



SELCO Foundation – Call for Vendors

**The Supply, Installation and Commissioning &
Comprehensive maintenance of Solar Photovoltaic
(SPV) Off-grid DC 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-DC systems across the state of Karnataka during the year 2023-2024.

The detailed tender document which can be downloaded from 27-02-2024.

<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/Jvhcatxi4aCeMbyf6>

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

by 4 pm on or before 06-03-2024.

Chief Executive Officer – SELCO Foundation



SELCO FOUNDATION

TENDER NOTIFICATION

FOR

**SUPPLY, INSTALLATION AND COMMISSIONING & COMPREHENSIVE
MAINTENANCE OF SOLAR PHOTOVOLTAIC (SPV) OFF-GRID DC
SYSTEMS ACROSS STATE OF KARNATAKA.**

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: 16/2023-2024

This tender by SELCO Foundation is for selection of vendors (hereinafter “Organisations” or “Bidder”) for the work of Supply, Installation, and maintenance (including training) of Solar Photovoltaic off grid DC Systems across the state of Karnataka.

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 Center s is subject to receiving the approval for installation from the local Center 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.

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

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

Tender: **16/2023-2024**

Dated: 27-02-2024

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 DC systems across state of Karnataka.

1.	Tender Ref No.	16/2023-2024
2.	Last date & time for the bid submission	06-03-2024, 4:00 PM
3.	Opening date of Technical Bid & Financial Bid	07-03-2024, 11:00 AM
4.	Venue of acceptance and opening of tenders.	SELCO Foundation, Bangalore
5.	Link for e-tender	https://forms.gle/Jvhcatxi4aCeMbyf6

Interested and eligible Organizations may furnish the Technical & Commercial Bids for Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) off-grid DC systems across state of Karnataka.

<https://forms.gle/Jvhcatxi4aCeMbyf6>

Or;

Furnish the same to the below-mentioned address:

Procurement Officer - Tender NO 16/2023-2024
#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

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 6](#)".

Sl. No.	Scheduled activity	Within days (no. of days)
1.	Supply starts	10 days
2.	Supply ends	20 days
3	Installations begins	10 days
4.	Commissioning of all the system	30 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 6](#)" enclosed in this Bidding Documents. If the bidders wish to visit the site, they may request the same to the Procurement Officer - Selco Foundation.

1. 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. The organization should have proven experience in execution of DC Solar Systems.
- III. Organization registration certificates or any other proof of incorporation to be submitted to establish the legal status.
- IV. 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.
- V. The organization should have its own local office, service center and technicians in the state of Karnataka.
- VI. 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.
- VII. Audited Financial Statements Certified by Auditor for the last 02 years.
- VIII. Income Tax returns for the last 02 financial years should be submitted.
- IX. Organization should submit the valid PAN card & Bank Details.
- X. The organization should submit the self-declaration certificate to declare that the organization is not blacklisted by any entity.
- XI. Documents to establish that the organization has implemented projects of worth Rs. 1 Crore or more in the last financial year. In case of organizations not meeting this requirement of implementing projects worth of Rs. 1 Crore 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.
- XII. The quote should include AMC (ANNUAL MAINTENANCE CONTRACT) for one year with a minimum of 2 scheduled services.

2. 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 - 3](#)
- II. Particulars of the Firm as per [Annexure - 4](#)
- III. Checklist of Documents to be submitted in First cover as per [Annexure - 5](#)
- 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 Karnataka State.
- VI. The Organizations have to sign all the pages of the documents as acceptance of all terms and conditions.

3. 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.

4. Price schedule:

The Organizations shall complete the price schedule as per [Annexure 7 - PRICE SCHEDULE](#) furnished in the Bidding Documents, indicating the total cost towards supply, installation, Load wiring and AMC. 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 7](#).

5. 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.

6. 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.

7. 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/nbjimnJ3HWCcqzLN9>

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

Procurement Officer - Tender No 16/2023-2024
SELCO Foundation, #690, 15th Cross, 2nd Phase,
JP Nagar, Bengaluru- 560078.
Email id: procurement@selcofoundation.org

8. 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.

9. 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.

10. 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.

11. 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.

12. 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.

13. 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 3](#) for their bid to be accepted. Submissions that are missing/incomplete information or have blank fields will not be considered.

Eligible bidder may be required to coordinate site visits for the SELCO Foundation Technical Team to evaluate the quality of the previous installation. This team will then generate a report detailing their findings and observations. The eligible bidders shall comply and facilitate such visit, in accordance with SELCO Foundation's requirements as communicated. This report will be taken into consideration by SELCO Foundation before awarding the tender.

14. Awarding Tender

The Tender will be awarded based on the criteria as stated in the Tender and in accordance with SELCO's policies. The bidder who have provided all documents in compliance with the terms and

regulations stated under this Tender and have further complied with SELCO's terms (as clarification would be required from time to time) will be awarded the tender.

The award for this tender will be communicated to the successful bidder by email.

SELCO shall have the right to disqualify a eligible bidder at its own discretion.

15. Terms and Conditions of the Contract

15.1 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.

15.2 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 1 year 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.

15.3 Payment Terms:

For the supply, installation, commissioning, and comprehensive maintenance of Solar Photovoltaic (SPV) off-grid systems payment will be released in 03 tranches under each contract by SELCO Foundation.

- a. The 1st tranche of payment will be 50% paid along with the work order and against submission of invoice.
- b. The 2nd tranche of payment will be 25% and will be paid against the Supply of materials to 100 % of the centers or in local godown with evidence of delivery note certified by the center Authority/Foundation representative and against submission of invoice.
- c. The 3rd and final tranche of payment will be 25% and will be paid on receipt of Installation Report along with Photographs of Installations by location wise/system wise duly certified by center authority and Foundation representative Officer and against submission of invoice. Along with receipt of hand over letter (in SELCO Foundation Letterhead) to the center authority.
- d. 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 SELCO Foundation and the Bidder will be paid only the net amount.
- e. 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.
- f. 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 instalment.

Note: For every tranche of payment, bidder has to raise an invoice

15.4 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 SELCO Foundation will not be responsible for any missing item or damage that is incurred before the system is handed over to the 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 SELCO Foundation for providing the services covered under this agreement.

15.5 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 SELCO Foundation in writing in advance and making bidder representative available at the location. Besides, the SELCO 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 SELCO 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.

15.6 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.

15.7 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 SELCO 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 Center.
- e. Bidder should provide training on basic maintenance of the solar system to the designated 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 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.

15.8 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 Center authority as per the list provided by the SELCO Foundation in writing. No variation shall be permitted, except with prior authorization in writing from the SELCO 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.

15.9 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 SELCO 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.

15.10 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 SELCO Foundation which shall be made as per clause 3 of this Agreement.

15.11 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 SELCO Foundation. The SELCO 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 SELCO Foundation for such disposal shall be payable by the account of the Bidder. The freight paid by the SELCO Foundation, if any, on the inward journey of the rejected material shall be reimbursed by the Bidder to the SELCO 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 SELCO Foundation, within 2 weeks of notification.

15.12 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 SELCO 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.

15.13 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 SELCO 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 SELCO Foundation by any ultimate user of the product with respect to the performance of the system (during the warranty period), the SELCO Foundation shall not be held liable in such cases and the Bidder should support the SELCO 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.

15.14 Indemnity:

The Bidder shall at all times indemnify the SELCO 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 SELCO Foundation, the SELCO Foundation shall notify the Bidder of the same and the Bidder shall indemnify and hold the SELCO 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 SELCO 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.

15.15 Other Clauses:

- a. The Bidder will treat all information disclosed to it by the SELCO 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 SELCO Foundation or any customer or agent of the SELCO 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 SELCO 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 SELCO 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 SELCO Foundation. The Bidder shall deliver all deeds, documents and paper in his possession relating to the business of the SELCO Foundation and further certify the same in writing.
- d. Both the SELCO 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 SELCO Foundation in writing of the various methods used to perform such activities in a timely manner. The SELCO 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 SELCO 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 SELCO Foundation is a charitable trust registered under the laws of India and is authorized to do business to the extent necessary to fulfil 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 SELCO 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

TYPE: DC System

System 1: System For Bed Sore Mattress

Bill of Materials for Solar System 1

Sl. No.	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 450 Wp – Polycrystalline	1 Set
2	Solar Battery	Flooded Battery of Total Minimum Capacity 3.6 kWh @C10,12Volt. (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 point 1	1 Set.
4	Micro Inverter - 230 Vac, 50 Hz	Total Minimum Capacity 200VA/150W for 1-Phase Supply	1 no.
5	Charge Controller	50A, 12V	1 no.
6	Copper Cable Red+ Black (Module - Module) PV1-F (Solar Cables)	4 sq.mm UV Protected Cable	6 m
7	Copper Cable (Battery -Battery & Battery – Inverter & Battery- CCU) - (DC Cables)	10 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)	10 sq.mm	20 m
9	Battery rack with acid absorbent + Insulation mat and Battery terminal rubber caps or Battery box of hard plastics.	As per Sl.No 2 (for metal rack- Each leg should be given a base plate)	1 Set.
10	Solar Array Junction Box with MCB and SPD and String Fuse.	MCB Rating- 2 pole: As per Solar Module Rating (Sl.No - 1 & 5) SPD Rating: 500 VDC, Type-2, 40kA Inline Fuse per string with Socket rating: (+ve Strings): 15A, 1000VDC	1 No.
11	Do's and Don'ts Practices Poster (Solar Panels, Battery and Inverter)	Foam Plaque - A4 Size for each	1 No.
12	Load wiring – DC cable	4 Sq. mm.	40 m
13	Load wiring – DC cable	2.5 Sq. mm.	20 m

14	DC LED Light	5 W, 12V	1 no
15	DC LED Light	10 W, 12V	1 no
16	DC Pedestal Fan	18W, 12V	1 no
17	Consumables		1 Set

System 2: DC Home Lighting- 1 Lights

Bill of Materials for Solar System 2

Sl. No.	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 40 Wp	1 Set
2	Module Mounting Structure (MMS)	Solar PV Module support structure. It should be suitable for available solar module - as per point 1	1 Set.
3*	Solar Battery	Battery of Total Minimum Capacity 6ah/12.8V @C10,12Volt. – LifePO4	1 Set
	Charge Controller	5A, 12.8V – compatible with LifePO4	1 no.
	Battery box of hard plastics.	As per Sl.No 2	1 Set.
4	Copper Cable Red + Black (Module - CCU)-(DC Cables)	4 sq.mm	20 m
5	Copper Cable Red + Black (CCU - Load)-(DC Cables)	1 sq. mm	10 m
6	LED Bulb	5 W	1 no.
7	Consumables		1 Set

***can be combine in single panel/ enclosure or supply separately with enclosures /conduits– check for SLD from SELCO Foundation**

System 3: DC Home Lighting- 2 Lights

Bill of Materials for Solar System 3

Sl. No.	Products	Capacity	Qty
1	Solar Module	Solar Photovoltaic Array of Total Minimum Capacity 40 Wp	1 Set
2	Module Mounting Structure (MMS)	Solar PV Module support structure. It should be suitable for available solar module - as per point 1	1 Set.

3*	Solar Battery	Battery of Total Minimum Capacity 12ah/12.8V @C10,12Volt. – LifePO4	1 Set
	Charge Controller	5A, 12.8V – compatible with LifePO4	1 no.
	Battery box of hard plastics.	As per Sl.No 2	1 Set.
4	Copper Cable Red + Black (Module - CCU)-(DC Cables)	4 sq.mm	20 m
5	Copper Cable Red + Black (CCU - Load)-(DC Cables)	1 sq. mm	10 m
6	LED Bulb	5W	2 no.
7	Consumables		1 Set

***can be combine in single panel/ enclosure or supply separately with enclosures /conduits– check for SLD from SELCO Foundation**

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.e.T.I.D & P.I.D Resistant
- Panel degradation should be linear over a period for 25+ years
- Should have temperature coefficient of power (P_{max}) $\leq -0.38\% / ^\circ\text{C}$
- 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):

- The MMS shall be made of Hot dip GI/Anodized Aluminium material and the structure shall support SPV modules at a given orientation, absorb and transfer the mechanical load to the roof uniformly. There should be no requirement of welding or complex heavy machinery at site. The array structure should be designed in such a way that it will occupy minimum space without sacrificing the output from SPV panels and should be able to withstand heavy winds.
- In case MMS is made of hot dip galvanized, the main frames and complete leg assemblies of the array structures shall be made of MS hot dip galvanized. Thickness of the galvanization shall be as per IS-4759. In case the MMS is of Aluminium type, anodic coating of AC25 grade as per IS :1868 is to be done.
- The MMS should be designed and fabricated as per site condition. It should be properly earthed and should be designed to withstand Seismic criteria as per IS1893.
- The MMS should be able to withstand extreme weather conditions in the area and a wind speed of 200kmph.
- All the nuts, bolts and other fasteners used should be of stainless steel (minimum grade SS 304). The nuts and bolts should be tightened using torque wrench.
- The installation of the mounting structure shall be done without disturbing the roof and its water proofing layer. All civil works including foundation required for erection and commissioning of solar plant shall be in the scope of vendor.
- The frame structure should have provision to adjust its angle of inclination to the Horizontal between 0 and 55°, so that it can be installed at the specified tilt angle. However, in case of thatched roof, the module should be pole mounted. The length of the pole should be minimum 3 m above the ground level after grouting & final installation and the diameter of the pole should be minimum of 5 cm. The pole should be medium duty GI pipe directly fixed into the ground.

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.

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 be weatherproof & UV resistant.

4. BATTERY:

A. LEAD ACID

- **Battery type:** Lead acid
 - **Plate technology:** Tall tubular plate/ flat plate
 - **Terminal type:** L - Type
 - **Electrolyte:** Free flow electrolyte
 - **Operating temperature:** -20°C to +55°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 %
- Should have **additional characteristics of:**
 - Low water loss
 - Low water top up
 - Should exhibit PSOC behaviour
 - Should have low fumes generation
 - Should perform easy recovery after idle period.
 - 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.
 - Battery should conform to the latest B.I.S/ International standards. A copy of the relevant test certificate for the battery should be furnished.
 - The battery should be warranted for a minimum of 5 years.**
 - 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.)
 - 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.
 - 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.
 - In case of double row racks, the inter row height should be of a minimum 18-inch separation.
 - 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.

B. Lithium-Ferro-Phosphate (Li-Fe-Po4) Battery

- The battery cycle life should be 2000 cycle at 95% discharge.
- The Lithium iron phosphate battery needs a very good "Battery Management System" BMS to ensure the proper charging and discharging of each cell of battery with proper protection of battery when temperature is reaching beyond battery permissible limits. This battery also needs constant current and constants voltage charging methodology related to upper voltage limit of battery. BMS primary focus are therefore on the safety and the protection of the battery, to Minimize the risk of sudden failure and to maximize the life cycle of the battery.
- BMS (Battery Management System) should be part of battery pack and battery pack enclosure should be as per standard.
- The battery pack should be capable of high rate of heat dissipations.
- The battery should operate between temperature range of 0 degree C to 60 deg C.
- **The battery should be warranted for a minimum of 5 years.**
- The other feature of the battery should be:

Sr.No.	Description	Specifications
1	Battery Configuration	12.8V ; Li fe PO4
2	Working Temperature Range (both for charging & discharging)	0-60 deg C
3	Storage Temperature Range	@ 0-25 Deg- 6 months
4	Cycle Life (Full charge to full discharge @ 25 deg C before capacityof battery falls below 75%	more than 2000 Cycles
5	Battery Warranty	5 years
6	Capacity of Individual Cells (Minimum)	3.2V cell of 5 AH
7	Type of Cell	Prismatic/Cylindrical
8	Nominal Voltage	12.8V
9	Operating Voltage Range	11.2 V - 14.6V
10	Discharge Cut off Voltage	>11.2V
11	Over Charge Cut off Voltage	15.5V+/- 0.2V
12	Charging Time	Around 5 - 5.5 Hours

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. Charge Controller Specifications:

Charge Controller should have proper algorithm (PWM/MPPT) that continuously tracks the maximum power point and automatically charges the batteries in an optimal way with all the available solar power.

- Indoor based
- Compatible with both Lead Acid and LifePO4 or can be separate 2 Charge controllers for Lead acid and LifePO4
- Charging Stages: 3 Stages: Bulk, Absorption, Floating,
- Battery temperature compensation: 3mV/°C/Cell (25°C ref) default value with adjustable - 8 to 0 mV/°C.
- Operating ambient temperature range: -20 to 55°C.
- Conversion efficiency should be more than 95%.
- Comprehensive display.
- Environmental Protection Index should be IP 54.

a. Protections:

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

b. Indicators

- Array on
- MPPT charger on
- Battery connected, charging
- Battery status
- Fault/ warnings

c. Display Parameters – optional

- Charging current
- Battery voltage
- Voltage of PV panels
- Energy Generation (kWh)- Today's and cumulative
- Fault / warning

6. MICROINVERTER:

The Microinverter should be provided to convert DC power by batteries, into AC power. The inverter should be off-Grid.

Typical technical features of the INVERTER shall be as follows:

Inverter with capacity & ratings as specified in the below should convert DC power into AC power. 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 Inverter will have the following features:

- Inverter efficiency should be more than 85%
- Output voltage 230 V, +/-3% with pure sine wave.
- Output frequency: 50 Hz, +/- 0.5 Hz
- Capacity of PCU is specified at minimum 0.8 lagging power factor
- Ambient temperature 50 degree Celsius (max.)
- MCB disconnect for Battery Input

- MCB disconnect for Load Output

6.2 Protections:

- Over voltage (automatic shutdown)
- Under voltage (automatic shutdown)
- Overload - Short circuit (circuit breaker & electronics protection against sustained fault)
- Over Temperature
- Battery reverse polarity

6.3 Indicators

- Battery connected, charging
- Inverter ON
- Load on battery
- Grid charger on
- Load on Grid
- Grid on
- Fault

6.4 Display Parameters

- Charging current
- Charging voltage
- Output voltage
- Grid voltage
- Inverter loading (kW) & Energy Generation (kWh)
- Output frequency
- Fault / fault code

6.5 Cooling: cooling mechanism required - Air Cooled/ passive

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.

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**
- The Electrode should not cut or combine to arrive at required length – 4 feet.

- Earth backfill compound - Graphite based (For normal soil conditions) and Bentonite based (For rocky soil conditions) should be used.
- Electrode should entirely be coated with minimum 2 inch with 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/markings 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°C to +85°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 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.

14. SYSTEM INSTALLATION 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
 - CR/CCU/PCU set-up
 - Combiner box
 - Earth pits

15. 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.

16. 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 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.

17. 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.

18. ANNUAL MAINTENANCE:

- AMC Cost for 1st year should be included in offer.
- 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 and applying petroleum jelly along with 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, sign boards sheets are present in the battery room
- Verifying the connectivity & condition of earth pits and ensure the resistance.
- Inspecting complete wiring (solar PV system with loads connected) as per bill of material.
- Verifying that additional or non solar loads (loads not considered to be connected to solar) as per the load details 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.
- Provide a list of spares along with competitive pricing on annual basis.

ANNEXURE 3: SELECTION OF COMPONENT

Component	Specifications	As per tender	System 1	System 2	System 3
Solar Module	Make/manufacturer				
	Type	Polycrystalline /Monocrystalline			
	Product Warranty	≥ 10 Years			
	Performance Warranty	≥ 25 Years			
	Number of cells				
	Each Panel Capacity (Wp)				
	Voc(V)				
	Isc (I)				
	Vmp(V)				
	Imp(I)				
	Module Efficiency	>16%			
	Total Power in Wp				
	Total Panel Quantity (Nos)				
	Total Panel Capacity (Wp)				
	No of Panels connected in series				
	No of Parallel Strings				
	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)			
Solar Battery	Make/Manufacturer				
	C rating				
	Type / Chemistry	Lead acid / Flooded/VRLA/ LifePO4			
	Plate technology	Tubular/ flat			
	Product Warranty - Replacement	5 Years/ 60 months			
	Battery Voltage	12V / 2V/12.8 V			
	Each Battery Capacity (Ah)				
	Total Battery Quantity (Nos)				
	Design capacity of battery in terms of KWh				
	No of batteries connected in series				
	No of Parallel Strings				
	Certifications (IEC Standards / NABL accredited labs / CPRI labs/ERDA/ BIS Standards)	IS 13369 : 1992 BIS 16270 : 2014 IS 1651			
Micro inverter	Make/manufacture				

	Product Warranty	5 years / 60 months			
	Total Harmonic Distortion (THD)	< 3%			
	Inverter Capacity (VA)				
	System Voltage (Battery Input voltage)	12V			
	Output voltage	230V - Pure sine wave			
	Output frequency	50 Hz, + / - 0.5Hz			
	Inverter self-consumption during no-load condition	< 2A			
	Power Factor	>0.8			
	Inverter Efficiency	>85%			
	Inverter Qty (Nos) per site	1			
	Ambient temperature	50 degrees Celsius (Max)			
	Cooling Mechanism	Passive/ 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			
Solar Charge Controller (CCU)	Make/manufacturer				
	Product Warranty	5 years / 60 months			

	Capacity (A)				
	System Voltage (Battery Input voltage)		12V	12.8V	12.8 V
	Type of charge controller (DC-DC converter)	MPPT/ PWM			
	Efficiency of charge controller (DC-DC converter)	>95%			
	Maximum input voltage range (Voc)				
	Qty (Nos) per site				
	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, 62509 BIS / NISE LAB, IS 16221			
Cables - Solar - PV1	Make				
	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	<i>Flexible cable</i>			
	Conductor	<i>Fine multi stranded wires, Tinned Copper Conductor</i>			
	Insulation Type	<i>Double Insulation</i>			
	Insulation Material	<i>Rubber with Flame-retardant, Oil-resistant</i>			
	Voltage Rating	<i>0.6 to 1.0 kV</i>			
	Operating Temperature range	<i>-40°C to +85°C</i>			

ANNEXURE 4 - 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 1 crore.	
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 the State of Karnataka.	

Signature of the bidder and address with seal

Date:

ANNEXURE 5 – 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 previous 2 financial years	YES/NO	
6	Copies of income tax returns filed in the previous 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 the state of Karnataka	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. 1 crore in the previous 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 in 45 days, 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 & CCU	YES/NO	

I abide by all the above terms & conditions.

SIGNATURE OF THE BIDDER and with office seal

PLACE:

DATE:

ANNEXURE 6- 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	10 Days	
2.	Supply ends	20 Days	
3	Installations begins	10 Days	
4.	Commissioning of all the system	30 days	

I abide by all the commitments accepted & conditions.

SIGNATURE OF THE BIDDER and with office seal

PLACE:

DATE:

ANNEXURE 7 - PRICE SCHEDULE

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

PRICE SCHEDULE FOR THE SUPPLY, INSTALLATION, COMMISSIONING & COMPREHENSIVE MAINTENANCE FOR 1 YEAR OF DC OFF-GRID SOLAR ENERGY SOLUTIONS ACROSS STATE OF KARNATAKA DURING THE YEAR 2023-2024.

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 for 1 year.
- d. Data Sheets/Brochures of PV Module, Battery & Inverters and charge controllers have to be submitted.
- e. Rates should include transportation, installation cost for supply of solution and any other cost in the region of operation of the Organizations.

Sl No	Design Type	System	Quantity	Price in Rs. for solar System	Total
1	Home lighting, powering Bed sore Mattress and TV	System 1	25		
2	DC Home Lighting – single Light	System 2	253		
3	DC Home Lighting – two Lights	System 3	71		
GST@_ _%					
TOTAL (with GST)					
Grand Total (Total of Solar System)					

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.....2024

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

Duly authorized to sign the Tender for and on behalf of _____