fault

6.4 Display Parameters

a. Charging current
b. Charging voltage
c. Voltage of PV panels
d. Output voltage
e. Grid voltage
f. Inverter loading (kW) & Energy Generation (kWh)
g. Output frequency
h. Fault / fault code

6.5 Cooling: cooling mechanism required - Air Cooled

6.6 Remote Monitoring: PCU Should have data port output - RS 232/RS485/ MODBUS.

- RS232/RS485: Bidder should provide the output data string with respective specifications.
- MODBUS: Bidder should provide the memory mapping data with respective specifications.

NOTE:

Proper ventilation in the room should be maintained to incorporate for the following reasons:

- Safety of the system
- Safety of the end users
- Efficient performance of the system.

7. PROTECTIONS:

The system should be provided with all necessary protections like earthing, lightning protection.

7.1 LIGHTNING PROTECTION:

Code of practice for protective measures against lightning strikes and surges as per IS 2309-1989 and subsequent amendments should be followed. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against lightning by deploying the required number of lightning arresters.

To increase the coverage area of protection, the lightning arrestor should be given an additional elevation by using anodized aluminium/G.I. pole. The height of the lightning arrester tip should be minimum 3 meters above the height of the panels set. Insulation should be provided between the lightning arrestor and the elevation pole and the building structure. Down conductor should be provided with saddle insulation along its length (i.e., from the lightning arrestor till the earthing pit).

Not more than 1 m gap should be maintained between two saddle insulators. Down conductors should maintain 0.5 m distance from panels, arrays and other power cables around.

- Franklin Rods/Passive type lightning arresters should be incorporated.
- The entire lightning arrester set up (Air terminal pole, spikes and base plates should be of **solid copper** only).
- Minimum size of the lightning arrester should be 10 mm by diameter and 4 feet by length.
- The base plate should be 90 mm X 90 mm X 5 mm in dimension
- The lightning protection system incorporated in the installation is only for the protection of the solar PV systems installed.
- The lightning arrestor setup should always be vertical and should be stable against high wind loads.
- In case of RCC flat roofs, the support structure for lightning arrester should be provided with anchor fasteners along with civil work made at its base plate.
- A concrete cube (Civil work) of 1.5 ft x 1.5 ft x 1.5 ft (L x B x H) dimensions should be set.
- If required, support wires should be used for additional stability of the lightning arrestor.
- In case of metal sheet roof, the lightning arrester should be placed at the apex of the roof with proper clamping and supporting wires may be used for additional support.
- The base of the clamp should be given EPDM strips which are to be used as sealant for waterproofing.
- The lightning arrester should be placed preferably at the back of the array and at the sides, with a separation distance of 0.5 meters only (From the panel edges).
- Down conductor for lightning arrester should be a GI Strip of (25 x 3) mm and should have 120 microns of galvanized thickness.
- Each Joints Should consist of two hexagonal nut and bolts assembly. There should be the least number of joints in the connection made between the lightning arrester and the earth pit.
- The down conductor should be given UPVC capping-casing protection along its entire run (From the lightning arrester till the earthing pit).
- UV resistance cable ties should be used to keep the GI strip & capping-casing together.
- The copper lightning arrester & G.I strip interface at the roof should be given a G.I. spray protection to prevent galvanic corrosion.

NOTE:

Locally copper coated/G.I rods are not allowed in the installation.

7.2 EARTHING:

Code of practice for protective earthing and protection against electric shocks as per the IEC 60364 and IS 3043 standards should be followed. Earthing is a way of transmitting any instant electricity discharge directly to the ground by providing a low resistance path (using electrical cables wires with no joints or metal strips with lesser joints). This instant electricity discharge is mostly in the form of lightning, surge voltages entering through grid lines and due to fault current/leakage current in the system. The goal is to protect the appliances from voltage surges and protect the users from the risk of electrocution due to leakage/fault current in the system.

- Earthing type - Chemical Earthing
- Electrodes used should be a copper-bonded electrode with 250 microns of copper thickness
- The electrode should be minimum of 70 mm by diameter and maximum of 4 feet by length
- Earth backfill compound - Graphite based (For normal soil conditions) and Bentonite based (For rocky soil conditions) should be used.
- Earth pit should contain 50+ kilograms of back fill compound
- Earth pit should be 12-inch by diameter and 4 ft by depth (As long as the electrode's length.)

- Individual earthing should be provided for these components: Lighting arrester, A.J.B, Grid input protection box, Inverter/PCU and connected loads.
- Minimum of 3 m distance between each pit must be maintained and 1.5 m from building foundations and sumps.
- Lightning arrester earthing pit should not be mixed with other earth pits and should be well spaced away from them.
- Should not combine AC earthing & DC Earthing.
- Earthing pits should have a chamber set above the ground and should be closed with a metallic lid/F.R.P lid and should have access for maintenance.
- Cable lugs of 10 Sq.mm with insulation should be used for cable-type down conductors to connect with the electrode.
- Proper cable-to-rod & strip-to-rod clamps should be used.
- Lightning arrester's earthing pit - The interface of the G.I strip & the copper electrode should be given a G.I. spray to prevent galvanic corrosion.
- Clamp materials should be that of copper alloys.
- Earth pit resistance should ideally be 0.5 Ohms and should not exceed 5 Ohms
- All the earth pits should be given an identification/marking to the devices/structures they are connected to.
- The earthing electrodes used in the project should have CPRI test certification.

NOTE:

Locally copper coated/G.I electrodes are not allowed in the installation.

8. CABLES (Over-ground cables):

GENERAL INDOOR/AC CABLES:

(Grid input to G.I.P.B -> Inverter -> Changeover switch 1 -> Load distribution box)

(Changeover switch - 2 (Grid & DG input) -> Changeover switch - 1 (Solar & Grid-DG input)

Stranded cable conductors should be made of high purity annealed 99.97% electrolytic grade copper with unadulterated FR PVC insulation.

Cable size as mentioned in the bill of materials to be used in the project.

The cables used shall have the following characteristics:

- High thermal stability and temperature withstanding range: -15^{o}C to +85^{o}C).
- Should have a temperature index of 250°C.
- Should have excellent resistance to heat, cold, water, oil, abrasion & UV radiation.
- Should have flexibility & higher bending capacity- 8D minimum bending radius (EFFR wires).
- Should have anti-rodent & anti-Termite resistant properties.
- Should have a high oxygen index (LOI) of > 21%.
- Should have high insulation resistance/Rated for nominal voltage (Uo/U): 600/1100 V.
- Should have low conductor resistance (Maximum conductor resistance at 20°C < 7.41 Ω).
- Should have low smoke density and emissivity (Corrosive halogen acid & toxic gasses below 18%).
- Should be 100% bunching & 100% conductive.
- Should be lead free.

NOTE:

The cables chosen for the project:

- should have passed the flame-resistant flammability test.
- Should confirm the sizing standards tests.
- Should be RoHS & Reach Compliant and should be NABL accredited.

- Cables of multiple brands should not be used in the installation.
- Should have the IEC, CE & ISI certification
- Cables of multiple brands should not be used in the installation

9. SOLAR CABLES/D.C. CABLES/OUTDOOR CABLES:

(Panels -> arrays -> A.J.B -> inverter)

Solar cables should have these specified constructional features:

Type PV1 - F (With double insulation)

- **Conductor:** Fine stranded Wire Tinned Copper Conductor according to BS EN 60228:2005 cl. 5
- **Insulation:** UV resistant, cross linkable, halogen free, flame-retardant compound for core insulation
- **Core Identification:** Red/Black
- **Sheath:** UV resistant, cross linkable, halogen free, flame-retardant compound for Sheath over insulation
- **Cable Colour:** Red/Black
- **Voltage Rating:** 0.6 / 1.0 kV

BATTERY CABLES:

(Battery -> Battery -> Inverter)

Battery cables should have these specified constructional features:

- **Cable type:** Flexible cable
- **Insulation type:** Double Insulation
- **Insulation material**: Rubber with Flame-retardant, Oil-resistant
- **Conductor:** Fine multi stranded wires, Tinned Copper Conductor
- **Cable colour:** Black
- **Core Identification:** White
- **Crimping:** Both ends crimped
- **Voltage Rating:** 0.6 / 1.0 kV

NOTE:

- Cables of multiple brands should not be used in the installation.
- Should have the IEC, CE & ISI certification
- The DC cables chosen for the project should have the following tests passed:
- Flame resistant flammability test.
- The sizing standards tests
- RoHS & Reach compliant

10.A - COLOR CODING & LABELING:

- Correct color codes should be followed for the laying of the cables.
- **For the DC side** - Red color for the positive side and Black color for the negative side should be incorporated and cables of other colors should not be used.
- **For the AC side/Single phase** - Both input and output (DB) of the inverter, Black color to be used for the neutral and Red color to be used for the line.
- **For the AC side/Three phase** - Both input and output (DB) of the inverter, Black color to be used for the neutral and Red, Blue & yellow color to be used for the lines.
- **For earthing -** Green-Yellow color should be used for the earth down conductors.
- **Labelling:**
- Each set of cables should be appropriately labelled by mentioning their origin point and their terminal point and should be easily identifiable for maintenance purposes.

- The components to which the cables are interconnected to, should be clearly labelled
- Labels should be made using permanent markers on white label tags

The cable should be so selected that it should be compatible up to the life of the solar PV panels i.e., twenty-five (25) operational years. Cable ends should be crimped along with cable lugs thoroughly using appropriate lugs. This cable-lug interface must be Insulated. Tin-coated copper cable lugs with respect to cable sizes should be used and they should be of required current ratings. Connectors (MC4) used for the solar cables should be of an IP-67 rating or higher.

Conduit pipe protection to be given to cables connecting:

1. Battery to battery,
2. Battery to inverter,
3. All cables entering the inverter.

DC/Solar cables from PV arrays and earthing cables should be given UPVC pipe protection. The end points of the conduit pipes should be protected from the rainwater/termites/insect's ingress by using appropriate sealant (Foam duct sealant). Cable Tie for outdoor application should be UV resistant. UPVC long "L-bend" pipes to be used wherever the cables pass through sharp edges/roof edges/angles in the wall.

AC cables entering the inverter from the grid input box, and all cables running from inverter up to the main distribution board should be provided with UPVC conduit pipe protection as well.

UPVC conduit pipes of 20 mm by diameter should be used. UPVC long-L-bends of 20 mm diameter should be used at the corners, edges. UPVC 2-way/3-way junction boxes should be used at regular spacing for maintenance purposes. The brands used here should be **ISI** certified.

NOTE:

- **Cables should not be left open and should be covered through conduit pipes.**
- **For DC connections use only DC cables and same for AC connections use only AC cables and do not interchange or mixed.**
- Ordinary PVC conduit pipes, bends and junction boxes are not allowed in the installation/to protect the DC & AC cables.

10.B - LOAD WIRING:

Type-1, 100% new load wiring (For PHC, HWC & SC):

- Upon installation of the solar PV systems, the output power from the P.C.U should be fed to **solar loads only** i.e., critical medical loads/efficient loads in the health centers, which is as described in the load details sheets of Annexure-3. **Non-solar loads** i.e., loads other than those which are not mentioned in the Annexure-3, i.e., heavy loads/inefficient loads/non-critical medical loads, should be separated from the solar lines and these non-critical loads should be simultaneously powered using grid power (using the existing/old wiring at the health center). The provision to separate the solar loads & non-solar loads using two separate sets of wiring should be made at the health centers on a **top-priority basis.**
- The design for the load wiring differs for each type of health center and the same can be referred to in annexure 3.
- The BOQ for load wiring differs for each type of health center and the same can be referred in annexure 1
- Laying of cables should be followed by strictly implementing the below mentioned clauses of annexure 2:
- 10: Cables/AC cables
- 10-A: Colour coding & labelling
- 9.2: Earthing

- 11: Change-over switches
- Cable & lug sizes only as specified in the BOQ list (Annexure-1) for the respective designs must be used
- Cable tools such as wire stripper, crimping tools and heat shrink sleeve kits should be used to manage the cables
- Hammer drill tool set, along with core drill-bit should be used to manage cables through the walls
- UPVC solid conduit pipe protection should be provided to protect the connections (new cables laid) made throughout the center. UPVC Junction boxes should be used at junction points for ease of installation and maintenance. Long UPVC bends should be used at sharp edges and bends in the wall.
- Quantity and specifications of ACDB, RCCB, MCBs & CO switches should be as per the BOQ list (Annexure-1)
- Quantity and specifications of fan regulators, gang boxes and switches should be as per the BOQ list (Annexure-1)
- Separate chemical earthing pit should be set and the ACDB, 3-pin sockets, CO switches should be provided with earthing protection.
- Labeling should be done for the components and connections as mentioned below:

a. Label the sockets:

- The gang box of the 3-pin sockets provided should be provided with a sticker and the sticker should be 3 Sq. inch by area.
- The sticker should have a main title **"Solar load"** on top and a subtitle on the bottom. The name of the solar load that is to be connected with the socket should be mentioned in the subtitle (Say ILR, Deep freezer etc)
- Stickers should be pasted such that the name of the solar load can be seen from the front of the socket and the other part of the sticker covers the side of the gang box. This will also ensure a seal is made to detect any attempts to tap power from the solar lines.

b. Label the switch boards:

- The switches and regulators at each switch board which control solar loads should be labeled as **"Solar loads".**
- A permanent marker of black color should be used to mark the lines and names.

c. Label the conduit pipes:

- The conduit pipes should be given marking of the cables they carry through them along the direction they carry the current through them. (Input from grid, input to inverter, output of inverter, connecting COS-1 with COS-2 etc)
- A permanent marker of black color should be used to mark the lines and names.

d. Label the changeover switch 1:

- Outside the door of the switch, all three positions of the lever should be written in BOLD LETTERS namely **"Solar - Off - Grid/DG"**
- Inside the switch, all the cables should be given identification tags mentioning the cables are **"incoming - outgoing"** and **"line - neutral"**.
- The incoming solar lines, the grid/DG lines from COS-2 and the outgoing lines to new DB should be labeled
- A strip of 3-inch long and 10 mm of width should be used for each cable.
- A permanent marker of black color should be used to mark the lines and names.

e. Label the changeover switch 2:

- Outside the door of the switch, all three positions of the lever should be written in BOLD LETTERS namely **"Grid - Off - DG"**
- Inside the switch, all the cables should be given identification tags mentioning the cables are **"incoming - outgoing"** and **"line - neutral".**
- The main incoming grid line, and the outgoing cables connecting the old DB and the COS-1 should be labeled.
- A strip of 3-inch long and 10 mm of width should be used for each cable
- A permanent marker of black color should be used to mark the lines and names.

11. CHANGE-OVER SWITCHES:

- Knife-type, metal case changeover switches should be used
- Plastic case changeover switches should **not be used**.
- Changeover switches as per the B.O.M specifications should be used.
- Labeling of the entry & exit points of cables should be clearly marked.
- The lever position at the changeover switch for "**Solar" - "Off" - "Grid"** should be clearly marked with permanent marker/labels.
- Metal case should be provided with earthing protection

12. Remote Monitoring /Data Acquisition System:

- Data acquisition system for the entire Solar System.
- Cloud based and local monitoring.
- Data logging provision for plant monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC, metering and instrumentation for display of systems parameters and status indication to be provided.
- The following parameters should be accessible via the operating interface in the real time separately for solar plant:

RMS Parameters List			
Sl.No	**Name of the Components**	**Name of the Parameters**	**Unit**
1	Solar Panel	Solar Panel Voltage	V
		Solar Panel Current	A
		Actual Solar Generation	kW
		Today's and Cumulative Solar Generation	kWh
2	Battery	Battery Voltage	V
		Battery Charging Current	A
		Battery Charging Power	kW
		Today's and Cumulative Battery Charging Energy	kWh
		Battery Discharge Current	A
		Battery Discharge Power	kW
		Today's and Cumulative Battery Discharge Energy	kWh
		Battery State of Charge	%
3	Inverter	Inverter Output Voltage	V
		Inverter Output Current	A
		Inverter Output Power	kW
		Today's and Cumulative Inverter Output Energy	kWh
4	Grid	Grid Input to Inverter Voltage	V
		Grid Input to Inverter Current	A
		Grid Input to Inverter Active Power	kW
		Today's and Cumulative Grid Input to Inverter Energy	kWh

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13. REPLACEMENT OF INEFFICIENT LOADS, INEFFICIENT EQUIPMENTS HANDOVER:

- All the critical but energy-inefficient loads that need to be connected to the solar system should be replaced with the energy-efficient loads as provided and as mentioned in the BOM list - Annexure 1 at the health centers & should be handed over to the hospital authority.
- The count of these inefficient equipment should be documented and should be acknowledged by the center's in-charge doctor & a copy of this acknowledged document should be shared with the SELCO foundation.
- The delivery, assembly and working of medical equipments made at respective centers and pictures for the same should be provided in the delivery and handover report
- Upon handing over the system to the health center, the respective health staff/representative should be briefed about the basic operations and basic troubleshooting of the solar system and also the basic operations of medical equipment provided.

Note:

- **Fan regulators:** Type - 2 Modular, Electronic regulators should be incorporated. Regulators used should be of the same make as of the fans purchased (Or) should fit the gang boxes provided
- If there is no provision to install ceiling fans to the roof for various reasons, then **wall-fans** should be preferred and mounted at a suitable point.
- The brands of the fans used should be **ISI** certified.

14. EXTRA MATERIAL:

- In case of extra materials used during the installations viz extra cables, earthing strips, sockets, switches, regulators, fans, bulbs, tube lights etc, then the same has to be documented and submitted to the procurement team in the following format:
- **Center wise**: The names of the centers
- **System wise**: If the center has more than one system
- **Details of the materials used:** Quantity of materials used, specifications of materials used, cost of the materials.
- **Justification**: Explanation must be provided for the extra materials used at the respective sites and documented.
- **Pictures**: It may also be required to include pictures in the justification documents to support the claim.
- **Approval**: The regional SELCO teams will verify the extra materials used at sites which will be taken forward for further processing at the SELCO head office.

15. PLAQUES, SLD, SIGN BOARDS, BOM & LOAD DETAILS:

Foam Plaques:

- **"**DOs & DON'Ts" practices for panel, battery and P.C.U handling/routine maintenance tips should be pasted at the battery-inverter room
- The size of the plaque should be of A4 size for each component i.e panel, battery & P.C.U maintenance. All the three plaques should then be made as one unit for better geometry of appearance and application over the wall.
- The plaque should carry the contact details of the vendor incharge of the projects, with their office address and customer care contact details. It is suggested to also have alternate contact details included in it for better reachout.
- The plaque should be of the dimensions specified in the BOM
- The plaque should be placed at an average height of 5 feet above the ground at the entrance of the battery-inverter room and should be easily readable.

- Both local language and English should be incorporated in description of details in the plaque
- Strong adhesive (Double sided glue tape) along with washer-screw-wall plugs, should be used to keep the plaques firmly stuck to the wall

Metal plaques:

- The plaques should be placed at the entrance of the main building or at the reception counters making them easily noticeable for the visitors at the hospital
- The plaque should be placed at a height of 6-feet from the floor and mounted firmly over the wall using self-tapping screws and plastic reinforcement
- Plaques of two sizes will be provided. The bigger sized plaques are to be used at the district hospitals, sub district hospitals & community health centers, while the smaller ones are to be used at the primary health centers, health and wellness centers, primary health sub centers/sub centers.

6. SLD of PV system:

- A single line diagram of the entire solar PV system components installed and the way they are interconnected at the center should be clearly printed along with their electrical specifications mentioned for each component (Refer annexure - 3).
- The size of the SLD board should be as per the BOM specifications as it varies for different types of health centers
- The Sunboard material used to draw the SLD should be a minimum of 3-mm thick and should be glued to the wall firmly along with washer-screw-wall plugs, should be used to keep the plaques firmly stuck to the wall
- The SLD board should be placed in the same room as that of the battery-inverter set-up, and depending upon the room condition the SLD board should be placed such that it gets maximum visibility

Load details:

- A copy of the load details should be pasted in the battery-PCU room, and the health staff/doctor in-charge should be briefed about the loads that need to be compulsorily connected to solar, and the loads that should never be connected to solar system.
- **Sign boards:**
- A caution sign board mentioning prohibition of smoking and open flames should be placed at the entrance of the battery-PCU room.
- High voltage & Danger symbol to be depicted at the entrance of the room
- Fire extinguisher operating procedure (PASS sequence) during emergency

Earth pits:

- Each earth pit should be given a labelling to identify the systems they are connected to.
- The size of the sign board should be of A5 size and should be supported by a GI pole of 2.5 feet tall (1.5 feet above the ground), of 2 mm thickness and of 120-micron galvanizing thickness.
- The sign board should have the details
- Earth pit number
- Earth pit connected to
- Ohmic value of the earth pit
- Tested date

BOQ:

- Bill of material sheet for load wiring should be pasted in the battery-inverter room
- Bill of material sheet for luminaries, fans and medical equipment should be pasted in the battery-inverter room

SLD of load wiring:

- A single line diagram of the load wiring made and the way they are interconnected at the center should be clearly printed along with their electrical specifications mentioned for each component (Refer annexure - 3).
- The size of the SLD board should be as per the BOM specifications as it varies for different types of health centers
- The Sunboard material used to draw the SLD should be a minimum of 3-mm thick and should be glued to the wall firmly along with washer-screw-wall plugs, should be used to keep the plaques firmly stuck to the wall
- The SLD board should be placed in the same room as that of the battery-inverter set-up, and depending upon the room condition the SLD board should be placed such that it gets maximum visibility

17. FIRE EXTINGUISHERS:

The chosen fire extinguishers should be of the ABC Dry powder extinguishing agents or CO2 type with a minimum of 5 Kgs of charge or more in the cylinder. The fire extinguishers should be PESO/CCOE approved and CE certified.

Fire extinguishers should have the features as follows:

- **Average discharge (%):** >95%
- **Average discharge time:** >9 sec
- **Average range of throw:** >2 meters
- **Operating temperature:** -30°C to +60°C
- **Fire rating**: >1A:34B

Fire extinguishers should have the characteristics as follows:

- Nonconductive
- Maximum visibility during discharge
- No thermal (or) static shocks

NOTE:

The fire extinguisher should be placed at the entrance of the battery room and should be serviced periodically to ensure there is proper charge and pressure in the cylinder.

18. SYSTEM COMPLETION-HANDOVER REPORTS:

- Once the installation is complete, the system functionality should be verified, and the instantaneous electrical parameters should be recorded and should be mentioned in the report and the same should be submitted to the SELCO foundation.
- The format sequence to record the parameters should be collected from SELCO foundation.
- All the components used in the installation process, their specifications, the quantity used, grand total should be clearly specified.
- Close-up pictures of the main components of solar PV set-up with GPS coordinates clicked at respective sites should be submitted along with the completion report and should be in the order as follows:
- Solar PV arrays
- A.J.B
- Battery bank
- P.C.U set-up
- G.I.P.B
- Combiner box
- Earth pits
- Lightning arrester

- Change-over switches
- Cable management (outdoor & indoor)
- Foam plaques
- Metal plaques
- SLD
- Load details pasted
- Earth pit sign boards

19. TOOLS & TACKLES AND SPARES:

After completion of installation & commissioning of the power plant, necessary tools & tackles shall be maintained by the successful bidder for maintenance purposes at the local service center.

20. SAFETY MEASURES:

The bidder shall take entire responsibility for electrical safety of the installation(s) and follow all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA guidelines etc.

The work is to be done in a Health Centre that will be in service. During installation, care shall be taken to ensure no hindrance is caused to patients and medical professionals in the building while they will be on their work.

21. OPERATION AND MAINTENANCE MANUAL:

An operation, instruction and maintenance manual in English and/or local language should be provided along with the solar system. The following minimum details must be provided in the manual:

- Basic principles of photovoltaics.
- A block diagram on Solar PV System - Showing interconnection of its components viz PV modules, batteries, inverters & Charge controls and loads.
- A small write up on expected performance of the SPV systems.
- A list of the critical loads (luminaire and medical equipment) that are to be connected to the solar PV system.
- A separate list of heavy loads which are never to be connected to the system.
- A list containing specification details of panels, batteries, P.C.U., showing type of the model used, model number, voltage & current capacity
- A list of total numbers of items (Solar panels, battery, inverter, earthing pits, lightning arresters, luminaries, fans and medical equipment) that are provided to the center.
- Significance of audio and visual indicators of the solar PV system.
- A SLD of the system installed.
- Clear instructions on regular maintenance and troubleshooting of the solar PV System.
- A list of DOs and DON'Ts practices while handling the solar PV system.
- Name, address and contact details of the customer care service/service provider for repair complaints and scheduled & unscheduled maintenance services.

22. ANNUAL MAINTENANCE:

- Two Scheduled visits per year with 6 months of interval gap should be done.
- Schedule visits should consist of basic maintenance of the system:
- Cleaning of panels and inspecting their condition and performance
- Cleaning of batteries & topping up with distilled water, check the specific gravity from each cell of the battery & inspect the battery performance.

- Inspecting inverter performance.
- Verifying the battery-inverter room has proper ventilation maintained
- Verifying the DOs & DON'TS plaques, SLD & load details sheets are present in the battery room
- Verifying the connectivity & condition of earth pits, ensure the resistance of the earth pits is below 5 Ohms
- Inspecting complete wiring (solar PV system with loads connected) as per bill of material.
- Verifying that non-solar loads are not connected to solar system
- Ensure all the solar loads (luminaries, fans, medical equipment) are functional.
- Verifying all the control switches & regulators of solar loads are functional
- Ensuring the lightning arrester set-up is intact
- Checking and verifying system performance with prescribed format provided by SELCO Foundation.

ANNEXURE 3: COUNT OF HEALTH CENTERS

Indicative count of Health centers is as follows. However, the sites are subject to change further to the site survey. SELCO Foundation will have the complete right on the selection of Health centers across Bodoland, Assam state.

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Sr No	Quote for Option	Count of Systems	Districts
1	SC - Option1	373	BTAD(Bodoland Territorial Autonomous District) with four districts namely Kokrajhar, Chirang, Baksa and Udalguri
2	SC – Option2	57	
3	PHC - Option1	39	
4	PHC -Option 2	81	

ANNEXURE 4: SELECTION OF COMPONENT

Component	Specifications	*As per tender*	SC -Option1	SC -Option2	PHC -Option1	PHC -Option2
Solar Module	**Make/manufacturer**					
	Type	*Polycrystalline / Monocrystalline*				
	Product Warranty	≥ 10 Years				
	Performance Warranty	≥ 25 Years				
	Power tolerance	Positive				
	Number of cells					
	Power in Wp					
	Voc(V)					
	Isc (I)					
	Vmp(V)					
	Imp(I)					
	Module Efficiency	>16.6%				
	Each Panel Capacity (Wp)					
	Total Panel Quantity (Nos)					
	Total Panel Capacity (Wp)					
	No of Panels connected in series					
	No of Parallel Strings					
	Uplift withstand force	≥ 2400 Pa				
	Downward withstand force	≥ 5400 Pa				
	Normal operating cell temperature	*< 45°C (+ or -2°C)*				
	Temperature coefficient (Voc)	*< -0.35%*				
	Temperature coefficient (Pmax)	*< -0.45%*				
	Temperature coefficient (Isc)	*< -0.07%*				

	Operating module temperature	*-40 to -45, +80 to +85°C*				
	Certifications (IEC Standards / NABL accredited labs / CPRI labs/ERDA/ BIS Standards)	IEC - 61215, 61730, TS 62804, 61853 IEC 61701 (Salt mist Corrosion resistant) IEC 62716 (Ammonia Corrosion resistant) UL Certified 1703 IEC 60068-2-68(Sand Abrasion) IEC 62804-1 (PID) DGS & D CERTIFIED				
Solar Battery	**Make/Manufacturer**					
	C rating	C 10				
	Type / Chemistry	Lead acid / Flooded				
	Plate technology	*Tall Tubular plate*				
	Product Warranty - Replacement	*5 Years/ 60 months*				
	Battery Voltage	*12V / 2V*				
	Each Battery Capacity (Ah)					
	Total Battery Quantity (Nos)					
	Design capacity of battery in terms of KWh	*19.2kWh, (battery capacity in ah x battery quantity x battery voltage)/1000*				
	No of batteries connected in series					
	No of Parallel Strings					
	No of cycles @80% DOD	*≥ 1500 Cycles*				

	Self-Discharge rate	< 3% per month				
	Wh efficiency	>80%				
	Ah efficiency	>90%				
	Dimensions in mm	*L x B X H*				
	weight of battery in Kgs					
	Certifications (IEC Standards / NABL accredited labs / CPRI labs/ERDA/ BIS Standards)	*IS 13369 : 1992* *BIS 16270 : 2014* *IS 1651*				
PCU	**Make/manufacturer**					
	Product Warranty	*5 years / 60 months*				
	Total Harmonic Distortion (THD)	*< 3%*				
	Inverter Capacity (kVA)	6 kVA				
	System Voltage (Battery Input voltage)					
	Output voltage	*230V - Pure sine wave*				
	Output frequency	50 Hz, + / - 0.5Hz				
	Compatible with Alternators / Generators	*Yes*				
	Type of charge controller (DC-DC converter)	*MPPT*				
	MOSFET / IGBT Based MPPT charging	MOSFET / IGBT				
	Efficiency of charge controller(DC-DC converter)	>95%				
	Maximum input voltage range(Voc)					
	Input MPPT range (Vmpp)					
	Inverter minimum response time	< 20 ms				

	RMS data type	*RS485/RS232/ MODBUS*				
	Inverter self-consumption during no-load condition	< 2A				
	Power Factor	>0.8				
	Inverter Efficency	*>85%*				
	Inverter Efficiency (%) @ 50% Load	>80%				
	Inverter Efficiency (%) @ 75% Load	> 85%				
	Inverter Efficiency (%) @ 100% Load	>80%				
	Inverter Qty (Nos) per site					
	Ambient temperature	*50 degree Celsius (Max)*				
	Cooling Mechanism	*Active air cooling*				
	Operating humidity	*95% Max*				
	Over voltage protection	*Yes*				
	Under voltage protection	*Yes*				
	Overload protection	*Yes*				
	Over Temperature protection	*Yes*				
	Battery reverse polarity protection	*Yes*				
	Panel reverse polarity protection	*Yes*				
	Certifications (IEC Standards / NABL accredited labs / CPRI labs/ERDA/ BIS Standards)	*IEC 61683, 60068 & 60529. BIS / NISE LAB, IEC 61727, IEC 62116/ 61683*				
	Make					

Cables - Solar - PV1	**Type**	*Flexible*				
	Conductor	*Fine stranded Wire Tinned Copper*				
	Insulation	*UV resistant, cross linkable, halogen free, flame-retardant compound for core insulation*				
	Voltage Rating	*0.6 to 1.0 kV*				
	Operating Temperature range	*-40°C to +85°C*				
Cables - Battery	**Make**					
	Type	*Flexible cable*				
	Conductor	*Fine multi stranded wires, Tinned Copper Conductor*				
	Insulation Type	*Double Insulation*				
	Insulation Material	*Rubber with Flame-retardant, Oil-resistant*				
	Voltage Rating	*0.6 to 1.0 kV*				
	Operating Temperature range	*-40°C to +85°C*				
Cables - AC	**Make**					
	Type	*Flexible cable*				
	Conductor	*Copper*				
	Insulation	*EFFR PVC insulation*				
	Voltage Rating	*0.6 to 1.0 kV*				
	Operating Temperature range	*-40°C to +85°C*				
Luminaries - Indoor	**Make**					
	Type	LED				
	Lumens	>90 lumens per watt				

	Warranty	*2 Years*				
Luminaries - Outdoor	**Make**					
	Type	LED				
	Lumens	>90 lumens per watt				
	Warranty	*2 Years*				
Ceiling Fan with Regulator	**Make**					
	TYPE	BLDC				
	Regulator	Two Modular, Electronic 5-step				
	Size	1200 mm				
	Warranty	*2 Years*				

ANNEXURE 5 - DETAILS OF THE ORGANIZATION

(Enclose separate sheets as necessary and in this checklist indicate yes or no)

1	Name and address of the Bidder (With pin code)	
2	Year of starting the organization	
3	Registration number (photocopy of registration certificate or any other relevant document to be enclosed)	
4	Name and Contact number of the Proprietor or Point of Contact	
5	Status of Supplier- Proprietorship / Partnership/ Pvt Ltd / Limited/others	
6	GSTIN (Copies of certificates to be enclosed)	
7	PAN No. from Income Tax Dept. (Copies of certificates to be enclosed)	
8	Documents to prove last financial year business of Rs 4 Crores	
9	Experience of Supplier/supplier relating to supply of solar energy-based solutions (supporting certificates to be enclosed)	
10	Particulars of Physical Infrastructure and total strength of staff available in the organization.	
11	Bidders Bank details	
12	Evidence of existence (GST Registration) of local office in Bodoland or in the State of Assam.	

Signature of the bidder and address with seal

Date:

ANNEXURE 6 – CONFIRMATION ON ENCLOSURES

Sl.No.	Description	Whether the Document is enclosed or not	Page No. From and to
1	Details of Organization as per Annexure 5	YES/NO	
2	Copies showing the legal status, places of registration and principal place of business of the firm	YES/NO	
3	Copies of audited financial statements for the last 2 years	YES/NO	
4	Copy of GST registration		
5	Copies of GST returns filed in the last 2 financial years	YES/NO	
6	Copies of income tax returns filed in the last 2 financial years	YES/NO	
7	Copy of PAN Card should be submitted	YES/NO	
8	Acceptance to provide service & Maintenance for 5 years	YES/NO	
9	Evidence of existence (GST Registration) of local offices in Bodoland or in the state of Assam	YES/NO	
10	Letter of declaration to confirm that the bidder has not been black listed by any entity or institution	YES/NO	
11	Documents to prove business of Rs. 4 Crores in the last Financial year	YES/NO	
12	Project Report on 3 successful Solar Off-grid Projects with contact details of customer	YES/NO	
13	Implementation plan to complete Installation by 30 November 2023, this should include Team Structure & Team Size (no's) and installation schedule.	YES/NO	
14	Bidders bank details	YES/NO	
15	Signed, sealed copies of Annexure 1, 2, 3, 4, 5 and 6	YES/NO	
16	Self-Declaration as per Annexure 4 for the components that will be used for the project	YES/NO	
17	Data Sheets/Brochures of PV Module, Battery & Inverters/PCU	YES/NO	

I abide by all the above terms & conditions.

SIGNATURE OF THE BIDDER and with office seal
PLACE:
DATE:

ANNEXURE 7- SCHEDULE OF INSTALLATION

Regarding Supply, installation and commissioning

Sl. No.	Scheduled activity	Within days (no. of days)	Accepted Schedule by date
1.	Supply starts after WO	15 Days	
2.	Supply ends	45 Days	
3	Installations begins	15 Days	
4.	Commissioning of all the system	60 days	

I abide by all the commitments accepted & conditions.

SIGNATURE OF THE BIDDER and with office seal

PLACE:

DATE:

ANNEXURE 8 - PRICE SCHEDULE

PARTICULARS TO BE SUBMITTED IN THE FINANCIAL BID (SECOND COVER).

PRICE SCHEDULE FOR THE SUPPLY, INSTALLATION, COMMISSIONING & COMPREHENSIVE MAINTENANCE FOR 5 YEARS OF OFF-GRID SOLAR ENERGY SOLUTIONS FOR 550 HEALTH CENTERS IN BODOLAND, ASSAM.

Rates quoted by the bidder:

a. The rates should be mentioned item wise clearly both in words and figures
b. Rates should be inclusive of GST however specified in the below given cell.
c. Rates should be inclusive of AMC from Year 2 to 5 but separately mentioned.
d. Rates should be inclusive of the RMS system but separately mentioned.
e. Data Sheets/Brochures of PV Module, Battery & Inverters and charge controllers have to be submitted.
f. Rates should include transportation, installation cost for supply of solution and any other cost in the region of operation of the Organizations**.**

Table 1: Cost of Solar BoM

Sl No	Quote for Option	No. of systems	Unit Price in Rs./Option of solar System	Total Price in Rs. per Option of solar System	Unit Price for Remote Monitoring System	Total Price for Remote Monitoring System	Unit AMC Price for years 2 to 5 (in Rs) per unit	Total AMC Price for years 2 to 5 (in Rs)
1	SC - Option1	373						
2	SC – Option2	57						
3	PHC - Option1	39						
4	PHC -Option 2	81						
			GST@_ _%		**GST@_ _%**		**GST@_ _%**	
	TOTAL (A)							

In words: Rupees_____

Table 2: Cost of Luminaries or accessories

Sl. No	Quote for System	Qty	Price in Rs./Unit	Total Cost in Rs.
1	SC - Option1	373		
2	SC – Option2	57		
3	PHC - Option1	39		
4	PHC -Option 2	81		
Sub Total				
GST@ _ _%				
TOTAL (B)				

In Words: Rupees_____

GRAND TOTAL (TOTAL A+ TOTAL B)	
GRAND TOTAL in words: Rupees	

CONDITIONS:

If our tender is accepted, we hereby undertake to abide as per the stipulated Terms and Conditions to supplier and supply, installation and maintenance of solar energy-based solutions.

We agree to abide by this tender and if the work is awarded to us, in executing the above contract we will strictly observe the laws against fraud and corruption in force in India namely “Prevention of corruption act 1988”.

We understand that you are not bound to determine the price based on the lowest offer that Foundation may receive.

We accept that all disputes between parties will be adjudicated by a competent court in Bangalore, India.

I, _____ (Name of signatory) on behalf of the bidder _____ (Name of the bidder), hereby certify that I have noted the technical specifications of solutions mentioned in Annexure 1, and the technical specifications for components mentioned in Annexure 2 and the prices quoted above are as per the details specified and in compliance with Annexure 1 and 2.

Dated this……. day of……2023

Signature (Name and Address of the Tender with seal) (In the capacity of……..

Duly authorized to sign the Tender for and on behalf of_____