SELCO Foundation – Call for Vendors

The Supply, Installation and Commissioning & Comprehensive maintenance for 1 year of Solar Photovoltaic (SPV) On-grid Systems.

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

SELCO Foundation hereby invites bids for the Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) on-grid systems for 1 year – for 32 Health centres across the state of Puducherry, during the year 2026-2027

The detailed tender document can be downloaded from

https://selcofoundation.org/tender/

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

https://forms.gle/eRBmEnR6zbvJmXuJ8

or submitted at the above-mentioned address

by 5 pm on or before 25th November 2026.

Chief Executive Officer – SELCO Foundation

SELCO FOUNDATION

TENDER NOTIFICATION

FOR

SUPPLY, INSTALLATION AND COMMISSIONING & COMPREHENSIVE MAINTENANCE

OF

SOLAR PHOTOVOLTAIC (SPV) ON-GRID SYSTEMS FOR 1 YEAR –

FOR 32 HEALTH CENTRES ACROSS THE STATE OF PUDUCHERRY.

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: 12/2026-2027

This tender by SELCO Foundation is for selection of vendors (hereinafter "**Organisation**" or "**Organization**") for the work of Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) on-grid systems for 1 year – for 32 Health centres across the state of PUDUCHERRY during the year 2026-2027.

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 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 Centres 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 to 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

NOTICE INVITATION TENDER 5

INSTRUCTION TO ORGANIZATION 6

ANNEXURE 1: TECHNICAL SPECIFICATIONS OF SOLUTIONS 18

Primary Health Center (PHC) – Option -1a 6.3 kWp Single phase ongrid System 18

Primary Health Center (PHC) – Option -1b 6.3 kWp Three Phase ongrid System 21

Community Health Centres - 10 kWp Three Phase Ongrid System 24

ANNEXURE 2- TECHNICAL SPECIFICATIONS OF COMPONENTS 28

ANNEXURE 3: COUNT OF HEALTH CENTRES 43

ANNEXURE 4: SELECTION OF COMPONENT 44

Primary Health Center (PHC) – 6.3kWp Single Phase System 44

Primary Health Center (PHC) – 6.3kWp Three Phase System 46

Community Health Center (CHC) - 10 kWp System 49

ANNEXURE 5 - DETAILS OF THE ORGANIZATION 53

ANNEXURE 6 – CONFIRMATION ON ENCLOSURES 54

ANNEXURE 7- SCHEDULE OF INSTALLATION 55

ANNEXURE 8 - PRICE SCHEDULE 56

ANNEXURE 9: COST VARIANCE/EXTRA MATERIAL REQUEST 58

ANNEXURE 10: ESCALATION MATRIX 59

SINGLE LINE DIAGRAMS – 60

Primary Health Center (PHC) – Option -1 6.3 kWp Single Phase System 60

Primary Health Center (PHC) – Option -2 6.3 kWp Three Phase System 61

Community Health Center (PHC) - 10 kWp Three Phase System 62

CONDITIONS: 63

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

Tender: 12/2026-2027 Dated: 11/11/2026

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) on-grid systems for 1 year – for 32 Health centres across the state of PUDUCHERRY during the year 2026-2027.

1.	Tender Ref No.	12/2026-2027
2.	Last date & time for the bid submission	25-11-2026, 5:00 PM
3.	Opening date of technical bid –first cover	26-11-2026, 11:00 AM
4.	Opening date of financial bid – second cover	26-11-2026, 11:00 AM
5.	Venue of acceptance and opening of tenders.	SELCO Foundation, Bangalore
6.	Link for e-tender	https://forms.gle/eRBmEnR6zbvJmXuJ8

Interested and eligible Organizations may furnish the Technical & Commercial Bids for Supply, Installation and Commissioning & Comprehensive maintenance of Solar Photovoltaic (SPV) on-grid systems for 1 year – for 32 Health centres across the PUDUCHERRY state during the year 2026-2027.

Or;

https://forms.gle/eRBmEnR6zbvJmXuJ8

Furnish the same to the below-mentioned address:

Procurement Officer - Tender NO 12/2026-2027
#690 15th Cross J P Nagar 2nd Phase
Bangalore - 560078
Telephone: 080-26493145

Any further information or clarification may be obtained either in person or through phone during office hours from the office of the SELCO Foundation Ph: 080-26493145 or through the email – procurement@selcofoundation.org

sd/-
Chief Executive Officer
SELCO Foundation

INSTRUCTION TO ORGANIZATION

1. Schedule of Supply, installation and commissioning:

Organization 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.	Post Bidding Site Assessment	15 days
2.	Supply starts	25 days
3.	Completion of Installation and Commissioning of all the system	90 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 Organization shall complete the supply schedule as per "Annexure 7" enclosed in this Bidding Documents. If the organizations wish to visit the site, they may request the same to the Procurement Officer (Selco Foundation).

2. Eligibility to Organization:

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. Preference shall be given to the organization which has its own local office, service centre and technicians at all interventional districts in PUDUCHERRY State during and post installation for at least 1 year.
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. 2 Crore or more in the last financial year. In case of organizations not meeting this requirement of implementing projects worth of Rs 2 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 organization. The decision of SELCO Foundation in this regard will be final and binding on such a organization.
XI. The Organization shall submit Project Completion Reports for a minimum of three (3) successfully executed Solar On-grid Projects, preferably within the State of PUDUCHERRY, with contact details (name, designation, phone number and/or email) of the respective client/customer for verification purposes.
XII. The past performance of the Organization, as evidenced by the submitted project reports, shall be assessed during the technical evaluation process for shortlisting/selection of eligible Organizations.
XIII. The quote should include AMC (ANNUAL MAINTENANCE CONTRACT) for 1 year with a minimum of 2 scheduled maintenance visits every year starting from the date of completion of installation.

XIV. The AMC should be done with reference to the AMC calendar dates and the AMC reports shall be submitted to SELCO in the standard format.

XV. The AMC reports shall be submitted to the concerned POC at SELCO within 7 days of the completion of AMC. The report shall contain the sign and seal from the health centre where the AMC was conducted.

3. 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:

a. Confirmation on Components as per Annexure - 4
b. Particulars of the Firm as per Annexure - 5
c. Checklist of Documents to be submitted in First cover as per Annexure - 6
d. The Organizations has to submit an acceptance letter of guarantee for 5 years for the total performance of the Solar Energy Systems.
e. The organization should have a service centre facility in PUDUCHERRY State.
f. The Organizations have to sign all the pages of the documents as acceptance of all terms and conditions.

4. 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, site assessment cost, Packing, and forwarding charges including transportation, loading & unloading, installation of Solar system, RMS, Load wiring & commissioning and annual maintenance contract for 1 years. The quote shall also include the travel cost for assessing issues, repair and replacement (spare costs to be declared up-front), labour charges etc. to fix the issues, whenever reported.

5. 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 site assessment, supply and installation. SELCO Foundation will only accept the budget in the exact format outlined in Annexure 8.

6. 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.

7. Pre- Bid Meeting:

Organizations can conduct pre-assessment of the sites if required at their own cost to understand and analyse the BOM or any relevant queries pertaining to tender before submitting the quotation**.**

A pre-bid meeting can be requested through email at **procurement@selcofoundation.org**, containing the queries, following which a meeting will be conducted either online or physically at the SELCO office on 12/11/2026. The organizations should send a questionnaire prior to meeting and attend the Prebid meeting compulsorily when informed by SELCO (no queries shall be answered on calls).

8. 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.

9. 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/eRBmEnR6zbvJmXuJ8

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

Procurement Officer - Tender No 12/2026-2027
SELCO Foundation, #690, 15th Cross, 2nd Phase,
JP Nagar, Bengaluru- 560078.
Email id: procurement@selcofoundation.org

10. 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.

11. 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.

12. Clarification of Bids:

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

13. 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.

14. 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.

15. 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.
Organizations 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.

The Foundation reserves the right to revise the Bill of Materials (BoM), technical specifications, or scope of work at any stage to meet Government regulations or project requirements. Any changes will be issued through a

written Change Order by the Foundation, and the vendor shall implement the revised requirements within the agreed timeline.

16. Terms and Conditions of the Contract

i. **Duration**: The agreement will be valid from the date of signing the Contract and for a period 1 year (12 months) from the date of completion of the supply, installation, commissioning of Solar Photovoltaic (SPV) on-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 1 (One) year. The end date of this agreement will be Twelve (12) 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.

ii. **Post bidding assessment of the sites:** The selected Organization shall be provided with a letter of intent for the execution of the project, the details of the site will be made available to the organization. If the organization requires to conduct the site survey, they can proceed with the same and submit the report to SELCO foundation containing details of site assessment for any additional material required communicated in writing as per Annexure "9". The additional material requirements are limited to wires and MMS structure only, excluding any other materials. During assessment, the Organizations shall assess the site, feasibility of installation, BOQ (standard components + customized components) and. During the site assessment if any site is observed to be unfit (old construction, roof damage, no access to roof, under demolition, etc.) should be declared as dropout sites and it should be clearly communicated to Selco. Selco will review and provide approval for dropout/replacement of the sites.

iii. **Process for Approval – Drop Out Health Centre:** As an outcome of the assessment, if there are any sites found to be unfit for the installation of DRE, organization shall immediately communicate to Selco along with site survey form and seek request for replacement of sites. Selco will internally review the request and provide the replacement centre.

iv. **Prices:** Prices provided by the Organization, 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.

Selected organization should submit critical spare list with prices along with quotation as an annexure. Organization should consider availability in their warehouse a minimum stock of 10% inventory of critical spare, Selco will have surprise audit of this inventory.

v. **Payment Terms:** For the supply, installation, commissioning and comprehensive maintenance of Solar Photovoltaic (SPV) on-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 on submission of scheduled workplan and against submission of Invoice.
b. The 2nd tranche of payment will be 20% and will be paid against the supply of materials to 50% of the Health Centres or in local godown with evidence of delivery note certified by the Health Centre 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 Centres with evidence of delivery note certified by the Health Centre Authority/Foundation representative.
d. The 4th and final tranche of payment will be 30% and will be paid on receipt of centre wise Installation report duly signed and certified by Health centre authority and foundation

representative along with the photograph of installations mentioned in the installation report, invoices, delivery challan, AMC schedule and Submission of Bank guarantee.

e. The Organization shall furnish a bank guarantee valid for the term of this Agreement, i.e., 5 years for a total 5% of the project cost, 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 Organization will be paid only the net amount.
g. The Organization should submit the progress report to the Senior Program Manager- Energy for Health, SELCO Foundation who will approve the invoice for payments based on the project performance and stages of completion.
h. The Organization has to provide installation certificate for each location mentioning the date of commissioning make & serial no. of each material (Solar panels, PCU/Inverter etc.), and Photographs of the system installed before disbursal of the final instalment.
i. The organization shall disclose the details of the State office/service centre locations with SELCO Procurement team.
j. The organization shall maintain sufficient (10% of total systems supplied) spare parts (Shall include all possible spares that can go faulty) of critical components for a period of 5 years like, earthing cables and pipes, lighting arrestor, SPD, MCB, fuses, cables and lugs, SMPS board, IGBT, Mother board, inverter display board, static board, 4 modular board, inverter fan relay, AJB I/O connectors, etc locally within the interventional state to ease the service in a minimal downtime.

vi. Insurance:

a. Required insurance shall be arranged and maintained by the Organization till the products/components are delivered in full till the 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 organization ’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 Centre authority.
c. Accidental damage for supplied items or to delivery staff or installation staff is the responsibility of the organization and the organization will ensure required insurance coverage and damage to service staff in case of any accidents during this engagement with the Foundation.

vii. Termination Clause: 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 the defaulting Party. The Foundation may terminate this contract in the event of delay in supply/ installation of the products by the Organization beyond a period of 15 days without justifiable reason from the stipulated time stated in the WO or the Organization 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 Organization 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 Organization shall refund the entire amount paid by the Foundation. The Organization shall deliver all deeds, documents and paper in his possession relating to the business of the Foundation and further certify the same in writing.

viii. **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 organization must facilitate this process by fixing time informing Foundation in writing in advance and making organization representative available at the location. Besides, the Foundation is also entitled to do a preliminary inspection at the manufacturing site of the Organization by giving prior notice.

The Organization shall provide free access to the Foundation during normal working hours at Organization's or its sub-Organization'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, Organization 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 Organization liable for non-performance of contract.

ix. **Packing:** Organization 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.

x. **Assembly, Pre-installation survey, Installation, after sales service and training:**

a. The Organization 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 organization must carry out a pre installation survey at his own cost so that the organization will have a clear idea on logistics to reach materials, estimating the ease of material movements, pre installation preparations etc.

c. The organization 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 Organization shall be fully responsible for getting the materials for grouting/preparation for foundation wherever required, curing of the grouting before installing. Organization cannot hand over this part of the work to an unskilled labourer or person in charge at the Health centre.

e. Organization should provide training on basic maintenance of the solar system to the designated Health centre staff.

f. Organization should ensure necessary guidance to the staff to maintain ethical, professionalism during the complete project with Health Centre staff, Selco Staff and any stakeholders within the project. All commercials/monetary aspect should be discussed with only Procurement Team of Selco.

g. 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, distribution box, Inverter/PCU etc.

h. The Organization shall provide necessary "After Sales Service" at site for a period of 5 years. Organization must keep a log book at each site /to be maintained at each system location and the organization representative must record the service done/complaint recorded /resolution done /instructions if any.

i. Organization 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 complaints.

j. Complaints will be lodged using Incident Management System/SMS/WhatsApp messenger app/email or a phone call and the organization must provide the appropriate active contacts like phone number/email ID/WhatsApp number for lodging complaints. Organization shall respond to the complaint and assist SELCO team to close the issues reported within 5 to 10 working days after lodging the Complaints.

k. Active contact numbers will be displayed at the site prominently for registering any complaints on the performance of the product.

l. The organization shall depute a dedicated service team at the local level of the concerned state and district for the troubleshooting/repair/replacement/service assistance for a period of 5 years. A point of contact and the escalation matrix shall be notified to SELCO Foundation along with the tender document, any further changes to the POC or the escalation matrix shall be informed to SELCO within 24 hours of such change. Organization should share the Escalation matrix of their organization up to as per annexure "10".

m. The organization should have in-house capacity to execute the assignment that meets the project's requirements. At any given point of time, if there arises a need of subcontracting the work, Organization should communicate to Selco and get prior approval along with the details of sub-contractor team from Selco. Ensuring quality work from subcontractor will be the sole responsibility of the organization.

n. The Organization has to submit a plan of servicing to the Foundation before the release of final payment. The organization will arrange a minimum of two (2) visits per year to the site for scheduled maintenance (AMC) for a period of one (1) year and submit a written report to the Foundation on the servicing with a functioning status of each site every six months.

xi. Delivery terms:

a. Successful organization 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 Centre 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 organization in meeting the said deliverables, the Organization 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.

xii. Risk Purchase on Default: In case of default on the part of the Organization 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 Organization. Organization shall be liable to pay the cost of such purchase products and also the penalty under clause 8 above for resultant delay.

xiii. Delay due to force majeure: If any time during the continuance of the Agreement the performance of either party in whole or part of 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 (90) 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.

xiv. **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 Organization 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 Organization 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 Organization. The freight paid by the Foundation, if any, on the inward journey of the rejected material shall be reimbursed by the Organization to the Foundation before the rejected materials are removed by the Organization. The Organization 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.

xv. **Warranty:** The Organization 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 Organization by the virtue of acceptance of the WO by the organization. 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 Organization prior to such date within 60 months from the date of commissioning. The warrant will be according to manufacturer's warranty policies. The organization shall submit the original warranty cards containing the warranty clauses to the Health centre and a copy of the same along with installation report to SELCO Foundation against all the products installed (Inverter, panel).

xvi. **Performance Guarantee**: The Organization 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 Organization 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 Organization 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 Organization 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 10 working days from the date of receipt of the Complaint at the site.

xvii. **Saura-eMitra Platform and Organization Responsibilities**

- **Saura-eMitra Platform**
  The Saura-eMitra platform, developed by SELCO Foundation, shall be used for tracking installation data, managing annual maintenance activities, and monitoring issue reporting and resolution of Solar Systems across Health facilities. Organizations are required to actively use this platform for all related activities.
- **Installation and Quality Checks**
  - Organizations must ensure that all technicians and supervisors install and use the Field Assist Android App.
  - All installation asset data and reports must be submitted via the app.

- Quality checks will be conducted based on submitted data.
- Organizations are responsible for rectifying any issues identified by SELCO Foundation representatives after reviewing installation reports.

- **Annual Maintenance**
  - Organizations shall conduct annual maintenance and update all relevant data in the Field Assist App.
  - AMC reports will be centrally evaluated and approved by the designated team.
- **Issue Reporting and Resolution**
  - All issues related to DRE systems in Health facilities must be reported through the Saura-eMitra platform.
  - Organizations will be notified when an issue is assigned.
  - The Organization's Point of Contact (PoC) must access the platform, review assigned issues, and act within agreed Service Level Agreements (SLAs) or Escalation matrix as per Annexure 10:
  - HIGH priority: within 3 days
- MEDIUM priority: within 7 days
- LOW priority: within 10 days
  - Once resolved, the Organization PoC must update the issue status in the platform.
  - SLA breaches will result in penalties.
- **Out of Warranty Cases and Spare Parts**
  - For out-of-warranty cases, Organizations must resolve issues within 14 days of receiving a work order via the Saura-eMitra platform.
  - For spare part changes, Organizations must resolve issues within 7 days of updating the status as "Spare parts change."
  - Failure to meet timelines requires Organizations to update both SELCO Foundation and Health staff via the platform.
- **Organization Responsibilities**
  - Organizations must assign a dedicated PoC to manage the app and resolve issues.
  - The PoC must attend regular training sessions conducted by SELCO Foundation.
  - The PoC is responsible for updating issue statuses within timelines.
  - If the PoC is unresponsive or fails to update statuses, escalations will be sent to Organization leadership for corrective action.

xviii. Indemnity: The Organization shall at all times indemnify and hold the Foundation harmless against all claims which may be made in respect to 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 Organization of the same and the Organization 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 Organization 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 or misrepresentation of any of the terms or obligations under this Contract or any acts, errors, representations, fraudulent acts, misrepresentations, wilful misconduct or negligence of the Organization its employees, sub organizations and agents in performance of its obligations under this Contract.

xix. Child Labor: The Organization will ensure that, its parent entities, partners or subcontractors nor any of its subsidiary or affiliated entities (if any) is engaged in any practice inconsistent with the rights set forth in the Child Labour (Prohibition and Regulation) Act of 1986, which, inter alia, requires that a child shall be protected from performing any work that is likely to be hazardous or to interfere with the child's

education, or to be harmful to the child's Health or physical, mental, spiritual, moral, or social development

xx. **Forced Labor**: The Organization will not engage in any activity that will result in forced or compulsory labor stated under applicable laws including the Bonded Labour System (Abolition) Act, 1976,

xxi. **Abuse of Labor:** Organization will act in accordance with applicable laws and regulations in relation to labourers rights as stated in The Factories Act, 1948 and similar legislations.

xxii. **Working Hours, Overtime, Wages and Other Benefits**: Working hours, wages and benefits shall be provided by the Organization to its staff and employees in accordance with applicable laws including the Minimum Wages Act, 1948.

xxiii. **Declaration of blacklisting**: The Organization represents and warrants to SELCO that, as on the date of signing of this Purchase Order, it is neither blacklisted/ debarred nor it is under a declaration of ineligibility by Central / State or Semi-Government Organization/Department or Institutions and Public Sector Undertakings in India and abroad. The Organization further undertakes to duly inform SELCO in writing in the event it is blacklisted subsequent to execution of this Purchase Order.

xxiv. **Compliance with Anti-bribery Laws:** The Organization and each of its directors, officers, employees, agents or other (collectively referred to as "Organization") represent and warrant that it shall not either directly or on behalf of SELCO Foundation give, offer, promise to offer, or authorize the offer, directly or indirectly (proxy bribing), anything of value (such as money, shares, goods or service, gifts or entertainment) to government officials, government customers, potential government customers or foreign government officials including officials of any public international organizations or officials of any political party either in India or abroad ("Officials") with an Intent to influence any act or decision in his or her official capacity Induce the Official to do or omit to do any act in violation of his or her lawful duty to obtain any improper advantage, or Induce to use such Official 's influence improperly to affect or influence an act or decision.

The Organization shall not provide any offering, promising, giving or receive, solicit or accept a financial or other advantage, or any other thing of value, with the intention of influencing or rewarding the behaviour of a person in a position of trust to perform a public, commercial or legal function to obtain or retain a commercial advantage.

The Organization understands and acknowledges that any non- adherence to the warranty as stated herein above will be violation of the provisions of the Indian Prevention of Corruption Act,1988 and other applicable laws and legislations ("Anti-bribery Laws").

In addition, the Organization agrees to promptly report to SELCO Foundation of any incident of breach or potential breach of this section.

xxv. **Compliance with Sexual Harassment of Women (Prevention, Prohibition & Redressal) Act, 2013 (PoSH):** The Organization shall agree to adhere to the mandates prescribed under the Sexual Harassment of Women (Prevention, Prohibition & Redressal) Act, 2013, which requires all workplaces to have a Policy and Internal Committee to address complaints of sexual harassment that women may face at the workplace.

xxvi. **Other Clauses:**

a. The Parties will treat all information disclosed to it by the other Party 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. The Parties will not at any time, except under legal process, divulge any trade or business

secret relating to the other Party or any customer or agent of the other Party, which may become known by virtue of the position under the agreement.

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. Except as is otherwise expressly provided in writing in the agreement, the Foundation shall be entitled to all intellectual property and other proprietary rights including, but not limited to, patents, copyrights, and trademarks, with regard to products, processes, inventions, ideas, know-how, or documents and other materials which the Organization has developed for the Foundation under the agreement and which bear a direct relation to or are produced or prepared or collected in consequence of, or during the course of, the performance of the agreement. The Organization acknowledges and agrees that such products, documents and other materials constitute works made for hire by the Foundation.

d. Subject to the foregoing provisions, all documents, reports, recommendations, documents, and all other data compiled by or received by the Organization under the agreement shall be the property of the Foundation, shall be made available for use or inspection by the Foundation at reasonable times and in reasonable places, shall be treated as confidential, and shall be delivered only to the Foundation's authorized officials on completion of work under the agreement.

e. Both the Foundation and the Organization fully and freely intend to create an independent contractor 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 Organization has the right to control the manner and means employed in performing their activities under this Agreement. The Organization 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 provide suggestions and direct the Organization to use other methods or refrain from using certain methods when performing such activities.

f. 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.

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. Not with standing anything else to the contrary: -

   - Organization ’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 Organization 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 Organization.

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.

xxvii. 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

Primary Health Center (PHC) – Option -1a 6.3 kWp Single phase ongrid System

Bill of Material for Solar System

Sl. No.	Products	Capacity	Qty.
1	Solar Panel	Solar Photovoltaic modules of Minimum Capacity 630 Wp (TOPCON) N-Type [Number of Panels and configuration should match the Inverter Specification/Technical requirement] Panel Make and Model should be approved under MNRE ALMM List	10 Nos
2	Module Mounting Structure (MMS)	Solar PV Module support structure. **RCC Roof:** Very Low elevation/Landscape Orientation (Triangular MMS with concrete block with wind deflectors). Wind deflectors on the East, West and North Side of each panel should be incorporated. Additional Ballast and anchoring should be incorporated for additional stability **Material:** Hot Dip Galvanized (>= 80 Microns) **Inclined Tin Sheet Roof:** Mini rail of the following specifications are to be incorporated Anodized aluminium (15 Microns) L x H x W x T – 300mm x 100mm x 40mm x 3mm EPDM tapes with adhesion to be used for each mini rail. Self-drilling screws of 2 inches to be used for metal purlins and 3 inches to be used for wooden purlins. Or Triangular MMS (Landscape mode) with EPDM tapes for south orientation. It should withstand the wind speed of 200 – 250 km/hr. It should be suitable for above mentioned solar module -As per Sl.No. 1	1 Set
3	Solar Grid tie String Inverter** - 230 Vac, 50 Hz	**Mounting:** Wall Mount Total Minimum Capacity 6 kW – MPPT based, Single Phase Supply, With Data Port (RS 485)	1 No
4	Copper Cable Red + Black (Module – Module - AJB) - PV1-F (Tin Coated Solar Cables)	**6 sq.mm** **UV Protected Cable** (Tin-coated copper lugs with insulation to be used at each termination points).	40 m
5	Copper Cable Red +Black (AJB - Inverter) - (Tin Coated DC Cables)	**6 Sq.mm** (1 IN 1 OUT) Tin-coated copper lugs with insulation to be used at each termination points	10 m

6	Inverter to ACDB (Copper AC Cable – Red + Black)	**10 Sq.mm - 2 Core** (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	30 m
7	Earthing Cable (Panels + MMS)	**4 Sq.mm** Panel to Panel, Panel to MMS, MMS leg to Main Earthing Terminal (Copper Busbar) Grounding Lugs should be used. (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	25 m
8	Earthing Cable (AJB, ACDB, Inverter)	16 Sq.mm (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	45 m
9	Cable/Down conductor for Lightning Arrestor	From Lightning arrestor to ground level: Aluminium cable of 50 sq.mm should be used. (Aluminium lugs with insulation to be used at each termination points)	25 m
		From Ground to Earth pit: Insulated (Outdoor) GI Strip (80 - 120 microns) of size 25 x 3 mm should be used. GI strips are to be routed by using DMC saddle insulator. Interconnection of aluminium cable with GI strip will be done by using SS nut and bolt assembly (M6, 304 Grade)	4 m
10	Earthing Kit 1. LA 2. Panels + MMS + AJB 3. ACDB + Inverter	Chemical earthing powder (25 kg per pit). Solid steel electrode rod, Bonded copper – Minimum 16 mm diameter, 1000 mm long with 250 microns Bonding thickness, tin-coated copper lugs with insulation, SS clamps with SS nut-bolts assembly. protective FRP Chamber with lid should be made. Earthing pit size should be minimum of 6-inch diameter and 1.5-meters long and should be filled with back fill compound. SS flats to be used between GI strips and electrodes. 2 x Copper Busbar of 6-inch long, 5-hole, 3 mm thick Typology – Equipotential (Refer Annexure 2) **Interconnection Between Earth Pits:** Inter connection of AC and DC earthing pits are to be made using 16 Sq.mm.	3 Set
11	Lightning Protection System	Lightning arrestor Solid Aluminium Alloy of 15 mm diameter and 2000 mm long with base plate should be used. Bore clamp to be used to interconnect lightning arrestor and down conductor. **RCC Roof:** GI Elevation pole 40 mm diameter, 3000 mm height. Supporting wires of 4 Sq.mm (80 - 120 microns) to be incorporated for stability to withstand wind speed of 200 – 250 km/hr. Bull dog grip to be used to tighten the support wires. Ceramic insulation to be provided between lightning arrestor base plate and GI elevation pole.	1 Set

		1.75 metre distance to be maintained between panel edges and LA Baseplate of elevation pole should be provided with anchor fasteners and to be provided with civil work of size 1.25 x 1.25 x 1.25 feet by L x B x H **Inclined Sheet roof:** T-based clamp of following specifications to be used Structural material (GI): 80 - 120 microns. L – Angle geometry Profile L – Angle thickness – 3mm L- Angle LxB – 37x37mm Hexagonal Nut – M8x20mm Hexagonal bolt – M8x6mm Vertical pole - 1500 mm Support Wire 4 Sq.mm	
12	AC Distribution Box with Solar Meter	Relay Contractor with Grid Reference: 63 A, 230 Vac, Double Pole MCB Rating: 63 A, 230 Vac (Double Pole) SPD Rating: Uc - 275 Vac, Type 2, 40 kA (Double Pole with phase Indicators) Solar Meter: Approved under ESCOM (Class 0.5s as per relevant IS & IEC Standard) Tin-coated copper lugs with insulation to be used at each termination points	1 Set
13	Solar Array Junction Box with MCB and SPD and String Fuse	1 IN 1 OUT MCB Rating: 25 A, 800 Vdc (Double Pole) SPD Rating: Uc – 800 Vdc, Type 2, 40 kA (Double Pole with Indicators) Inline Fuse Rating: (+Ve Strings) - 25 A x 1 No. Inter connection of the components inside the AJB should be DC cable of 6 Sq. mm	1 Set
14	Net Meter	Single Phase Net Meter: Approved under ESCOM (Class 0.5s as per relavant IS & IEC Standard)	1 Set
15	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
16	Marking for DC earthing with Elevated Plaques (Panels + MMS + AJB)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
17	Marking for AC earthing with Elevated Plaques (ACDB + Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
18	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 4 ft x 2 ft	1 No
19	Do's and Don'ts Practices Poster	Foam Plaque - A4 Size for each	1 No

	(Solar Panels and Inverter)		
20	Signboard for Danger, No Fire and PASS	Danger - Electric shock - A4 Danger - High Voltage - A4 No Fire - A5 PASS - A4	1 No each
21	Fire Extinguisher	Multi-Purpose - ABC Dry powder extinguishing agents (or) CO2 type with 6 kg net weight of the charge inside the cylinder	1 No
22	Consumables	Includes: UPVC pipes and fittings, Conduits/ pipes/Flexible pipes, Screws, Nuts and Bolts etc..	1 Set

Primary Health Center (PHC) – Option -1b 6.3 kWp Three Phase ongrid System

Bill of Material for Solar System

Sl. No.	Products	Capacity	Qty.
1	Solar Module	Solar Photovoltaic modules of Minimum Capacity 630 Wp (TOPCON) N-Type [Number of Panels and configuration should match the Inverter Specification/Technical requirement] Panel Make and Model should be approved under MNRE ALMM List	10 Nos
2	Module Mounting Structure (MMS)	Solar PV Module support structure. **RCC Roof:** Very Low elevation/Landscape Orientation (Triangular MMS with concrete block with wind deflectors). Wind deflectors on the East, West and North Side of each panel should be incorporated. Additional Ballast and anchoring should be incorporated for additional stability **Material:** Hot Dip Galvanized (>= 80 Microns) **Inclined Tin Sheet Roof:** Mini rail of the following specifications are to be incorporated Anodized aluminium (15 Microns) L x H x W x T – 300mm x 100mm x 40mm x 3mm EPDM tapes with adhesion to be used for each mini rail. Self-drilling screws of 2 inches to be used for metal purlins and 3 inches to be used for wooden purlins. Or Triangular MMS (Landscape mode) with EPDM tapes for south orientation. It should withstand the wind speed of 200 – 250 km/hr. It should be suitable for above mentioned solar module -As per Sl.No. 1	1 Set

3	Solar Grid tie String Inverter** - 415 Vac, 50 Hz	**Mounting:** Wall Mount Total Minimum Capacity 6 kW – MPPT based, Three Phase Supply, With Data Port (RS 485)	1 No
4	Copper Cable Red + Black (Module – Module - AJB) - PV1-F (Tin Coated Solar Cables)	**6 sq.mm** **UV Protected Cable** (Tin-coated copper lugs with insulation to be used at each termination points).	40 m
5	Copper Cable Red +Black (AJB - Inverter) - (Tin Coated Solar Cables)	**6 Sq.mm** (1 IN 1 OUT) Tin-coated copper lugs with insulation to be used at each termination points	10 m
6	Inverter to ACDB (Copper AC Cable – Red + Yellow + Blue + Black)	**6 Sq.mm - 4 Core** (3P + 1N) (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	30 m
7	Earthing Cable (Panels + MMS)	**4 Sq.mm** Panel to Panel, Panel to MMS, MMS leg to Main Earthing Terminal (Copper Busbar) Grounding Lugs should be used. (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	25 m
8	Earthing Cable (AJB, ACDB, Inverter)	16 Sq.mm (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	45 m
9	Cable/Down conductor for Lightning Arrestor	From Lightning arrestor to ground level: Aluminium cable of 50 sq.mm should be used. (Aluminium lugs with insulation to be used at each termination points)	25 m
		From Ground to Earth pit: Insulated (Outdoor) GI Strip (80 - 120 microns) of size 25 x 3 mm should be used. GI strips are to be routed by using DMC saddle insulator. Interconnection of aluminium cable with GI strip will be done by using SS nut and bolt assembly (M6, 304 Grade)	4 m
10	Earthing Kit 1. LA 2. Panels + MMS + AJB 3. ACDB + Inverter	Chemical earthing powder (25 kg per pit). Solid steel electrode rod, Bonded copper – Minimum 16 mm diameter, 1000 mm long with 250 microns Bonding thickness, tin-coated copper lugs with insulation, SS clamps with SS nut-bolts assembly. protective FRP Chamber with lid should be made. Earthing pit size should be minimum of 6-inch diameter and 1.5-meters long and should be filled with back fill compound. SS flats to be used between GI strips and electrodes. 2 x Copper Busbar of 6-inch long, 5-hole, 3 mm thick Typology – Equipotential (Refer Annexure 2) **Interconnection Between Earth Pits:** Inter connection of AC and DC earthing pits are to be made using 16 Sq.mm.	3 Set

11	Lightning Protection System	Lightning arrestor Solid Aluminium Alloy of 15 mm diameter and 2000 mm long with base plate should be used. Bore clamp to be used to interconnect lightning arrestor and down conductor. **RCC Roof:** GI Elevation pole 40 mm diameter, 3000 mm height. Supporting wires of 4 Sq.mm (80 - 120 microns) to be incorporated for stability to withstand wind speed of 200 – 250 km/hr. Bull dog grip to be used to tighten the support wires. Ceramic insulation to be provided between lightning arrestor base plate and GI elevation pole. 1.75 metre distance to be maintained between panel edges and LA Baseplate of elevation pole should be provided with anchor fasteners and to be provided with civil work of size 1.25 x 1.25 x 1.25 feet by L x B x H **Inclined Sheet roof:** T-based clamp of following specifications to be used Structural material (GI): 80 - 120 microns. L – Angle geometry Profile L – Angle thickness – 3mm L- Angle LxB – 37x37mm Hexagonal Nut – M8x20mm Hexagonal bolt – M8x6mm Vertical pole - 1500 mm Support Wire 4 Sq.mm	1 Set
12	AC Distribution Box with Solar Meter	Relay Contractor with Grid Reference: 32 A, 415 Vac, Four Pole MCB Rating: 32 A, 415 Vac (Four Pole) SPD Rating: Uc - 275 Vac, Type 2, 40 kA (Four Pole with phase Indicators) RYB Phase Indicators Solar Meter: Approved under ESCOM (Class 0.5s as per relevant IS & IEC Standard) Tin-coated copper lugs with insulation to be used at each termination points	1 Set
13	Solar Array Junction Box with MCB and SPD and String Fuse	1 IN 1 OUT MCB Rating: 25 A, 800 Vdc (Double Pole) SPD Rating: Uc – 800 Vdc, Type 2, 40 kA (Double Pole with Indicators) Inline Fuse Rating: (+Ve Strings) - 25 A x 1 No. Inter connection of the components inside the AJB should be DC cable of 6 Sq. mm	1 Set
14	Net Meter	Three Phase Net Meter: Approved under ESCOM (Class 0.5s as per relavant IS & IEC Standard)	1 Set

15	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
16	Marking for DC earthing with Elevated Plaques (Panels + MMS + AJB)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
17	Marking for AC earthing with Elevated Plaques (ACDB + Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
18	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 4 ft x 2 ft	1 No
19	Do's and Don'ts Practices Poster (Solar Panels and Inverter)	Foam Plaque - A4 Size for each	1 No
20	Signboard for Danger, No Fire and PASS	Danger - Electric shock - A4 Danger - High Voltage - A4 No Fire - A5 PASS - A4	1 No each
21	Fire Extinguisher	Multi-Purpose - ABC Dry powder extinguishing agents (or) CO2 type with 6 kg net weight of the charge inside the cylinder	1 No
22	Consumables	Includes: UPVC pipes and fittings, Conduits/ pipes/Flexible pipes, Screws, Nuts and Bolts etc..	1 Set

Community Health Centres - 10 kWp Three Phase Ongrid System

Bill of Material for Solar System

Sl. No.	Products	Capacity	Qty.
1	Solar Module	Solar Photovoltaic modules of Minimum Capacity 630 Wp (TOPCON) N-Type [Number of Panels and configuration should match the Inverter Specification/Technical requirement] Panel Make and Model should be approved under MNRE ALMM List	16 Nos
2	Module Mounting Structure (MMS)	Solar PV Module support structure. **RCC Roof:** Very Low elevation/Landscape Orientation (Triangular MMS with concrete block with wind deflectors). Wind deflectors on the East, West and North Side of each panel should be incorporated. Additional Ballast and anchoring should be incorporated for additional stability **Material:** Hot Dip Galvanized (>= 80 Microns) **Inclined Tin Sheet Roof:**	1 Set

		Mini rail of the following specifications are to be incorporated Anodized aluminium (15 Microns) L x H x W x T – 300mm x 100mm x 40mm x 3mm EPDM tapes with adhesion to be used for each mini rail. Self-drilling screws of 2 inches to be used for metal purlins and 3 inches to be used for wooden purlins. Or Triangular MMS (Landscape mode) with EPDM tapes for south orientation. It should withstand the wind speed of 200 – 250 km/hr. It should be suitable for above mentioned solar module -As per Sl.No. 1	
3	Solar Grid tie String Inverter** - 415 Vac, 50 Hz	**Mounting:** Wall Mount Total Minimum Capacity 10 kW – MPPT based, Three Phase Supply, With Data Port (RS 485)	1 No
4	Copper Cable Red + Black (Module – Module - AJB) - PV1-F (Tin Coated Solar Cables)	**6 sq.mm** **UV Protected Cable** (Tin-coated copper lugs with insulation to be used at each termination points).	50 m
5	Copper Cable Red +Black (AJB - Inverter) - (Tin Coated Solar Cables)	**6 Sq.mm** (1 IN 1 OUT) Tin-coated copper lugs with insulation to be used at each termination points	10 m
6	Inverter to ACDB (Copper AC Cable – Red + Yellow + Blue + Black)	**10 Sq.mm - 4 Core** (3P + 1N) (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	30 m
7	Earthing Cable (Panels + MMS)	**4 Sq.mm** Panel to Panel, Panel to MMS, MMS leg to Main Earthing Terminal (Copper Busbar) Grounding Lugs should be used. (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	25 m
8	Earthing Cable (AJB, ACDB, Inverter)	16 Sq.mm (Tin-coated copper lugs with insulation to be used at the cable-earth electrode interface).	45 m
9	Cable/Down conductor for Lightning Arrestor	From Lightning arrestor to ground level: Aluminium cable of 50 sq.mm should be used. (Aluminium lugs with insulation to be used at each termination points)	25 m
		From Ground to Earth pit: Insulated (Outdoor) GI Strip (80 - 120 microns) of size 25 x 3 mm should be used. GI strips are to be routed by using DMC saddle insulator. Interconnection of aluminium cable with GI strip will be done by using SS nut and bolt assembly (M6, 304 Grade)	4 m
10	Earthing Kit 1. LA 2. Panels + MMS + AJB	Chemical earthing powder (25 kg per pit). Solid steel electrode rod, Bonded copper – Minimum 16 mm diameter, 1000 mm long with 250 microns Bonding thickness,	3 Set

	3. ACDB + Inverter	tin-coated copper lugs with insulation, SS clamps with SS nut-bolts assembly. protective FRP Chamber with lid should be made. Earthing pit size should be minimum of 6-inch diameter and 1.5-meters long and should be filled with back fill compound. SS flats to be used between GI strips and electrodes. 2 x Copper Busbar of 6-inch long, 5-hole, 3 mm thick Typology – Equipotential (Refer Annexure 2) **Interconnection Between Earth Pits:** Inter connection of AC and DC earthing pits are to be made using 16 Sq.mm.	
11	Lightning Protection System	Lightning arrestor Solid Aluminium Alloy of 15 mm diameter and 2000 mm long with base plate should be used. Bore clamp to be used to interconnect lightning arrestor and down conductor. **RCC Roof:** GI Elevation pole 40 mm diameter, 3000 mm height. Supporting wires of 4 Sq.mm (80 - 120 microns) to be incorporated for stability to withstand wind speed of 200 – 250 km/hr. Bull dog grip to be used to tighten the support wires. Ceramic insulation to be provided between lightning arrestor base plate and GI elevation pole. 1.75 metre distance to be maintained between panel edges and LA Baseplate of elevation pole should be provided with anchor fasteners and to be provided with civil work of size 1.25 x 1.25 x 1.25 feet by L x B x H **Inclined Sheet roof:** T-based clamp of following specifications to be used Structural material (GI): 80 - 120 microns. L – Angle geometry Profile L – Angle thickness – 3mm L- Angle LxB – 37x37mm Hexagonal Nut – M8x20mm Hexagonal bolt – M8x6mm Vertical pole - 1500 mm Support Wire 4 Sq.mm	1 Set
12	AC Distribution Box with Solar Meter	Relay Contractor with Grid Reference: 50 A, 415 Vac, Four Pole MCB Rating: 50 A, 415 Vac (Four Pole) SPD Rating: Uc - 275 Vac, Type 2, 40 kA (Four Pole with phase Indicators) RYB Phase Indicators Solar Meter: Approved under ESCOM (Class 0.5s as per relevant IS & IEC Standard) Tin-coated copper lugs with insulation to be used at each termination points	1 Set

13	Solar Array Junction Box with MCB and SPD and String Fuse	1 IN 1 OUT MCB Rating: 25 A, 1000 Vdc (Double Pole) SPD Rating: Uc – 1000 Vdc, Type 2, 40 kA (Double Pole with Indicators) Inline Fuse Rating: (+Ve Strings) - 25 A x 1 No. Inter connection of the components inside the AJB should be DC cable of 6 Sq. mm	1 Set
14	Net Meter*	Three Phase Net Meter: Approved under ESCOM (Class 0.5s as per relavant IS & IEC Standard)	1 Set
15	Marking of Lightning Arrester Earthing with Elevated Plaques	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
16	Marking for DC earthing with Elevated Plaques (Panels + MMS + AJB)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
17	Marking for AC earthing with Elevated Plaques (ACDB + Inverter)	Elevation pole length - 3 Feet. Metal plaque dimension - A5	1 No
18	Single Line Diagram (SLD) for the system	Sun board with 3 mm Thickness - 4 ft x 2 ft	1 No
19	Do's and Don'ts Practices Poster (Solar Panels and Inverter)	Foam Plaque - A4 Size for each	1 No
20	Signboard for Danger, No Fire and PASS	Danger - Electric shock - A4 Danger - High Voltage - A4 No Fire - A5 PASS - A4	1 No each
21	Fire Extinguisher	Multi-Purpose - ABC Dry powder extinguishing agents (or) CO2 type with 6 kg net weight of the charge inside the cylinder	1 No
22	Consumables	Includes: UPVC pipes and fittings, Conduits/ pipes/Flexible pipes, Screws, Nuts and Bolts etc..	1 Set

Note to Vendors — Metering and Net-Metering Requirements

1. The Applicant shall procure and install only tested and approved bi-directional (net) meters sourced from ESCOM-empanelled manufacturers/firms, through ESCOM-authorized vendor outlets. The meters shall comply with the applicable ESCOM technical specifications and regulatory requirements for recording both imported and exported energy at the grid-interconnection point.
2. The Bidder shall be responsible for obtaining all requisite net-metering approvals, NOCs, connectivity permissions, and inspection/commissioning clearances from the respective ESCOM/DISCOM. This includes coordination for meter testing, installation, sealing, grid synchronization, and commissioning of the solar PV system.
3. All costs associated with meter procurement, approvals, installation, testing, commissioning, documentation, and liaison with the concerned ESCOM shall be deemed included in the Bidder's quoted price. No additional cost variation or escalation shall be admissible on this account.

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 Organization.

1. SOLAR PV MODULE:

The PV modules used must qualify to the latest edition of the IEC PV module qualification test.

The total solar PV array capacity should not be less than the allocated capacity and should comprise TOPCON modules of minimum Wp mentioned in the bill of materials. Module capacity less than minimum Wp mentioned in the BoM / Purchase Order shall not be accepted.

PV modules must be tested and approved by one of the IEC authorized test centers. The module frame shall be made of corrosion-resistant materials, preferably anodized aluminum of 12 - 15 microns thickness.

NOTE:

Approval from SELCO Foundation should be sought before finalizing the choice of brand for SPV modules.

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 Twelve (12) years from the date of sale to the original customer

Defects and/or failures due to manufacturing.

Defects and/or failures due to quality of materials

Non-conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the 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 30-year period and not more than 8% after the first twelve 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 30 years

Should have temperature coefficient of power (Pmax) ≤ -0.35% /°C

Should be able to withstand downward force ≥ 5600 pascals

Should be able to withstand uplift force ≥ 2400 pascals

Should have tempered/toughened solar glass of > = 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)

The flash data of all modules to be supplied are required to be submitted at the time of supply and the sample IV curve of the rated watt class to be provided.
Each module used in the Project shall use a RFID tag bearing the following details: The RFID must be placed outside the lamination of the PV module.
Name of manufacturer, name of manufacturer of solar cells symbol of bidder;
Country of Origin (separately for cells and modules)
Unique model number
Unique Serial number
Month and Year of manufacture (separately for cells and module).
Date and Year of obtaining IEC PV module qualification certificate.
Name of Test Lab issuing IEC certificate.
Other relevant information on traceability of solar cells and module as per ISO 9000.
Polarity of terminals or leads (colour coding is permissible).
Maximum system voltage for which the module is suitable.
Date & place of manufacture.
I-V Curve for the module at standard test condition (1000W/sqm, AM1.5, 25 °C).
Wattage, Wp, Pmax, Imp, Vmp, Isc & FF for the module.
The accessibility to the list of module IDs along with the above parametric data for each module shall be provided.
The module's power mismatch of the modules connected to an Inverter should be less than 2%.
The module frame shall be made of corrosion resistant material, which shall be electrically compatible with the structural material used for mounting the modules. In case of metal frames for modules, it is required to have provision for earthing.
The module frame should have been made of Aluminium or corrosion resistant material, which shall be electrolytically compatible with the structural material used for mounting the modules with sufficient no. of grounding/installation.
The sampling test shall be carried out on random basis on the PV MODULE at accredited labs.
ALMM Specifications and amendments shall be complied

2. MODULE MOUNTING STRUCTURE (MMS):

For very low elevation & flat RCC surface mounting:
Landscape orientation to be incorporated.
Triangular MMS with concrete block with wind deflectors
Wind deflectors on the East, West and North Side of each panel should be incorporated.
Additional Ballast and anchoring should be incorporated for additional stability.
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 at the front side of the MMS and concrete block of L x W x H = 1.5 x 1.5 x 0.75 feet at the back side of the MMS respectively. 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.
For inclined sheet roofs/Tin roofs (General purpose mounting):
Mini rails to be incorporated
Anodized mini rails of 15 microns thickness.
Mini rail dimension should be of L x H x W x T – 300mm x 100mm x 40mm x 3mm
Mini rails can be fastened to the purlins using self-driven screws. (Pop riveting can be incorporated on PPGL sheets which are in good condition.)
EPDM strips to be used as sealant for waterproofing.

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 customization 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 panels.

General guidelines:

Each structure should have an angle of inclination as per the geographical location to receive maximum irradiation.

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.

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.

Organizations must follow the 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.

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 and output termination can be made through suitable cable glands.

Proper cable lugs (Fork, pin type) with insulation should be provided for the cables connected with the boxes.

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.

Should comply with the R.o.H.S. Directive 2002/95/EC

4. AC Distribution Box:

The AC distribution 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.

ACDB should have Line Indicators

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

5. Solar PCU/Inverter:

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 on-Grid.

- Inverter shall confirm to the following standards and appropriately certified by the labs:
  - **i.** Efficiency measurement: IEC 61683
  - **ii.** Environmental Testing: IEC 60068-2 or IEC 62093
  - **iii.** EMC, harmonics, etc.: IEC 61000 series, 6-2, 6-4 and other relevant Standards.
  - **iv.** Electrical safety: IEC 62109 (1&2), EN 50178 or equivalent
- Recommended practice for PV – Utility interconnections: IEEE standard 929 – 2000 or equivalent
  - **i.** Protection against islanding of grid: IEEE1547/ UL1741/ IEC 62116 ore equivalent.
  - **ii.** Grid Connectivity: Relevant CEIG/ CEA/ CERC regulation and grid code (Latest version)
  - **iii.** Reliability test standard: IEC 62093 or equivalent
- Inverter shall consist of an electronic Inverter along with associated control, protection and data logging devices.
- The rated power/name plate capacity of the Inverters shall be the AC output of the Inverter at 50°C. Any Inverters with AC output at 50°C, below the name plate/rated power of the Inverter shall not be allowed.
- The Inverter supplied shall be suitable for 60% additional DC input Capacity. (E.g. if Inverter is supplied with rated capacity of 5 kW (AC) shall accept at least 7.2 kW of DC power for fixed system).
- All Inverters should consist of associated control, protection and data logging devices and remote monitoring hardware and compatible with software used for string level monitoring.
- Dimension and weight of the Inverter shall be indicated by the Bidder in the offer.
- The minimum European efficiency of the Inverter shall be 98% load as per IEC 61683 standard for measuring efficiency. The conversion efficiency of different loads i.e. 25%, 50%, 75% and 100% shall be specified along with the overload capacity.
- The Inverter shall be tropicalized and design shall be compatible with conditions prevailing at site. Provision of exhaust fan with proper ducting for cooling of Inverter's should be incorporated in the Inverter's, keeping in mind the extreme climatic condition of the site as per the recommendations of OEM to achieve desired performance and life expectancy.

- The Inverters shall be of outdoor containerized central type or string inverters with protection to minimum of IP 55
- Nuts & bolts and the Inverter enclosure shall have to be adequately protected taking into consideration the atmosphere and weather prevailing in the area.
- Grid Connectivity: Relevant CERC regulations and grid code as amended and revised from time to time shall be complied. The system shall incorporate a uni-directional Inverter and should be designed to supply the AC power to the grid at load end. The inverter shall adjust the voltage & frequency levels to suit the Grid.
- All the phases shall be supervised with respect to rise/fall in programmable threshold values of frequency.
- The Inverter output shall always follow the grid in terms of voltage and frequency. This shall be achieved by sensing the grid voltage and phase and feeding this information to the feedback loop of the Inverter. Thus control variable then controls the output voltage and frequency of the Inverter, so that Inverter is always synchronized with the grid. The Inverter shall be self-commutated with MPPT technology. This should be capable of synchronize maximum within 1 Minute.

Operational Requirements for Inverter

- The Inverter must have the feature to work in tandem with other similar Inverter's and be able to be successively switched "ON" and "OFF" automatically based on solar radiation variations during the day
- The Inverter shall be capable of controlling power factor dynamically.
- Maximum power point tracker (MPPT) shall be integrated in the inverter to maximize energy drawn from the Solar PV array. The MPPT should be microprocessor based to minimize power losses. The details of working mechanism of MPPT shall be mentioned by the Bidder in its offer. The MPPT unit shall confirm to IEC 62093 for design qualification.
- The system shall automatically “wake up” in the morning and begin to export power provided there is sufficient solar energy and the grid voltage and frequency is in range.
- Sleep Mode: Automatic sleep mode shall be provided so that unnecessary losses are minimized at night. The inverter must also automatically re-enter standby mode when threshold of standby mode reached.
- Stand – By Mode: The control system shall continuously monitor the output of the solar power plant until pre-set value is exceeded & that value to be indicated.
  Basic System Operation (Full Auto Mode): The control system shall continuously monitor the output of the solar power plant until pre-set value is exceeded & that value to be indicated.
- Inverter shall have provisions/features to allow interfacing with monitoring software and hardware devices.
- Inverter should have Display in the front.
- Inverter should have master slave configuration

Protection against faults for inverter

- The inverter shall include appropriate self-protective and self-diagnostic feature to protect itself and the PV array from damage in the event of inverter component failure or from parameters beyond the inverter’s safe operating range due to internal or external causes. The self-protective features shall not allow signals from the inverter front panel to cause the inverter to be operated in a manner which may be unsafe or damaging.

- Faults due to malfunctioning within the inverter, including commutation failure, shall be cleared by the Inverter protective devices. In addition, it shall have following minimum protection against various possible faults.
- Grounding Leakage Faults: The inverter shall have the required protection arrangements against grounding leakage faults.
- Over Voltage & Current: In addition, over voltage protection shall be provided between positive and negative conductor and earth ground such as Surge Protection Devices (SPD).
- Inverter shall have arrangement for adjusting DC input current and should trip against sustainable fault downstream and shall not start till the fault is rectified.
- Galvanic Isolation shall be achieved through Inverter duty transformer.
- Each solid state electronic device shall have to be protected to ensure long life of the Inverter as well as smooth functioning of the Inverter.
- Anti-islanding (Protection against Islanding of grid): The inverter shall have anti islanding protection. (IEEE 1547/UL 1741/ equivalent BIS standard)
- Unequal Phases: The system shall tend to balance unequal phase voltage (with 3- phase systems).
- Reactive Power: The output power factor of the inverter should be of suitable range to supply or sink reactive power. The inverter shall have internal protection arrangement against any sustained fault in the feeder line and against lightning in the feeder line.
- Isolation: The inverter shall have provision for input & output isolation. Each solid- state electronic device shall have to be protected to ensure long life as well as smooth functioning of the inverter.
- All Inverters shall be three phase using static solid state components. DC lines shall have suitably rated isolators to allow safe start up and shut down of the system. Fuses & Circuit breakers used in the DC lines must be rated suitably.
- Inverter shall be of Central type to optimize the power output.
- Desired Technical Specifications of Inverter.
  i. Sinusoidal current modulation with excellent dynamic response.
  ii. Compact and weather proof housing (indoor/ outdoor)
  iii. Comprehensive network management functions (including the LVRT and capability to inject reactive power to the grid)
  iv. No load loss < 1% of rated power and maximum loss in sleep mode shall be less than 0.05%
  v. Optional VAR control
  vi. Unit wise & integrated Data logging
  vii. Dedicated Prefabs / Ethernet for networking
- Inverter must provide protection against:
  i. Over current
  ii. Sync loss
  iii. Over temperature
  iv. DC bus over voltage
  v. Cooling Fan failure (If provided)
  vi. Short circuit
  vii. Lightning
  viii. Earth fault
- Surge voltage induced at output due to external source
- Power regulation in the event of thermal overloading
- Set point pre-selection for VAR control
- Bus communication via -interface for integration
- Remote control via telephone modem or mini web server

- Integrated protection in the DC and three phase system
- Insulation monitoring of the PV array with sequential fault location
- Ground fault detector which is essential for large PV generators in view of appreciable discharge current with respect to ground.
- Over voltage protection against atmospheric lightning discharge to the PV array is required.
- The inverter must be entirely self-managing and stable in operation.
- A self-diagnostic system check should occur on start up. Functions should include a test of key parameters on start up.
- Inverter front panel shall be provided with display (LCD or equivalent) to monitor, but not limited to, the following:
  i. DC power input
  ii. DC input voltage
  iii. DC Current
  iv. AC power output
  v. AC voltage (all the 3 phases and line)
  vi. AC current (all the 3 phases and line)
  vii. Power Factor
  viii. Frequency
  ix. Display of sine wave with distortion, if any.
- PCU Shall confirm to IEC 61683 standard for efficiency measurements.
- PCU shall confirm to IEC 60068-2 standards for Environmental Testing.
- All inverters shall be IEC 61000 compliant for electromagnetic compatibility, harmonics, etc.
- All inverters shall be safety rated as per IEC 62109 (1 &2), EN 50178 or equivalent DIN or UL standard.
- Each PCU shall be compliant with IEEE standard 929 – 200 or equivalent. The Bidder should select the Central inverter as per its own system design so as to optimize the power output.

6. Protections:

The system should be provided with all necessary protections like earthing and lightning protection :-

6.1 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 G.I. pole. The height of the lightning arrester tip should be minimum 5 meters above the mounting surface. Insulation should be provided between the lightning arrestor and the elevation pole and the building structure. Down conductors should maintain 1.75 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 Aluminium Alloy).**

Minimum size of the lightning arrester should be 15 mm by diameter and 2000 mm by length.

The base plate should be 90 mm X 90 mm X 5 mm in dimension

RCC roof - GI Elevation pole 40 mm diameter and 3000 mm height.

Inclined Sheet roof - GI Elevation pole 40 mm diameter and 1500 mm height.

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 lightning arrestor setup should be provided with anchor fasteners along with civil work made at its base plate.
In case of metal sheet roof, the lightning arrester should be placed at the apex of the roof . **T-base clamps** should be made use of to install the lightning arrestor.
Supporting GI wires of 4 sq. mm (80 - 120 microns) should be used for additional stability of the lightning arrestor.
A concrete cube (Civil work) of 1.25 ft x 1.25 ft x 1.25 ft (L x B x H) dimensions should be set.
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 1.75 meters only (From the panel edges).
From Lightning arrestor to ground level: Aluminium cable of 50 sq.mm should be used. (Aluminium lugs with insulation to be used at each termination points)
From Ground to Earth pit: Insulated (Outdoor) GI Strip (80 - 120 microns) of size 25 x 3 mm should be used. GI strips are to be routed by using DMC saddle insulator. Interconnection of aluminium cable with GI strip will be done by using SS nut and bolt assembly (M6, 304 Grade)
Down conductor to be connected to earthing rod with steel clamps and testlinks.
NOTE:
Copper bonded and G.I rods are not allowed in the installation.
Approval from SELCO Foundation should be sought before finalizing the choice of brand for lightning arrestors.

6.2 EARTHING:
Code of practice for protective earthing and protection against electric shocks as per the IEC 62305 and latest 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 **Solid steel electrode rod copper-bonded electrode with 250 microns of bonding thickness**
The electrode should be minimum of 16 mm by diameter and 1000 mm by length, placing should be 500 mm from ground level.
Earth backfill compound - Clay based (High Moisture), Graphite based (For normal soil conditions) and Bentonite based (For rocky soil conditions) should be used.
Earth pit should should be filled with back fill compound.
Earth pit should be minimum 6-inch by diameter and 1500 mm by depth (As long as the electrode's length.)
Individual earthing for AC Loads should be provided for these components: Grid input protection box, Inverter/PCU, Changeover Switches, connected loads and Inverter rack. These all should be connected using MET (Main Earthing Terminal) / copper Busbar 6-inch long, 5-hole, 3 mm thick).
Individual earthing for DC Loads should be provided for these components: Panel + MMS, A.J.B, Switch disconnector. These all should be connected using MET (Main Earthing Terminal – Busbar) / copper Busbar 6-inch long, 5-hole, 3 mm thick)
Individual earthing for Lightning Arrester should be provided.

Interconnection of AC and DC earthing pits are to be made using earthing cable 16 sq.mm.
A 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.
Earthing pits should have a chamber set at the ground level and should be closed with a metallic lid/F.R.P lid and should have access for maintenance.
Cable lugs of 16 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.
Clamp materials should be that of stainless steel.
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.
SS clamps/flats to be used between GI strips and electrodes

NOTE:
G.I electrodes are not allowed in the installation.
Approval from SELCO Foundation should be sought before finalizing the choice of brand for earth electrodes.

7. CABLES (Over-ground cables):

7.1 GENERAL INDOOR/AC CABLES:

(Grid input to G.I.P.B -> Inverter -> Changeover switch -> Load distribution box) -> Changeover switch (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 300°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 > 30%.
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
Also, approval from SELCO Foundation should be sought before finalizing the choice of brand for AC cables.

7.2 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: 1.0 kV

The DC cables chosen for the project should have the following tests passed:

Flame resistant flammability test.

The sizing standards tests

RoHS & Reach compliant

Also, approval from SELCO Foundation should be sought before finalizing the choice of brand for DC cables.

7.3 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:

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 19 mm by diameter should be used. UPVC long-L-bends of 19 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.

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

8.1 Foam Plaques:

"DOs & DON'Ts" practices for panel and P.C.U handling/routine maintenance tips should be pasted at the PV System room
The size of the plaque should be of A4 size for each component i.e panel & 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 Organization 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 reach out.
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 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

8,2 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 Center
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

8.3 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.
The size of the SLD board should be as per the BOM specifications
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 inverter set-up, and depending upon the room condition the SLD board should be placed such that it gets maximum visibility
Note:
SELCO Foundation will provide the content for SLD.

8.4 Sign boards:

A caution sign board mentioning prohibition of smoking and open flames should be placed at the entrance of the Inverter/PCU room.

High voltage & Danger symbol to be depicted at the entrance of the room

Fire extinguisher operating procedure (PASS sequence) during emergency

8.5 Earth pits:

Earth pit should be given a labelling to identify.

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

9. FIRE EXTINGUISHERS:

The chosen fire extinguishers should be of the ABC Dry powder extinguishing agents or CO2 type with a minimum of (6 Kgs) 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:

Non conductive

Maximum visibility during discharge

No thermal (or) static shocks

NOTE:

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

10. 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

DCDB
P.C.U set-up
ACDB
Earth pits
Lightning arrester
Cable management (outdoor & indoor)
Foam plaques
Metal plaques
SLD
Earth pit sign boards

11. TOOLS & TACKLES AND SPARES:

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

12. SAFETY MEASURES:

The Organization 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.

13. 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 (luminaries 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 & curent capacity

A list of total numbers of items (Solar panels, 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.

14. 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

Inspecting inverter performance.

Verifying the control room has proper ventilation maintained.

Verifying the DOs & DON'TS plaques, SLD & load details sheets are present in the PV system 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.

QUALITY CERTIFICATION, STANDARDS AND TESTING FOR GRID- CONNECTED ROOFTOP SOLAR PV SYSTEMS/ POWER PLANTS

Quality certification and standards for grid-connected rooftop solar PV systems are essential for the successful mass-scale implementation of this technology. It is also imperative to put in place an efficient and rigorous monitoring mechanism, adherence to these standards. Hence, all components of grid-connected rooftop solar PV system/ plant must conform to the relevant standards and certifications given below:

Solar PV Modules/Panels	
IEC 61215 / IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules.
IEC 61701	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- Part 1 /IS16170: Part 1	Photovoltaic (PV) module performance testing and energy rating –: Irradiance and temperature performance measurements, and power rating
IEC 62716	Photovoltaic (PV) Modules - Ammonia (NH3) Corrosion Testing (As per the site condition like dairies, toilets)
IEC 61730-1,2	Photovoltaic (PV) Module Safety Qualification – Part 1: Requirements for Construction, Part 2: Requirements for Testing
IEC 62804	Photovoltaic (PV) modules - Test methods for the detection of potential-induced degradation. IEC TS 62804-1: Part 1: Crystalline silicon (mandatory for applications where the system voltage is > 600 VDC and advisory for installations where the system voltage is < 600 VDC)
IEC 62759-1	Photovoltaic (PV) modules – Transportation testing, Part 1: Transportation and shipping of module package units
Solar PV Grid connected Inverters (on grid)	
IEC 62109-1 IEC 62109-2	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power system. Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 for outdoor mounting, IP 54 for indoor mounting)
BS EN 50530 (as applicable)	Overall efficiency of grid-connected photovoltaic inverters: This European Standard provides a procedure for the measurement of the accuracy of the maximum power point tracking (MPPT) of inverters, which are used in grid-connected photovoltaic systems. In that case the inverter energizes a low voltage grid of stable AC voltage and constant frequency. Both the static and dynamic MPPT efficiency is considered
IEC/IS 61683(as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC62116/UL1741/ IEEE 1547 (as applicable)	Utility-interconnected Photovoltaic Inverters - Test Procedure of Islanding Prevention Measures

IEC 60255-27	Measuring relays and protection equipment – Part 27: Product safety requirements
IEC 60068- 2/IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters
IEC 61000 series, 6-2, 6-4 and other relevant standards	EMC, Harmonics etc...
Fuses	
IS/IEC 60947(Part 1, 2 & 3), EN50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): Low-voltage Switchgear and Control-gear, Part 1: General rules Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors, switch-disconnectors and fuse-combination units EN 50521: Connectors for photovoltaic systems – Safety requirements and tests
IEC 60269-6	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems.
Surge Arrestors	
IEC 62305-4 / BFC 17 - 102: 2011	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD)	Electrical installations of buildings - Part 5 53: Selection and erection of electrical equipment - Isolation, switching and control
IEC 61643- 11: 2011	Low-voltage surge protective devices Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
Cables	
IEC 60227 /IS694, IEC 60502 /IS1554 (Part 1 & 2) / IEC 69947 (as applicable)	General test and measuring method for PVC (Polyvinyl chloride) insulated cables (for working voltages up to and including 1100 V, and UV resistant for outdoor installation)
BS EN 50618	Electric cables for photovoltaic systems (BT(DE/NOT)258), mainly for DC Cables
Earthing /Lightning	
IEC 62561 Series	IEC 62561-1
(Chemical earthing) (as applicable)	Lightning protection system components (LPSC) Part 1: Requirements for connection components IEC 62561-2 Lightning protection system components (LPSC) - Part 2: Requirements for conductors and earth electrodes IEC 62561-7 Lightning protection system components (LPSC) -Part 7: Requirements for earthing enhancing compounds
NFC 17-102 / IEC 62305-2	Early Stream Emission Air Terminal Technology
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall beof the thermo-plastic type with IP 65 protection for outdoor use, and IP 54 protection for indoor use.
Solar PV Roof Mounting Structure	
IS 2062/ IS 4759	Material for the structure mounting

ANNEXURE 3: COUNT OF HEALTH CENTRES

Indicative count of Health Centres 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 Centres across PUDUCHERRY state.

Puducherry	No	Single Phase	Three Phase
Total PHCs	29	23	6
Total CHCs	3	0	3

Sl.No	District	Block	Health Centre(HC) Name	Design Options
1	Puducherry	Puducherry	Karikalampakkam	CHC - 10 kWp - Three Phase
2	Puducherry	Puducherry	Bahour	PHC - Option 1b - 6.3 kWp Three Phase
3	Puducherry	Puducherry	Maducarai	PHC - Option 1b - 6.3 kWp Three Phase
4	Puducherry	Puducherry	Nettapakkam	PHC - Option 1b - 6.3 kWp Three Phase
5	Puducherry	Puducherry	Sooramangalam	PHC - Option 1b - 6.3 kWp Three Phase
6	Puducherry	Puducherry	Sorapet	PHC - Option 1b - 6.3 kWp Three Phase
7	Puducherry	Puducherry	Kalapet	PHC - Option 1b - 6.3 kWp Three Phase
8	Puducherry	Puducherry	Mettupalayam	PHC - Option 1b - 6.3 kWp Three Phase
9	Puducherry	Puducherry	Abishekapakkam	PHC - Option 1b - 6.3 kWp Three Phase
10	Puducherry	Puducherry	Thavalakuppam	PHC - Option 1b - 6.3 kWp Three Phase
11	Puducherry	Puducherry	Kosapalayam	PHC - Option 1b - 6.3 kWp Three Phase
12	Puducherry	Puducherry	Kurusukuppam	PHC - Option 1b - 6.3 kWp Three Phase
13	Puducherry	Puducherry	Mudaliyarpet	PHC - Option 1b - 6.3 kWp Three Phase
14	Puducherry	Puducherry	Katterikuppam	PHC - Option 1b - 6.3 kWp Three Phase
15	Puducherry	Puducherry	Ramanathapuram JIRHC	PHC - Option 1b - 6.3 kWp Three Phase
16	Puducherry	Puducherry	Thirubuvanai	PHC - Option 1b - 6.3 kWp Three Phase
17	Puducherry	Puducherry	Thirukanour	PHC - Option 1b - 6.3 kWp Three Phase
18	Karaikal	Karaikal	Kottucherry	PHC - Option 1b - 6.3 kWp Three Phase
19	Karaikal	Karaikal	Vizihidiyur	PHC - Option 1b - 6.3 kWp Three Phase
20	Karaikal	Karaikal	Karaikalmedu	PHC - Option 1b - 6.3 kWp Three Phase
21	Karaikal	Karaikal	Kovilpathu	PHC - Option 1a - 6.3 kWp Single Phase
22	Karaikal	Karaikal	UPHC THIRUNAGAR	PHC - Option 1a - 6.3 kWp Single Phase
23	Karaikal	Karaikal	Ambagarathur	PHC - Option 1b - 6.3 kWp Three Phase
24	Karaikal	Karaikal	Nallambal	PHC - Option 1a - 6.3 kWp Single Phase
25	Karaikal	Karaikal	Nallathur	PHC - Option 1a - 6.3 kWp Single Phase
26	Karaikal	Karaikal	Nedungadu	PHC - Option 1b - 6.3 kWp Three Phase
27	Karaikal	Karaikal	Thirunallar	CHC - 10 kWp - Three Phase
28	Karaikal	Karaikal	Varichikudi	PHC - Option 1b - 6.3 kWp Three Phase
29	Karaikal	Karaikal	TRPattinam	PHC - Option 1b - 6.3 kWp Three Phase
30	Karaikal	Karaikal	Neravy	PHC - Option 1a - 6.3 kWp Single Phase
31	Mahe	Mahe	Palloor	CHC - 10 kWp - Three Phase
32	Yanam	Yanam	GIRIYAMPETA UPHC	PHC - Option 1a - 6.3 kWp Single Phase

ANNEXURE 4: SELECTION OF COMPONENT

Primary Health Center (PHC) – 6.3kWp Single Phase System

Technical Specifications			
Component	Specifications	As per BoM	Responses
Solar Module – Domestic (DCR) Panels- approved under MNRE ALMM LIST I and MNRE ALMM LIST II	Make/manufacturer		
	Type	TOPCON (N Type)	
	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	
	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	10	
	Total Panel Capacity (Wp)	6300	
	No of Panels connected in series		
	No of Parallel Strings		
Solar Module- NON-Domestic (NON DCR) Panels- approved under MNRE ALMM LIST I	Make/manufacturer		
	Type	TOPCON (N Type)	
	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	
	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	10	
	Total Panel Capacity (Wp)	6300	
	No of Panels connected in series		
	No of Parallel Strings		
PCU/Inverter	Make/manufacturer		
	Mounting	Wall Mount	
	Product Warranty	5 Years	
	Inverter Capacity (kW)	6	
	Output voltage	230	
	Output frequency	50 Hz	
	Compatible with Alternators / Generators		
	Type of charge controller (DC-DC converter)	MPPT	

	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	R5485/MODBUS/CAN	
	No Load loss when Inverter is ON condition	< 1%	
	Power Factor	0.8	
	Total Harmonic Distortion (THD)		
	Inverter Efficiency at load	>= 98%	
	Cooling Mechanism (Active / Forced)		
	Operating humidity		
	Over voltage protection	Yes	
	Under voltage protection	Yes	
	Overload protection	Yes	
	Over Temperature protection	Yes	
	Panel reverse polarity protection	Yes	
DC Cables - Solar - PV1-F	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
DC Cables - AJB - Inverter	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
AC Cables	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables - Earthing	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables/Down Conductor for Lightning Arrestor	Make		
	Type		
	Size	50 Sq.mm	
	Conductor Material	Aluminium	
	Insulation Material	PVC insulated	
	Voltage Rating		
	Operating Temperature range		

Cables/Down Conductor for Lightning Arrestor	Material	Galvanized Iron	
	Type	Insulated (Outdoor)	
	Size	25 x 3 mm	
Earthing Electrode	Make		
	Type	Solid Steel Electrode Rod - Copper Bonded Electrode	
	Bonding Thickness	250 microns	
	Diameter	16 mm	
	Length	1000 mm	
	Backfill compound (Clay / Graphite / Bentonite)		
	Backfill Compound Qty per Pit	25 Kg	
Lightning Arrestor	Make		
	Type	Solid Aluminium Alloy	
	Diamater	15 mm	
	Length	2000 mm	
	Elevation Pole Diameter	40 mm	
	Elevation Pole Height		
	Supporting Wires for pole	Yes	
AC Distribution Box	Double Pole relay contactor Make		
	Double Pole relay contactor Rating	63 A, 230 Vac	
	Double Pole MCB Make		
	Double Pole MCB Rating	63 A, 230 Vac	
	Double Pole SPD Make		
	Double Pole SPD Rating with Indicators	275 Vac, Type 2, 40 kA	
Array Junction Box	String Configuration	1 In 1 Out	
	Inline Fuse Make		
	Inline Fuse with bracket: Rating (+ve side)	25 A	
	No of Fuse	1	
	Double Pole MCB Make		
	Double Pole MCB Rating	25 A, 800 Vdc	
	Double Pole SPD Make		
	Double Pole SPD Rating with Indicators	Uc -800 Vdc, Type 2, 40 KA	
Net Meter	Make		
	Rating		
	Class		
Fire Extinguisher	Make		
	Extinguishing Medium	ABC Dry powder	
	Net Weight of Charge	6 kg	
	Total Capacity		

Primary Health Center (PHC) – 6.3kWp Three Phase System

Technical Specifications			
Component	Specifications	As per BoM	Responses
Solar Module – Domestic (DCR) Panels- approved	Make/manufacturer		
	Type	TOPCON (N Type)	

under MNRE ALMM LIST I and MNRE ALMM LIST II	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	
	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	10	
	Total Panel Capacity (Wp)	6300	
	No of Panels connected in series		
	No of Parallel Strings		
Solar Module- NON-Domestic (NON DCR) Panels- approved under MNRE ALMM LIST I	Make/manufacturer		
	Type	TOPCON (N Type)	
	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	
	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	10	
	Total Panel Capacity (Wp)	6300	
	No of Panels connected in series		
	No of Parallel Strings		
PCU	Make/manufacturer		
	Mounting	Wall Mount	
	Product Warranty	5 Years	
	Inverter Capacity (kW)	6	
	Output voltage	415	
	Output frequency	50 Hz	
	Compatible with Alternators / Generators		
	Type of charge controller (DC-DC converter)	MPPT	
	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	R5485/MODBUS/CAN	
	No Load loss when Inverter is ON condition	< 1%	

	Power Factor	0.8	
	Total Harmonic Distortion (THD)		
	Inverter Efficiency at load	>= 98%	
	Cooling Mechanism (Active / Forced)		
	Operating humidity		
	Over voltage protection	Yes	
	Under voltage protection	Yes	
	Overload protection	Yes	
	Over Temperature protection	Yes	
	Panel reverse polarity protection	Yes	
DC Cables - Solar - PV1-F	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
DC Cables - AJB - Inverter	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
AC Cables	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables - Earthing	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables/Down Conductor for Lightning Arrestor	Make		
	Type		
	Size	50 Sq.mm	
	Conductor Material	Aluminium	
	Insulation Material	PVC insulated	
	Voltage Rating		
	Operating Temperature range		
Cables/Down Conductor for Lightning Arrestor	Material	Galvanized Iron	
	Type	Insulated (Outdoor)	
	Size	25 x 3 mm	
Earthing Electrode	Make		
	Type	Solid Steel Electrode Rod - Copper Bonded Electrode	
	Bonding Thickness	250 microns	
	Diameter	16 mm	
	Length	1000 mm	

	Backfill compound (Clay / Graphite / Bentonite)		
	Backfill Compound Qty per Pit	25 Kg	
Lightning Arrestor	Make		
	Type	Solid Aluminium Alloy	
	Diamater	15 mm	
	Length	2000 mm	
	Elevation Pole Diameter	40 mm	
	Elevation Pole Height		
	Supporting Wires for pole	Yes	
AC Distribution Box	Four Pole relay contactor Make		
	Four Pole relay contactor Rating	32 A, 415 Vac	
	Four Pole MCB Make		
	Four Pole MCB Rating	32 A, 415 Vac	
	Four Pole SPD Make		
	Four Pole SPD Rating with Indicators	275 Vac, Type 2, 40 kA	
Array Junction Box	String Configuration	1 In 1 Out	
	Inline Fuse Make		
	Inline Fuse with bracket: Rating (+ve side)	25 A	
	No of Fuse	1	
	Double Pole MCB Make		
	Double Pole MCB Rating	25 A, 800 Vdc	
	Double Pole SPD Make		
	Double Pole SPD Rating with Indicators	Uc -800 Vdc, Type 2, 40 KA	
Net Meter	Make		
	Rating		
	Class		
Fire Extinguisher	Make		
	Extinguishing Medium	ABC Dry powder	
	Net Weight of Charge	6 kg	
	Total Capacity		

Community Health Center (CHC) - 10 kWp System

Technical Specifications			
Component	Specifications	As per BoM	Responses
Solar Module – Domestic (DCR) Panels-approved under MNRE ALMM LIST I and MNRE ALMM LIST II	Make/manufacturer		
	Type	TOPCON (N Type)	
	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	

	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	16	
	Total Panel Capacity (Wp)	10080	
	No of Panels connected in series		
	No of Parallel Strings		
Solar Module- NON-Domestic (NON DCR) Panels- approved under MNRE ALMM LIST I	Make/manufacturer		
	Type	TOPCON (N Type)	
	Product Warranty	>= 12 Years	
	Performance Warranty	>= 30 Years	
	Power tolerance		
	Number of cells		
	Power in Wp		
	Voc(V)		
	Isc (I)		
	Vmp(V)		
	Imp(I)		
	Module Efficiency	> 20%	
	Each Panel Capacity (Wp)	630	
	Total Panel Quantity (Nos)	16	
	Total Panel Capacity (Wp)	10080	
	No of Panels connected in series		
	No of Parallel Strings		
PCU	Make/manufacturer		
	Mounting	Wall Mount	
	Product Warranty	5 Years	
	Inverter Capacity (kW)	6	
	Output voltage	415	
	Output frequency	50 Hz	
	Compatible with Alternators / Generators		
	Type of charge controller (DC-DC converter)	MPPT	
	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	R5485/MODBUS/CAN	
	No Load loss when Inverter is ON condition	< 1%	
	Power Factor	0.8	
	Total Harmonic Distortion (THD)		
	Inverter Efficiency at load	>= 98%	
	Cooling Mechanism (Active / Forced)		
	Operating humidity		
	Over voltage protection	Yes	
	Under voltage protection	Yes	
	Overload protection	Yes	

	Over Temperature protection	Yes	
	Panel reverse polarity protection	Yes	
DC Cables - Solar - PV1-F	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
DC Cables - AJB - Inverter	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1500	
	Operating Temperature range		
AC Cables	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC Insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables - Earthing	Make		
	Type		
	Conductor Material	Copper	
	Insulation Material	PVC insulated	
	Voltage Rating	1000	
	Operating Temperature range		
Cables/Down Conductor for Lightning Arrestor	Make		
	Type		
	Size	50 Sq.mm	
	Conductor Material	Aluminium	
	Insulation Material	PVC insulated	
	Voltage Rating		
	Operating Temperature range		
Cables/Down Conductor for Lightning Arrestor	Material	Galvanized Iron	
	Type	Insulated (Outdoor)	
	Size	25 x 3 mm	
Earthing Electrode	Make		
	Type	Solid Steel Electrode Rod - Copper Bonded Electrode	
	Bonding Thickness	250 microns	
	Diameter	16 mm	
	Length	1000 mm	
	Backfill compound (Clay / Graphite / Bentonite)		
	Backfill Compound Qty per Pit	25 Kg	
Lightning Arrestor	Make		
	Type	Solid Aluminium Alloy	
	Diamater	15 mm	
	Length	2000 mm	
	Elevation Pole Diameter	40 mm	
	Elevation Pole Height		
	Supporting Wires for pole	Yes	

AC Distribution Box	Four Pole relay contactor Make		
	Four Pole relay contactor Rating	50 A, 415 Vac	
	Four Pole MCB Make		
	Four Pole MCB Rating	50 A, 415 Vac	
	Four Pole SPD Make		
	Four Pole SPD Rating with Indicators	275 Vac, Type 2, 40 kA	
Array Junction Box	String Configuration	1 In 1 Out	
	Inline Fuse Make		
	Inline Fuse with bracket: Rating (+ve side)	25 A	
	No of Fuse	1	
	Double Pole MCB Make		
	Double Pole MCB Rating	25 A, 1000 Vdc	
	Double Pole SPD Make		
	Double Pole SPD Rating with Indicators	Uc -1000 Vdc, Type 2, 40 KA	
Net Meter	Make		
	Rating		
	Class		
Fire Extinguisher	Make		
	Extinguishing Medium	ABC Dry powder	
	Net Weight of Charge	6 kg	
	Total Capacity		

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 Organization (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 2 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	Organizations Bank details	
12	Evidence of existence (GST Registration) of local office in in the State of PUDUCHERRY.	

Signature of the organization 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 the state of PUDUCHERRY	YES/NO	
10	Letter of declaration to confirm that the organization has not been black listed by any entity or institution	YES/NO	
11	Documents to prove business of Rs. 2 Crores in the last financial year	YES/NO	
12	Project Report on 3 successful Solar on-grid Projects in PUDUCHERRY state with contact details of customer	YES/NO	
13	Implementation plan to complete Installation by 28th February' 2027, this should include Team Structure & Team Size (no's) and installation schedule.	YES/NO	
14	Organizations bank details	YES/NO	
15	Service Level /Escalation Matrix	YES/NO	
16	Signed, sealed copies of Annexure 1, 2, 3, 4, 5 and 6	YES/NO	
17	Self-Declaration as per Annexure 4 for the components that will be used for the project	YES/NO	
18	Data Sheets/Brochures of PV Module & Inverters/PCU	YES/NO	

I abide by all the above terms & conditions.

SIGNATURE OF THE ORGANIZATION AND WITH OFFICE SEAL
DATE & PLACE:

ANNEXURE 7- SCHEDULE OF INSTALLATION

Regarding Supply, installation and commissioning

Sl. No.	Scheduled activity	Within days (no. of days)	Accepted Schedule by date
1.	Post Bidding Site Assessment	15 days	
2.	Supply starts	25 days	
3.	Completion of Installation and Commissioning of all the system	90 days	

I abide by all the commitments accepted & conditions.

SIGNATURE OF THE ORGANIZATION 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 AND COMMISSIONING & COMPREHENSIVE MAINTENANCE OF SOLAR PHOTOVOLTAIC (SPV) ON-GRID SYSTEMS FOR 1 YEAR – FOR 32 HEALTH CENTRES ACROSS THE STATE OF PUDUCHERRY DURING THE YEAR 2026-2027.

Rates quoted by the organization:

a. The rates should be mentioned item wise clearly in 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 & 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**.**

OPTION 1: WITH Domestic (DCR) Panels- approved under MNRE ALMM LIST I and MNRE ALMM LIST II

	Table 1: Cost of Solar BoM							
Sl No	**Solar Design**	**Phase**	**No. of System**	**Solar System**			**Total Price Per System**	**GRAND TOTAL**
				Unit/system Price in Rs. For solar system + services (installation, Transport, AMC)	**GST @5% (on 70% of Solar System + Installation+ Transportation +AMC)**	**GST @18% (on 30% of Solar System + Installation+ Transportation +AMC)**		
1	*Primary Health Center – 6.3 kWp*	*Single Phase*	6					
2	*Primary Health Center – 6.3 kWp*	*Three Phase*	23					
3	*Community Health Center- 10 kWp*	*Three Phase*	3					
							GRAND TOTAL	

In words: Rupees_____.

OPTION 2: WITH NON-Domestic (NON-DCR) Panels- approved under MNRE ALMM LIST I

	Table 1: Cost of Solar BoM							
Sl No	Solar Design	Phase	No. of System	Solar System			Total Price Per System	GRAND TOTAL
				Unit/system Price in Rs. For solar system + services (installation, Transport, AMC)	GST @5% (on 70% of Solar System + Installation+ Transportation +AMC)	GST @18% (on 30% of Solar System + Installation+ Transportation +AMC)		
1	*Primary Health Center – 6.3 kWp*	*Single Phase*	6					
2	*Primary Health Center – 6.3 kWp*	*Three Phase*	23					
3	*Community Health Center- 10 kWp*	*Three Phase*	3					
							GRAND TOTAL	

In words: Rupees_____.

ANNEXURE 9: COST VARIANCE/EXTRA MATERIAL REQUEST

Sl No	Name of the Health Centre	Plant Capacity	6 Sq.mm DC solar Cable Red & black					10 Sq.mm DC solar Cable Red & black				
			QTY as per BOM	QTY as per actual/Site Assessment	Difference in QTY	Cost per meter in Rs	Price Variance In Rs	QTY as per BOM	QTY as per actual/Site Assessment	Difference in QTY	Cost per meter in Rs	Price Variance In Rs
1	Site 1	6.3kWp										
2	Site 2	6.3kWp										
3	Site 3	6.3kWp										
4	Site 4	6.3kWp										
5	Site 5	6.3kWp										
6	Site 6	6.3kWp										
7	Site 7	6.3kWp										
8	Site 8	10kWp										
9	Site 9	10kWp										
10	Site 10	10kWp										
	Sum											

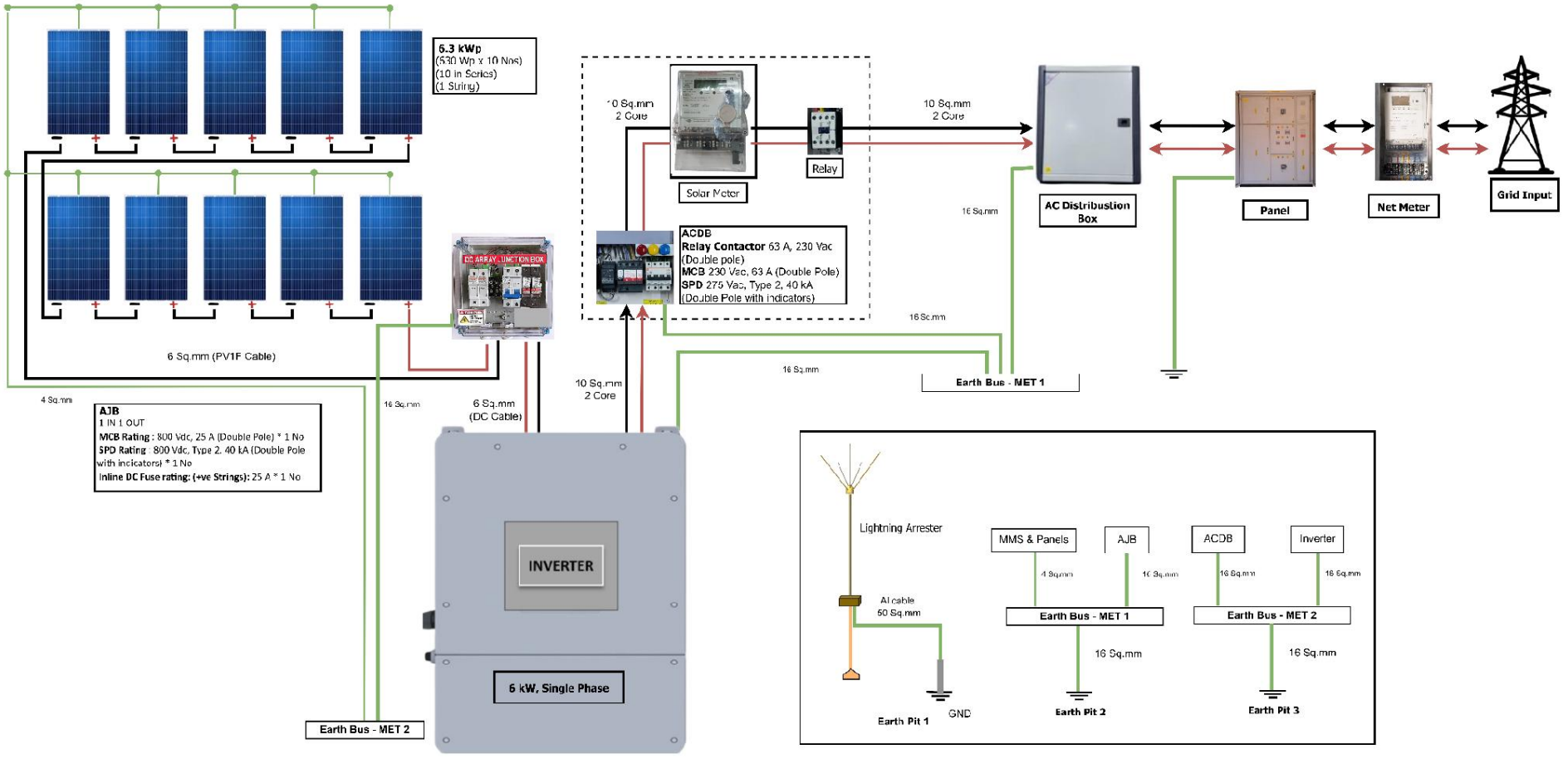
ANNEXURE 10: ESCALATION MATRIX

Escalation Matrix						
Sl No	**Department**	**Name**	**Designation**	**Levels of Contact**	**Contact Details**	**Email**
1				L1		
				L2		
2				L3		
				L4		
				L5		
3				L6		
				L7		

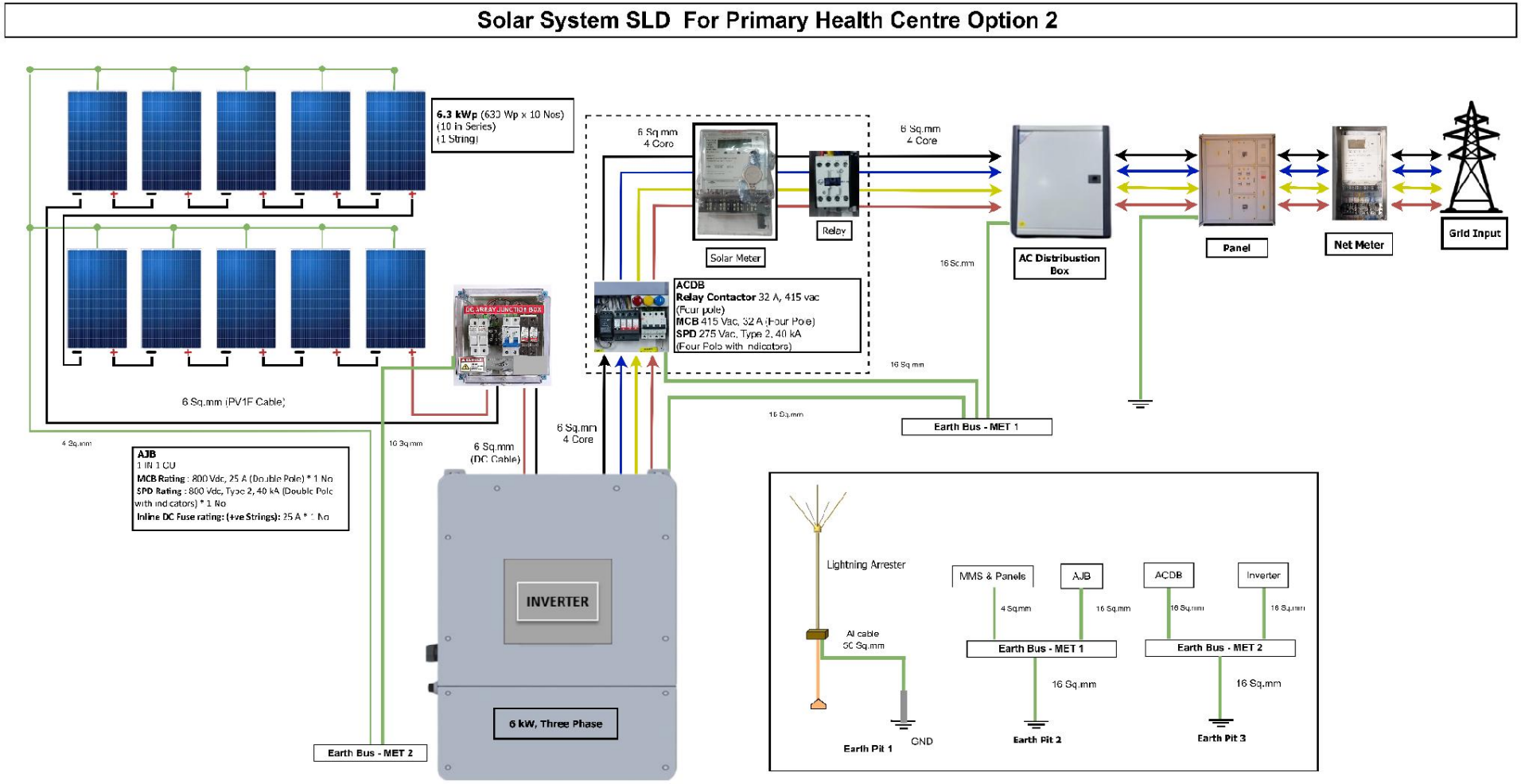
SINGLE LINE DIAGRAMS –

Primary Health Center (PHC) – Option -1 6.3 kWp Single Phase System

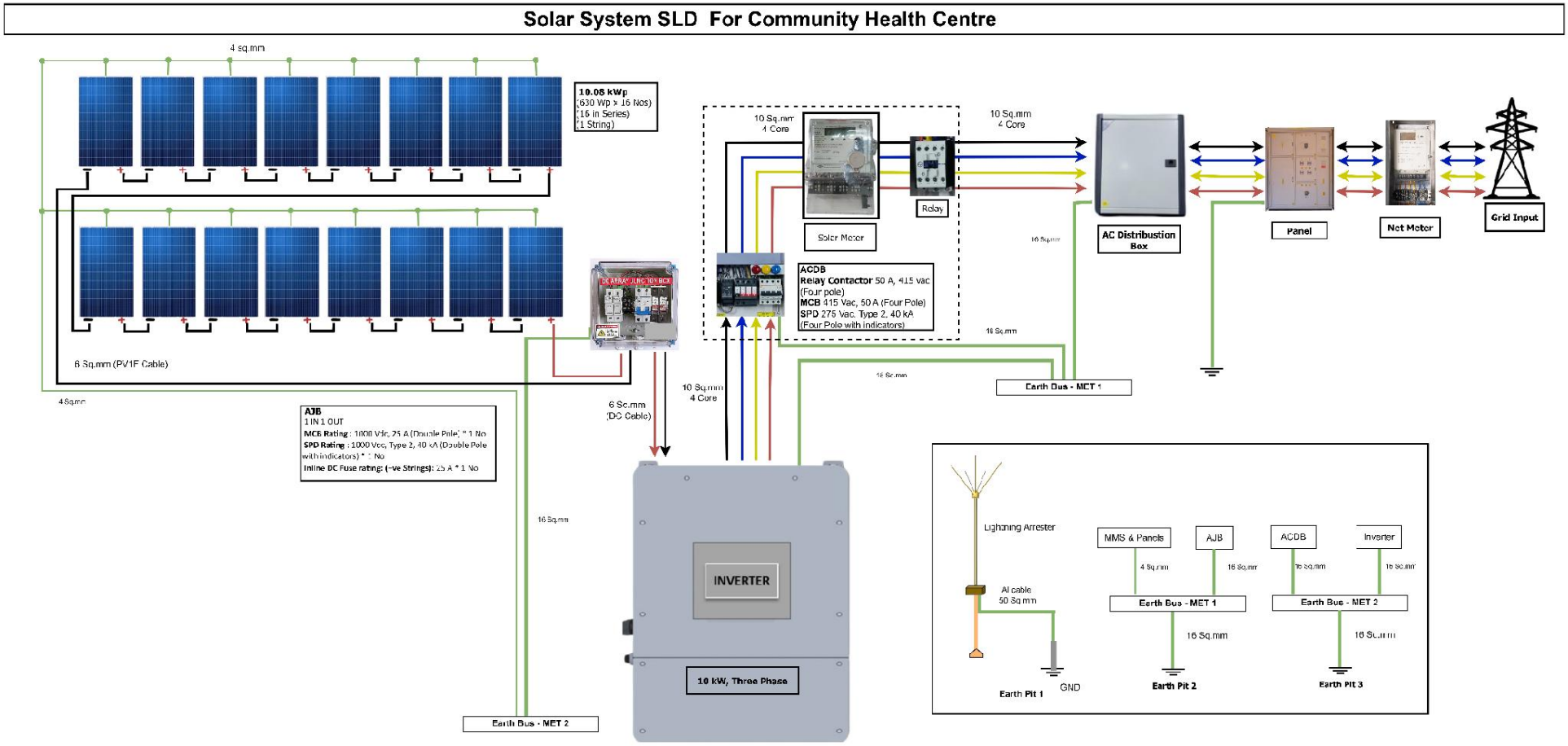
Solar System SLD For Primary Health Centre Option 1



Primary Health Center (PHC) – Option -2 6.3 kWp Three Phase System



Community Health Center (PHC) - 10 kWp Three Phase System



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 organization _____ (Name of the organization), 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……2026.

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

Duly authorized to sign the Tender for and on behalf of_____