

TENDER DOCUMENT / GUIDELINES FOR GRID CONNECTED ROOFTOP SOLAR PV SYSTEMS

THE CAMPCO LIMITED
P.B.NO 223, Varanashi Towers,
Mission Street Mangaluru Karnataka India-575001

Installation Site Address: -

The Campco Chocolate Factory
Kemminje, Puttur, Dakshina Kannada,
Karnataka, India - 574202

Request for Selection (RFS) of Bidders for
Implementation of Grid Connected Roof Top Solar PV System
in The Campco Limited
at Campco Chocolate Factory, Kemminje, Puttur, Karnataka,
India.

Telephone: +91 98805 18041

Website: www.campco.org

Email: ccfenergy@campco.org

RFS No: 01 / 580kWp
Dated: 06.08.2026
Rev: 01

The Campco Limited
P.B.NO 223, Varanashi Towers,
Mission Street Mangaluru, Karnataka, India-575001

Telephone: 08251-277411
0824-2888200

Website: www.campco.org

Email: info@campco.org

The Campco Limited
P.B.NO 223, Varanashi Towers,
Mission Street, Mangaluru, Karnataka, India-575001

RFS No: 01 / 580kWp
Date: 06.08.2026

The Campco Limited, Mangalore invites bids from the eligible bidders to participate in the Request for Selection (RFS) of Bidders for Design, manufacture, supply, erection, testing and commissioning including warranty, operation & maintenance of Roof Top Solar PV power system to be installed at Campco Chocolate Factory, Kemminje, Puttur in Karnataka in India.

For the implementation of above mentioned work, Bidders should submit their bid proposal/application along with all supporting documents to complete in all aspect on or before 5.30 p.m. of 22.09.2026 to the address “The Campco Limited Campco Chocolate Factory, Darbe Post, Kemminje Village, Puttur Karnataka India-574 202”.

Bid documents which include Eligibility criteria, “Technical Specifications”, various conditions of contract, formats, etc. Any amendment (s) / corrigendum / clarifications with respect to this Bid shall be communicated on or before 5.30 p.m. of 22.09.2026.

BID INFORMATION SHEET

Document Description	a. This RFS document comprises “Bidding documents of 580kWp Grid Connected solar Roof Top PV System” b. “Bidder can submit bids of 580kWp Grid Connected solar Roof Top PV System” (Bidders can visit the site located at Campco Chocolate Factory, Kemminje, Puttur, Karnataka, India - 574202)
The Campco Chocolate Factory	Installed Windmills with capacity 2.95MW at different locations of Karnataka and 500 kWp SRTPV system at CCF Puttur. Further to green energy we are extending SRTPV system which needs synchronization to the existing.
RFS No. & Date	RFS No: 01 / 580kWp Dated: 06.08.2026
Broad Scope of Work for Bidding	Please Refer Scope of Works
Pre-bid Clarification (if required)	On or before 02.09.2026
Last date & Time of Submission in Response to RFS	21.09.2026 up to 5.30 PM
Bid opening of Envelop –I & III	22.09.2026 at 03.30 PM Location: The Campco Limited, The Campco Chocolate Factory, Kemminje, Darbe, Puttur, D.K., Karnataka India-574 202.
Bid Opening Envelop-II (Techno- Commercial)	Will be intimated later through Website.
Name, Designation, Address and other details (For Submission in response to RFS)	Deputy General Manager - CCF The Campco Limited, The Campco Chocolate Factory, Kemminje, Darbe, Puttur, D.K., Karnataka India-574 202.
Email	ccfenergy@campco.org / ccfhead@campco.org / info@campco.org
<u>Important Note:</u>	No separate notifications will be issued for any changes/amendments/clarification etc. in the print media. For all updated details visit https://campco.org/tender/

1.0. DEFINITIONS & ABBREVIATIONS

In this “Bid / RFS Document” the following words and expression will have the meaning as herein defined where the context so admits:

- 1.1. “**Affiliate**” shall mean a company that either directly or indirectly
 - a. controls or
 - b. is controlled by or
 - c. Is under common control with a Bidding Company and “**control**” means ownership by one company of at least twenty six percent (26%) of the voting rights of the other company.
- 1.2. “**B.I.S**” shall mean specifications of Bureau of Indian Standards (BIS);
- 1.3. “**Bid**” shall mean the Techno Commercial and Price Bid submitted by the Bidder along with all documents/credentials/attachments annexure etc., in response to this RFS, in accordance with the terms and conditions hereof.
- 1.4. “**Bidder/Bidding Company**” shall mean Bidding Company submitting the Bid. Any reference to the Bidder includes Bidding Company / including its successors, executors and permitted assigns as the context may require;
- 1.5. “**Bid Deadline**” shall mean the last date and time for submission of Bid in response to this RFS as specified in Bid information Sheet;
- 1.6. “**Bid Capacity**” shall means capacity offered by the bidder in his Bid under invitation.
- 1.7. “**CEA**” shall mean Central Electricity Authority.
- 1.8. “**Chartered Accountant**” shall mean a person practicing in India or a firm whereof all the partners practicing in India as a Chartered Accountant(s) within the meaning of the Chartered Accountants Act, 1949;
“**Competent Authority**” shall mean Managing Director of The Campco Limited himself and/or a person or group of persons nominated by MD for the mentioned purpose herein;
- 1.9. “**Commissioning**” means Successful operation of the Project / Works by the Contractor, for the purpose of carrying out Performance Test(s) as defined in RFS.

- 1.10. **“Company”** shall mean a body incorporated in India under the Companies Act, 1956 or Companies Act, 2013 including any amendment thereto;
- 1.11. **“Capacity Utilization Factor” (CUF)** shall mean the ratio of actual energy generated by SPV project over the year to the equivalent energy output at its rated capacity over the yearly period.
- CUF = actual annual energy generated from the plant in kWh / (installed plant capacity in kW * 365 * 24).*
- 1.12. **“Eligibility Criteria”** shall mean the Eligibility Criteria as set forth in Clause 3.6 of this RFS;
- 1.13. **“Financially Evaluated Entity”** shall mean the company which has been evaluated for the satisfaction of the Financial Eligibility Criteria set forth in Clause 3.6.3 hereof;
- 1.14. **“IEC”** shall mean specifications of International Electro-technical Commission;
- 1.15. **“kWp”** shall mean kilo-Watt Peak;
- 1.16. **“kWh”** shall mean kilo-Watt-hour;
- 1.17. **“Minimum Bid Capacity”** shall mean 580 kWp which is the minimum capacity (or as per site condition) for which the Bidder can submit its Bid.
- 1.18. – Deleted--
- 1.19. **“O&M”** shall mean Operation & Maintenance of Rooftop Solar PV system.
- 1.20. **“Owner of the project”** shall mean anyone who has ownership (including lease ownership also) of the roof and is the legal owner of all equipments of the project. Owner of the project can enter into a PPA with the consumer (s) of power for supply of solar power for at least 25 years from the date of Commissioning of project.
- 1.21. **“Project Cost / Project Price”** shall mean the price offered by the Bidder for the Scope of work as per RFS document.
- 1.22. **“Project capacity”** means Capacity in kWp offered by the Bidder for each State consisting of single or multiple roof tops. The project capacity specified is on “DC” output Side.

1.23. **“Performance Ratio” (PR) means**

“Performance Ratio” (PR) means the ratio of plant output versus installed plant capacity at any instance with respect to the radiation measured. $PR = (\text{Measured output in kW} / \text{Installed Plant capacity in kW} * (1000 \text{ W/m}^2 / \text{Measured radiation intensity in W/m}^2))$.

1.24. **“Project Company”** shall mean Company incorporated by the bidder as per Indian Laws.

1.25. **“Price Bid”** containing the Bidder’s quoted Price as per this RFS;

1.26. **“EMD”** Earnest Money Deposit.

1.27. **“Qualified Bidder ”** shall mean the Bidder(s) who, after evaluation of their Techno Commercial Bid as per Clause 3.1 stand qualified for opening and evaluation of their Price Bid;

1.28. **“RFS”** shall mean Request for Selection (RFS)/Bid document/Tender document

1.29. **“Statutory Auditor”** shall mean the auditor of a Company appointed under the provisions of the Companies Act, 1956 or under the provisions of any other applicable governing law;

1.30. **“Successful Bidder(s) /Contractor/Project Developers(s)”** shall mean the Bidder(s) selected by The Campco Limited pursuant to this RFS for Implementation of Grid Connected Roof Top Solar PV System as per the terms of the RFS Documents, and to whom an Allocation Letter has been issued;

1.31. **“Wp”** shall mean Watt Peak.

1.32. **1MWp** for the purpose of conversion in **kWp** shall be considered as 1000kWp.

SECTION - I

A. INTRODUCTION, BID DETAILS AND INSTRUCTIONS TO THE BIDDERS

1. **INTRODUCTION**

- 1.1 The Central Arecanut & Cocoa Marketing & Processing Co-Op Ltd. (The CAMPCO Limited), registered under section 9 of Multi State Co-operative Societies Act, 2002, having its Registered Office at P.B.No. 223, Varanashi Towers, Mission Street, Mangaluru – 575001, having its chocolate manufacturing at Campco Chocolate Factory, Kemminje, Puttur, D.K., Karnataka, India - 574202, planning for the installation of grid-connected roof top solar PV projects on the roofs of the factory. Factory has already installed 3 windmills to meet the electrical requirements at different locations of Karnataka. Further it has 500kWp Solar PV installed on roof top of the factory building. In addition to this The Campco Limited is planning to extend its solar PV's to the remaining roofs of the factory.
- 1.2 Bidder can Submit bids as per RFS to The Campco Limited as per Clause 2.3.1
- 1.3 The scheme targets installation of grid-connected roof top solar PV projects on the roofs of The Campco Limited at Campco Chocolate Factory, Kemminje, Puttur, D.K., Karnataka, India – 574202. The generated solar power may be utilized for captive application and the surplus power will be fed to the grid. The scheme aims to reduce the fossil fuel based electricity load on main grid and make building self-sustainable from the point of electricity, to the extent possible.
- 1.4 The Campco Limited, which expression shall also include its successors and permitted assigns, hereby invites interested companies to participate in the bidding process for the selection of Successful Bidder(s) for implementation of large scale grid-connected roof top Solar Photovoltaic Projects.
- 1.5 The Bidder is advised to read carefully all instructions and conditions appearing in this document and understand them fully. All information and documents required as per the bid document must be furnished. Failure to provide the information and / or documents as required may render the bid technically unacceptable.
- 1.6 The bidder shall be deemed to have examined the bid document, to have obtained his own information in all matters whatsoever that might affect the carrying out the works in line with the scope of work specified elsewhere in the document at the offered rates and to have satisfied himself to the sufficiency of his bid. The bidder shall be deemed to know the scope, nature and magnitude of the works and requirement of materials, equipment, tools and labour involved, wage structures and as to what all works he has to complete in

accordance with the bid documents irrespective of any defects, omissions or errors that may be found in the bid documents.

2.0 BID DETAILS:

2.1 The bidding process under this RFS of the rooftop scheme is for 580kWp or as per site condition.

2.1.1 Bids are invited from the prospective bidders for the tendered capacity as indicated

2.2 --Deleted--

2.3 BID CAPACITY

2.3.1 Bidder can submit the bid for the capacity of 580kWp (or as per site condition). Bidder shall quote in its price bid the capacities accordingly.

3 INSTRUCTIONS TO THE BIDDERS

3.1 Bidder must meet the eligibility criteria independently as a Bidding Company or as a Bidding Consortium with one of the members acting as the Lead Member of the Bidding Consortium.

- a. Bidder will be declared as a Qualified Bidder based on meeting the eligibility criteria and as demonstrated based on documentary evidence submitted by the Bidder in the Bid.
- b. In case of a Bidding Consortium the Financial Eligibility criteria like Annual turnover or Net worth as indicated in Clause 3.2.3, shall be fulfilled by the Lead Member or Parent Company of the Lead Member while the Technical Eligibility Criteria shall be fulfilled by consortium member.
- c. In case bidder submitting bid through consortium, a Consortium Agreement as per the Format-1 shall be furnished along with the bid.
- d. Financial Consortium is not allowed in this Bidding Process. Consortium is only permitted for Technical partnership as per Format-2.
- e. Further in-case where the bidding company has used the financial eligibility criteria of its parent company then it needs to be ensured that any change in the controlling equity of the Bidding Company requires prior approval of The Campco Limited.
- f. All members of the consortium should be registered as company only. However, Member of the Consortium may form the Project Company as specified in Clause 3.7.
- g. Bidder including its member of the consortium can submit one bid only.

3.2 **ELIGIBILITY CRITERIA**

3.2.1 **GENERAL**

- (a) The Bidder should be either a body incorporated in India under the Companies Act, 1956 or 2013 including any amendment thereto and engaged in the business of Solar Power.

A copy of certificate of incorporation shall be furnished along with the bid in support of above.

- (b) **Local Manufacturing Preference:** Bidder preferred to be a module manufacturer or a contractor and prefer to use of Indian-made solar PV modules.
- (c) **Permits and Approvals:** Bidders are compulsory responsible for obtaining all necessary permits, approvals, and licenses. All costs should be included in project cost.
- (d) **Payment Terms:** Details regarding payment schedules, including advances, payments upon completion of milestones, and final payments, are outlined in Clause 6.9.

3.2.2 **TECHNICAL ELIGIBILITY CRITERIA:**

The Bidder should have installed & commissioned at least one Grid connected Solar PV Power Project having a capacity of not less than 250kWp individual or cumulative of 1MWp which should have been commissioned at least twenty four months prior to Techno-Commercial Bidding date. The list of project commissioned at least 12 months prior to Techno-Commercial Bidding date, indicating whether the project is grid connected, along with a copy of the Commissioning date and Work order / Contract / Agreement/ from the Client/Owner shall be submitted.

3.2.3 **FINANCIAL ELIGIBILITY CRITERIA:**

- (a) The Bidder should have an Annual Turnover or Net worth as indicated below.
- i. The Annual turnover of Rupees 3 Crore in the last 3 financial years preceding the Bid Deadline subject to the condition that the Bidder should at least have completed 7 financial year.
- OR**
- ii. The Computation of Net worth shall be based on unconsolidated audited annual accounts of the last financial year immediately preceding the Bid Deadline. Share premium can be included in the Net-worth calculation in case of listed companies in India only.

For the purposes of meeting financial requirements, only unconsolidated audited annual accounts shall be used.

Bidders shall furnish documentary evidence as per the **Format -1**, duly certified by Authorized Signatory and the Statutory Auditor / Practising Chartered Accountant of the Bidding Company in support of their financial capability. Documentary evidence for financial

eligibility criteria including Format – 1 should be submitted in Envelop -I

3.3 INCORPORATION OF A PROJECT COMPANY

3.3.1 In case the Bidder wishes to incorporate a Project Company, in such a case, Bidder if selected as a Successful Bidder can incorporate a Project Company. Bidder shall be responsible to get all clearance required/obtained in the name of the Bidding Company transferred in the name of the Project Company.

3.4 BID SUBMISSION BY THE BIDDER

3.4.1 The information and/or documents shall be submitted by the Bidder as per this document.

3.4.2 The Bidder shall furnish documentary evidence in support of meeting Eligibility Criteria as indicated in Clause no. 3.2.1, 3.2.2 and 3.2.3 to the satisfaction of The Campco Limited and shall also furnish unconsolidated/consolidated audited annual accounts in support of meeting financial requirement, which shall consist of balance sheet, profit and loss account, profit appropriation account, auditors report, etc., as the case may be of Bidding Company or Financially Evaluated Entity for any of the last three(3) financial years immediately preceding the Bid Deadline which are used by the bidder for the purpose of calculation of Annual Turnover or of last Financial Year in case of Net Worth.

3.4.3 In case the annual accounts for the latest financial year are not audited and therefore the bidder cannot make it available, the applicant shall give certificate to this effect from their directors. In such a case, the Applicant shall provide the Audited Annual Reports for 3(Three) years preceding the year or from the date of incorporation if less than 3 years for which the Audited Annual Report is not being provided.

3.5 BID SUBMITTED BY A BIDDING COMPANY:

The Bidding Company should designate one person to represent the Bidding Company in its dealings with The Campco Limited. The person should be authorized to perform all tasks including, but not limited to providing information, responding to enquires, signing of Bid etc. The Bidding Company should submit, along with Bid, a Power of Attorney in original (as per Format), authorizing the signatory of the Bid.

3.6 CLARIFICATIONS AND PRE-BID MEETING

3.6.1 The Campco Limited will not enter into any correspondence with the Bidders, except to furnish clarifications on RFS Documents and showcase of the site if necessary. The Bidders may seek clarifications or suggest amendments to RFS in writing, through a letter (and also soft copy by e-mail) to the address, date and time mentioned in Bid information sheet.

3.6.2 The Campco Limited is not under any obligation to entertain/ respond to suggestions made or to incorporate modifications sought for.

3.7 AMENDMENTS TO RFS

- 3.7.1 At any time prior to the deadline for submission of Bids, the The Campco Limited may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the RFS document by issuing clarification(s) and/or amendment(s).
- 3.7.2 The clarification(s) / amendment(s) (if any) may be notified on The Campco Limited website <https://campco.org/tender/>, at least Two (2) days before the proposed date of submission of the Bid. If any amendment is required to be notified within Two (2) days of the proposed date of submission of the Bid, the Bid Deadline may be extended for a suitable period of time.
- 3.7.3 The Campco Limited will not bear any responsibility or liability arising out of non-receipt of the information regarding Amendments in time or otherwise. Bidders must check the website for any such amendment before submitting their Bid.
- 3.7.4 In case any amendment is notified after submission of the Bid, prior to the opening of Techno-Commercial Bid, Bids received by The Campco Limited shall be returned to the concerned Bidders on their request through registered post or courier and it will be for the Bidders to submit fresh Bids as the date notified by The Campco Limited for the informative literature etc., as required in the Bid document. Each page of the Bid document should be signed & stamped. Bids with any type of change or modification in any of the terms/ conditions of this document may be rejected. The Campco Limited reserves the right to accept / reject the bid document without assigning any reasons whatsoever and without incurring any liability on any account.
- 3.7.5 If necessary, additional papers may be attached by the Bidder to furnish/ submit the required information. Any term / condition proposed by the Bidder in his bid which is not in accordance with the terms and conditions of the RFS document or any financial conditions, payment terms, rebates etc. mentioned in Price Bid shall be considered as a conditional Bid and may make the Bid invalid.
- 3.7.6 All the notices related to this Bid which are required to be publicized shall be uploaded on website www.campco.org (<https://campco.org/tender/>)

3.8 VALIDITY OF BID

- 3.8.1 The bid and the Price Schedule included shall remain valid for a period of 3 months from the date of techno-commercial bid opening, with bidder having no right to withdraw, revoke or cancel his offer or unilaterally vary the offer submitted or any terms thereof. In case of the bidder revoking or cancelling his offer or varying any term & conditions in regard thereof or not accepting letter of allocation, The Campco Limited shall forfeit the EMD furnished by him. Confirmation regarding the Bid offer validity shall be clearly mentioned in the covering letter.

3.8.2 METHOD OF BID SUBMISSION

- 3.8.2.1 Bids are required to be submitted in a single sealed cover envelope containing **Envelope-I** (Covering letter, Supporting Documents to meet eligibility criteria), **Envelope-II** (Techno-Commercial documents) each one duly sealed separately.

All the envelopes shall be kept in an outermost **Envelope-III**. All the envelopes should be superscripted as “Bid for Implementation of Grid connected Roof Top Solar PV System with reference to RFS No. 01 / 580kWp”.

- 3.8.3 All the envelopes shall be sealed properly & shall indicate the Name & address of the Bidder. The Bid must be complete in all technical and commercial respect and should contain requisite certificates, drawings, informative literature etc. as required in the Bid document. Each page of the Bid document should be signed & stamped. Bids with any type of change or modification in any of the terms/ conditions of this document will be rejected. If necessary, additional papers may be attached by the Bidder to furnish/ submit the required information. Any term / condition proposed by the Bidder in his bid which is not in accordance with the terms and conditions of the RFS document or any financial conditions, payment terms, rebates etc. mentioned in Price Bid shall be considered as a conditional Bid and may make the Bid invalid.

3.9 COST OF BIDDING

- 3.9.1 The bidder shall bear all the costs associated with the preparation and submission of his offer and the company will in no case be responsible or liable for those costs, unless any conditions. The Bidder shall not be entitled to claim any costs, charges and expenses of and incidental to or incurred by him through or in connection with his submission of bid even though The Campco limited may elect to modify / withdraw the invitation of Bid.

3.10 OPENING OF BIDS

- 3.10.1 Envelopes of the Bidders shall be opened as per the details mentioned bid information sheet. If any delay in opening of the envelopes shall be intimated through website.

3.11 RIGHT TO WITHDRAW THE RFS AND TO REJECT ANY BID

- 3.11.1 This RFS may be withdrawn or cancelled by The Campco Limited at any time without assigning any reasons thereof. The Campco Limited further reserves the right, at its complete discretion, to reject any or all of the Bids without assigning any reasons whatsoever and without incurring any liability on any account.
- 3.11.2 The Campco Limited reserve the right to interpret the Bid submitted by the Bidder in accordance with the provisions of the RFS and make its own judgment regarding the interpretation of the same. In this regard The Campco Limited shall have no liability towards any Bidder and no Bidder shall have any recourse to The Campco Limited with respect to the selection process. The Campco Limited shall evaluate the Bids using the evaluation process specified in Section -I, at its sole discretion. The Campco Limited decision in this regard shall be final and have no binding on the Bidders.
- 3.11.3 The Campco Limited reserves its right to vary, modify, revise, amend or change any of the terms and conditions of the Bid before submission. The decision regarding acceptance or rejection of bid by The Campco Limited will be final.

3.12 ZERO DEVIATION

- 3.12.1 This is a ZERO Deviation Bidding Process. Bidder is to ensure compliance of all provisions of the Bid Document and submit their Bid accordingly. Tenders with any deviation to the bid conditions shall be liable for rejection while EXAMINATION OF BID DOCUMENT
- 3.12.2 The Bidder is required to carefully examine the Technical Specification, terms and Conditions of Contract, and other details relating to supplies as given in the Bid Document.
- 3.12.3 The Bidder shall be deemed to have examined the bid document including the agreement/contract, to have obtained information on all matters whatsoever that might affect to execute the project activity and to have satisfied himself as to the adequacy of his bid. The bidder shall be deemed to have known the scope, nature and magnitude of the supplies and the requirements of material and labour involved etc. and as to all supplies he has to complete in accordance with the Bid document.
- 3.12.4 Bidder is advised to submit the bid on the basis of conditions stipulated in the Bid Document. Bidder's standard terms and conditions if any will not be considered. The cancellation / alteration / amendment / modification in Bid documents shall not be accepted by The Campco Limited.
- 3.12.5 Bid not submitted as per the instructions to bidders is liable to be rejected. Bid shall confirm in all respects with requirements and conditions referred in this bid document.

B. CONDITIONS OF CONTRACT

3.13 SCOPE OF WORK

- 3.13.1 The scope of work for the bidder include Identification of buildings rooftop, Obtaining No Objection Certificate (NOC)” from Distribution Company (DISCOM) for grid connectivity, complete design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of the grid connected rooftop solar PV project including operation and maintenance (O&M) of the project for a period of Three years after commissioning.

3.14 INSURANCE

- 3.14.1 The Bidder shall be responsible and take an Insurance Policy for transit-cum- storage-cum-erection for all the materials to cover all risks and liabilities for supply of materials on site basis, storage of materials at site, erection, testing and commissioning. The bidder shall also take appropriate insurance during O&M period.
- 3.14.2 The Bidder shall also take insurance for Third Party Liability covering loss of human life, engineers and workmen and also covering the risks of damage to the third party/material/equipment/properties during execution of the Contract. Before commencement of the work, the Bidder will ensure that all its employees and representatives are covered by suitable insurance against any damage, loss, injury or death arising out of the execution of the work or in carrying out the Contract. Liquidation, Death, Bankruptcy etc., shall be the responsibility of bidder.
- 3.14.3 Bidder shall take utmost care for the properties of the host during execution of work. Any damages to the property of host shall be reimbursed at actuals by the bidder.

3.15 WARRANTEES AND GUARANTEES

- 3.15.1 The Bidder shall warrant that the goods supplied under this contract are new, unused, of the most recent or latest technology and incorporate all recent improvements in design and materials. The bidder shall provide system Warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 3 years from the date of commissioning. The successful bidder has to transfer all the Guarantees / Warrantees of the different components to the Owner of the project. The responsibility of operation of Warrantee and Guarantee clauses and Claims/ Settlement of issues arising out of said clauses shall be responsibility of the Successful bidder. The Campco Limited will not be responsible in any way for any claims whatsoever on account of the above.

3.16 TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP

- 3.16.1 The Design, engineering, manufacture, supply, installation, testing and performance of the equipment shall be in accordance with latest appropriate IEC/Indian Standards as detailed in the Technical specifications of the bid document. Where appropriate Indian Standards and Codes are not available, other suitable standards and codes as approved by the MNRE shall be used.
- 3.16.2 The specifications of the components should meet the technical specifications mentioned.
- 3.16.3 Any supplies which have not been specifically mentioned in this Contract but which are necessary for the design, engineering, manufacture, supply & performance or completeness of the project shall be provided by the Bidder without any extra cost and within the time schedule for efficient and smooth operation and maintenance of the SPV plant.
- 3.16.4 Bidders to follow recent notification / amendments / orders by MNRE with respect to Solar PV Panels by considering project completion time as per 6.8.3

3.17 ANNUAL MAINTENANCE CONTRACT (AMC) – (as applicable and If Opted by The Campco Limited)

- 3.17.1 The bidder shall be responsible for AMC, is a mandatory requirement including preventive maintenance. During this period, the bidder shall be responsible for supply of all spare parts as required from time to time for scheduled and preventive maintenance, major overhauling of the plant, replacement of defective modules, inverters, PCU's etc and maintaining log sheets for operation detail, deployment of staff for continuous operations and qualified engineer for supervision of O&M work, complaint logging & its attending.
- 3.17.2 Regular Inspections: Routine maintenance checking connections, remotely monitoring the system performance is typically specified as a part of the AMC.
- 3.17.3 Spare Parts Management: The tender may outline procedures for the availability and replacement of spare parts during the maintenance/warranty period.

3.18 METERING AND GRID CONNECTIVITY

Metering and grid connectivity with synchronization to the exiting SRTPV and of the roof top solar PV system under this scheme would be the responsibility of the Bidder in accordance with the prevailing guidelines of the concerned DISCOM and / or CEA (if available by the time of implementation). The Campco Limited could facilitate connectivity; however the entire responsibility lies with bidder only.

3.19 PLANT PERFORMANCE EVALUATION

The successful bidder shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning and related Capacity Utilization Factor (CUF) as per the GHI levels of the location during the O&M period.

C. EVALUATION CRITERIA

4 BID EVALUATION

4.1 BID EVALUATION

The evaluation process comprises the following four steps:

Step I : Responsiveness check of Techno Commercial Bid

Step II : Evaluation of Bidder's fulfilment of Eligibility Criteria as per Clause 3.2 of Section-I

Step III : Evaluation of Price Bid

Step IV : Successful Bidders(s) selection

4.2 RESPONSIVENESS CHECK OF TECHNO COMMERCIAL BID

The Techno Commercial Bid submitted by Bidders shall be scrutinized to establish responsiveness to the requirements laid down in the RFS subject to Clause 3.2.1, Clause 3.2.2, and Clause 3.2.3. Any of the following may cause the Bid to be considered "Non-responsive", at the sole discretion of The Campco Limited:

- a. Bids that are incomplete, i.e. not accompanied by any of the applicable formats inter alia covering letter, power of attorney supported by a board resolution, applicable undertakings, format for disclosure, valid Bid Bond, etc.;
- b. Bid not signed by authorized signatory and /or stamped in the manner indicated in this RFS;
- c. Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria;
- d. Information not submitted in the formats specified in this RFS;
- e. Bid being conditional in nature;
- f. Bid not received by the Bid Deadline;
- g. Bid having Conflict of Interest;
- h. More than one Member of a Bidding Company using the credentials of the same Parent Company /Affiliate;
- i. Bidder delaying in submission of additional information or clarifications sought by The Campco Limited as applicable;
- j. Bidder makes any misrepresentation.

Each Bid shall be checked for compliance with the submission requirements set forth in this RFS before the evaluation of Bidder's fulfilment of Eligibility Criteria is taken up. Clause 3.2 shall be used to check whether each Bidder meets the stipulated requirement.

5. PRELIMINARY EXAMINATION

- 5.1.** The Campco Limited 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 stamped and whether the Bids are otherwise in order.
- 5.2.** Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total Amount that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total amount shall be corrected. If there is a discrepancy between words and figures, the amount written in words will prevail.

6. EVALUATION OF BIDDER'S FULFILMENT OF ELIGIBILITY CRITERIA

- 6.1.** Evaluation of Bidder's Eligibility will be carried out based on the information furnished by the Bidder as per the prescribed Formats and related documentary evidence in support of meeting the Eligibility Criteria as specified in Clause 3.2. Non-availability of information and related documentary evidence for the satisfaction of Eligibility Criteria may cause the Bid to be non-responsive.

6.2. EVALUATION OF PRICE BID

Price Bid (Envelope II) of the Qualified Bidders shall be opened as per the details mentioned in The Campco Limited website [www.campco.org\(https://campco.org/tender/\)](https://campco.org/tender/) or Email, post deadline of bid submission. The evaluation of Price Bid shall be carried out based on the information furnished in Envelope I. The Price Bid submitted by the Bidders shall be scrutinized to ensure conformity with the RFS. Any Bid not meeting any of the requirements of this RFS may cause the Bid to be considered "Non-responsive" at the sole decision of The Campco Limited. Bidder can visit the site to review the roof and site condition.

6.3. SUCCESSFUL BIDDER(S) SELECTION

- 6.3.1.** Bids qualifying in Clause 3.2 shall only be evaluated in this stage.
- 6.3.2.** The Project Cost for SRTPV system quoted in all Price Bids of Qualified Bidders shall be ranked from the lowest to the highest.
 - 6.3.2.1.** Based on the price bid quoted by the bidders for the capacity, The Campco Limited shall arrange the bids in the ascending order i.e. L1, L2, L3, __ _ [L1 being the lowest project cost (per kW) for the capacity].

- 6.3.2.2. For the capacity, lowest bidder will be declared as the successful bidder. For further allocation if any, the L2 bidder will be asked to match the price quoted by the L1 bidder. In case the L2 bidder refuses to match the L1 price then L3 bidder shall be offered to match L1 price. The process will continue till the next bidder matches the L1 price. The bidder who matches the L1 price will also be declared Successful bidder. However, The Campco Limited at its own discretion may relax the condition.
- 6.3.2.3. Deleted
- 6.3.2.4. For further allocation if any, all the qualified bidders of empanelled companies of the State except the L1 bidder will be given 10 days from the date of notification of L1 price on The Campco Limited website to give their consent to execute the work at L1 price failing which it will be assumed that they are not interested to match L1 price.
- 6.3.3. Letter(s) of Allocation (LOA): The Letter(s) of Allocation (LOA) shall be issued to all such Successful Bidder (s) selected as per the provisions of this Clause 6.3.2
- 6.3.4. Each Successful Bidder shall acknowledge the LOA and return duplicate copy with signature & stamp of the authorized signatory of the Successful Bidder to The Campco Limited within Fifteen (15) days of issue of LOA.
- 6.3.5. If the Successful Bidder, to whom the Letter of Allocation has been issued does not fulfil any of the conditions specified in Bid document, The Campco Limited reserves the right to annul/cancel the award of the Letter of Allocation of such Successful Bidder and forfeit the EMD/Bid Bond.
- 6.3.6. The Campco Limited at its own discretion, has the right to reject any or all the Bids without assigning any reason whatsoever, at its sole discretion
- 6.3.7. There shall be no negotiation on the quoted Project cost and quality of material between The Campco Limited and the Bidder(s), during the process of execution. However there may be negotiation on project cost between The Campco Limited and Bidder before LOA. Negotiated project cost shall not be more than in initial quoted L1 bid.

6.4. INCREASE/DECREASE OF BIDDER ALLOCATED CAPACITY

- 6.4.1. The Campco Limited reserves the right to increase or decrease upto twenty percent (20%) of the Bidder Allocated Capacity at its sole discretion and at the request of the Bidder and The Campco limited at L1 price before the issue of LOA.
- 6.4.2. In case bidder has requested for reduction in Allocated capacity, then upto 20% reduction of allocated capacity only can be accepted by The Campco Limited without forfeiture of EMD at The Campco Limited sole discretion. The request for the reduction in allocated capacity can only be accepted before the issue of LOA.

- 6.4.3. In case capacity is modified by The Campco Limited as per Clause 6.4.1 & 6.4.2 above, Successful bidder shall submit the equivalent amount of EMD/Amended EMD to The Campco Limited within 30 days from the date of issue of allocation letter /sanction letter.
- 6.4.4. In case bidder has increased / decreased the allocated capacity while bidding, proportionate price will be calculated on as per kWp basis.

6.5. TRANSFER OF CAPACITY

- 6.5.1. At sole discretion of The Campco Limited may allow transfer of allocated capacity in full or part. However, such transfer shall generally be allowed as per Bidder request, if agreed by The Campco Limited.
- 6.5.2. Deleted
- 6.5.3. Amended Performance security (EMD) pertaining to additional capacity allocated or capacity transferred shall be submitted by bidder within 30 days from the date of issue of such notification.

Note: Increase/decrease/transfer of the Successful Bidder Capacity at the time of Allocation will be at the sole discretion of The Campco Limited.

6.6. NOTIFICATION TO SUCCESSFUL BIDDERS

- 6.6.1. The name of Successful Bidders shall be notified on The Campco Limited website and also shall be notified individually through letter of allocation.

6.7. Deleted

6.8. PROJECT ALLOCATION AND SANCTION

- 6.8.1. The identification of the projects (roof tops) at time of bidding is not mandatory. The Bidders, however, in their own interest are advised to make a preliminary survey of availability of roof tops in The Campco Chocolate Factory Kemminje Puttur for which they intend to Bid, as well as issue of Grid connectivity, as non-availability of roof tops and non-completion of other formalities after allocation of project will result in forfeiture of Bid Bond/EMD amount submitted by them.
- 6.8.2. The Successful Bidders selected as described in Clause 6.3 above shall be issued Letter of Allocation (LOA) indicating the allocated capacity.
- 6.8.3. The bidders who have been notified as Successful Bidders, shall be given maximum 10 months from the date of issue of Letter of Allocation for commissioning of the allocated capacity in which roofs identification is also in the bidders scope. However the commissioning period after the issue of Letter of Allocation can be relaxed with mutual consent only.

- 6.8.3.1. Preference should be given to The Campco Limited identified roofs first. In the event of offer given by The Campco Limited to the Bidder to execute the project in The Campco Limited identified roof, the time for submission of project sanction documents by the bidder to The Campco Limited will be 30 days from the date of issue of allocation letter which can be extended depending upon the merit of the case. Failure of non-compliance of same shall lead to forfeiture of EMD for that State in proportion to the capacity allocated in The Campco Limited identified location.
- 6.8.3.2. Further, Successful Bidders can start submitting their Project sanction documents as soon as they receive LOA from The Campco Limited. Project sanction documents shall be submitted to The Campco Limited with Project size. If after 10 months, the successful bidder could not identify and commission the rooftop(s) capacity up to the allocated capacity and submit Project sanction documents, in such case full EMD may be forfeited and the unidentified allocated capacity gets cancelled and bidder including its affiliates/GROUP COMPANIES/ Parent / Ultimate parent company may be debarred to participate in The Campco Limited's future tenders for a period as decided by the competent authority of The Campco Limited.
- 6.8.3.3. Successful bidders shall share the time and date stamping photographs of the roofs and location details with The Campco Limited before entering into any legal agreement. This has to ensure that the location identified by the Successful bidder is freshly identified and strictly complying the norms provided in Clause 21 below.
- 6.8.4. For identification of projects, The Campco Limited or state nodal agency (SNA) may provide help. However the entire responsibility of finding the buildings lies with the Bidder.
- 6.8.5. Onus of identifying the buildings/rooftops and completing the other documentation like finalizing the Project report and entering into agreements lies with the Successful Bidder within the above mentioned time frame even for the buildings/rooftops identified by The Campco Limited for preferential installation.
- 6.8.6. After the Project Sanctioned Document have been submitted by the Successful Bidder/ Project Developer and accepted by The Campco Limited", The Campco Limited will issue the Sanction Letter(s).
- 6.8.7. If the Bidder fails to commission the project within specified time, penalty on per day basis calculated for the Performance Security on a 6 month's period would be levied. After 6 months, the project will get cancelled and the total EMD would be forfeited.

6.9. PAYMENT TERMS:

- 6.9.1. 40% on receipt of solar panels and inverters.
- 6.9.2. 40% after project installation.
- 6.9.3. 20% after project commissioning (generation of power and MESCOM approvals).

6.10. CORRUPT OR FRAUDULENT PRACTICES

The Campco Limited requires that Successful Bidders/ Contractors should follow the highest standard of ethics during the execution of contract. In pursuance of this policy, The Campco Limited:

- 6.10.1. Defines, for the purposes of this provision, the terms set forth as follows :
- 6.10.2. “Corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the bid process or in contract execution; and
- 6.10.3. “Fraudulent practice” means a misrepresentation of facts in order to influence a bid process or the execution of a contract to the detriment of The Campco Limited /Govt scheme, and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the of the benefits of free and open competition;
- 6.10.4. will declare a firm ineligible/debarred, either indefinitely or for a specific period of time, a GOVT contract if at any time it is found that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a Government/ The Campco Limited schemes.

SECTION-II

TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below. Any shortcomings will lead to cancelation of payment in full or part as decided by The Campco Limited

7. DEFINITION

A Grid Tied Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables and switches. PV Array is mounted on a suitable structure. Grid tied SPV system is without battery and should be designed with necessary features to synchronize the existing SRTPV and supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable.

Solar PV system shall consist of following equipments/components.

- Solar PV modules consisting of required number of **Crystalline** PV modules.
- Grid interactive Power Conditioning Unit with Remote Monitoring System
- Mounting structures
- Mounting structures for inverters with safety structures and cabinets.
- Junction Boxes.
- Earthing and lightening protections.
- IR/UV protected PVC Cables, pipes and accessories
- Synchronizing elements
- Any other items related to successful installation

7.1. SOLAR PHOTOVOLTAIC MODULES:

7.1.1. The PV modules used should be Topcon Bifacial (DCR) preferably made in India.

7.1.2. The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-2- requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.

- a) For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701
- b) The total solar PV array capacity should not be less than allocated capacity (kWp) and should comprise of solar crystalline modules of minimum 500 Wp and above wattage. Module capacity less than minimum 500 watts should not be accepted

- c) Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
- d) PV modules must be tested and approved by one of the IEC authorized test centers.
- e) The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- f) The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power in his bid. The Campco Limited shall allow only minor changes at the time of execution.
- g) Other general requirement for the PV modules and subsystems shall be the Following:
 - I. The rated output power of any supplied module shall have only positive tolerance of 4 to 5W.
 - II. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
 - III. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
 - IV. Curves at STC should be provided by bidder.

7.1.3. Warranties:

- 7.1.3.1. Minimum warranty period of 3 year for all other equipments.
- 7.1.3.2. Minimum free service period 1 year for the project.
- 7.1.3.3. Mounting structure of Solar panels and related items should have warranty for a period equal to warranty of solar panels.
- 7.1.3.4. Any changes with respect to clause 7.1.3 should be separately furnished Envelop-II.
- 7.1.3.5. Performance warranty: Warranty to be provided on performance on the PV module for a period of 25 (twenty five) years from the date of customer's invoice. If within 10(ten) years from the date of customer's invoice, any PV modules exhibit a power output less than 90% of the minimum Peak Power at Standard Test Conditions (STC), or within 25(twenty five) years from the date of the Customer's invoice, any PV modules exhibit a power output less than 80% of the minimum Peak Power at Standard Test Conditions (STC), such loss in power is determined by installer (at its sole and absolute discretion) to be due to defects in material or workmanship, installer will replace such loss power either by providing to the customer additional PV module(s) to make up such loss in power, or by repairing or replacing the defective PV modules(s), at the option of installer.
- 7.1.3.6. The warranty on grid-tied inverters (including optimizer) is 25(twenty five) years.

8. ARRAY STRUCTURE

- a) Aluminium / Hot dip galvanized MS / SS mounting structures may be used for mounting the modules/ panels/arrays
- b) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed (like Mangalore speed of 100 km/ hour). It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to The Campco Limited. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
- c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.
- d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.
- e) The fasteners used should be made up of aluminium / stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels
- f) Regarding civil structures the bidder need to take care of the load bearing capacity of the roof and need arrange suitable structures based on the quality of roof.
- g) Mounting structure of panel placed on roof should be designed in such a way that it should not leads to any water seepage especially during rainy season. Also mounting structure should not corrode or make any pitting to the roof. In case of any drill hole to the roof should be covered by suitable leak proof agents avoiding leakages in the roof.
- h) Proper walk way to be provided for easy accessing to all PV modules for cleaning and maintenance purpose.
- i) All the above array structures are in bidders scope.

9. JUNCTION BOXES (JBs)

- a) The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands.
- b) Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification

10. AC DISTRIBUTION PANEL BOARD:

- a) AC Distribution Panel Board (DPB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar while in grid tied mode.
- b) Interconnection at LT Bus Bar and synchronization with existing Solar Roof Top PV system, which is already in place at location i.e The Campco Chocolate Factory, Kemminje Puttur.
- c) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS60947 part I, II and III.
- d) The changeover switches, cabling work should be undertaken by the bidder as part of the project.
- e) All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 or 230 volts, 50 Hz
- f) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- g) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- h) Should conform to Indian Electricity Act and rules (till last amendment).
- i) All the 415 AC or 230 volts devices / equipment like bus support insulators, circuit breakers, SPDs, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions

Variation in supply voltage	+/- 10 %
Variation in supply frequency	+/- 3 Hz

11. PCU/ARRAY SIZE RATIO:

- a) The inverter overloading should be minimum 30% and maximum 40%.
- b) Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

12. PCU/ Inverter:

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter and the associated control and protection devices. All these components of the system are termed the "Power Conditioning Unit (PCU)". In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter, to the power conditioning unit/inverter

should also be DG set interactive. If necessary. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

- Switching devices : IGBT/MOSFET
- Control : Microprocessor /DSP
- Nominal AC output voltage and frequency : 415V, 3 Phase, 50 Hz (In case single phase inverters are offered, suitable arrangement for balancing the phases must be made.)
- Output frequency : 50 Hz
- Grid Frequency Synchronization range : + 3 Hz or more
- Ambient temperature considered : -20o C to 50o C
- Humidity : 95 % Non-condensing
- Protection of Enclosure : IP-20(Minimum) for indoor.
- : IP-65(Minimum) : for outdoor.\
- Grid Frequency Tolerance range : + 3 or more
- Grid Voltage tolerance : - 20% & + 15 %
- No-load losses : Less than 1% of rated power
- Inverter efficiency(minimum) : >97%
- THD : < 3%
- PF : > 0.9.

- a) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.
- b) The output of power factor of PCU inverter is suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against the lightning on feeder.
- c) Built-in meter and data logger to monitor plant performance through external computer shall be provided.
- d) The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30) /Equivalent BIS Std.
- e) The charge controller (if any) / MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS std. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.
- f) The PCU/ inverters should be tested from the MNRE approved test centres / NABL /BIS

/IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

13. DATA ACQUISITION SYSTEM / PLANT MONITORING

- i. Data Acquisition System shall be provided for the solar PV plant.
- ii. Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication to be provided.
- iii. The following parameters are accessible via the operating interface display in real time separately for solar power plant:
 - a. AC Voltage.
 - b. AC Output current.
 - c. Output Power
 - d. Power factor.
 - e. DC Input Voltage.
 - f. DC Input Current.
 - g. Power produced
 - h. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage).
- iv. All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and read on the digital front panel at any time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- v. All instantaneous data shall be shown on the computer screen.
- vi. Remote Monitoring and data acquisition through Remote Monitoring System software at The Campco Limited location with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier. Provision for interfacing these data on The Campco Limited server and portal in future shall be kept.

14. PROTECTIONS

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

14.1. LIGHTNING PROTECTION

The SPV power plants shall be provided with lightning & overvoltage protection. 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 required number of Lightning Arrestors. Lightning

protection should be provided as per IEC 62305 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

14.2. SURGE PROTECTION

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

14.3. EARTHING PROTECTION

- i. Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lighting arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of Department/ The Campco Limited as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.
- ii. Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

14.4. GRID ISLANDING:

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

15. CABLES

Cables of appropriate size to be used in the system shall have the following characteristics:

- i. Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards
- ii. Temp. Range: –10oC to +80oC.
- iii. Voltage rating 660/1000V
- iv. Excellent resistance to heat, cold, water, oil, abrasion, UV radiation
- v. Flexible
- vi. Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar

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

- vii. Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- viii. The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25years.
- ix. The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings approved prior to installation.
- x. Multi Strand, Annealed high conductivity copper conductor PVC type 'A' pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation for UV protection Armoured cable for underground laying. All cable trays including covers to be provided. All cables conform to latest edition of IEC/ equivalent BIS Standards as specified below:
BoS item / component Standard Description Standard Number Cables General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V, UV resistant for outdoor installation IS /IEC 69947.
- xi. The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2%.
- xii. The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 3 %.

16. TOOLS & TACKLES AND SPARES:

- i. After completion of installation & commissioning of the power plant, necessary tools & tackles are to be provided free of cost by the bidder for maintenance purpose. List of tools and tackles to be supplied by the bidder for approval of specifications and make from The Campco Limited.
- ii. A list of requisite spares in case of PCU/inverter comprising of a set of control logic cards, IGBT driver cards etc. Junction Boxes. Fuses, MOVs / arrestors, MCCBs etc along with spare set of PV modules be indicated, which shall be supplied along with the equipment. A minimum set of spares shall be maintained for the entire period of warranty for immediate replacement and Operation & Maintenance which upon its use shall be replenished.

17. DANGER BOARDS AND SIGNAGES:

Danger boards should be provided as and where necessary as per IE Act. /IE rules as amended up to date. Three signage shall be provided one each at battery –cum- control room, solar array area and main entry from administrative block. Text of the signage may be finalized in consultation with The Campco Limited.

18. FIRE EXTINGUISHERS:

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

- a) Portable fire extinguishers in the control room for fire caused by electrical short circuits
- b) Sand buckets in the control room
- c) The installation of Fire Extinguishers should confirm to TAC regulations and BIS standards.
- d) The fire extinguishers shall be provided in the control room housing PCUs as well as on the Roof or site where the PV arrays have been installed.

19. DRAWINGS & MANUALS:

- i. Two sets of Engineering, electrical drawings and Installation and O&M manuals are to be supplied. Bidders shall provide complete technical data sheets for each equipment giving details of the specifications along with make/makes in their bid along with basic design of the power plant and power evacuation, synchronization along with protection equipment.
- ii. Approved ISI and reputed makes for equipment be used.
- iii. For complete electro-mechanical works, bidders shall supply complete design, details and drawings for approval to The Campco Limited before progressing with the installation work

20. PLANNING AND DESIGNING:

- i. The bidder should carry out Shadow Analysis at the site and accordingly design strings & arrays layout considering optimal usage of space, material and labor. The bidder should submit the array layout drawings along with Shadow Analysis Report to The Campco Limited for approval.
- ii. The Campco Limited reserves the right to modify the landscaping design, Layout and specification of sub-systems and components at any stage as per local site conditions/requirements.
- iii. The bidder shall submit preliminary drawing for approval & based on any modification or recommendation, if any. The bidder submit three sets and soft copy of final drawing for formal approval to proceed with construction work.

21. DRAWINGS TO BE FURNISHED BY BIDDER AFTER AWARD OF CONTRACT

- i. The Contractor shall furnish the following drawings Award/Intent and obtain approval
- ii. General arrangement and dimensioned layout
- iii. Schematic drawing showing the requirement of SV panel, Power conditioning Unit(s)/ inverter, Junction Boxes, AC and DC Distribution Boards, meters etc.
- iv. Structural drawing along with mounting details for the structure.
- v. Itemized bill of material for complete SV plant covering all the components and associated accessories.
- vi. Layout of solar Power Array
- vii. Shadow analysis of the roof

22. Deleted

23. SAFETY MEASURES:

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

ANNEXURE-A: DOCUMENTS REQUIRED FOR PROJECT SANCTION

Following documents will be required to be submitted for project sanction:

1. Project Report (As per TOC provided by The Campco Limited) (Project report should contain the following TOC)
 - Context / background / Introduction
 - Project objectives
 - Target benefit
 - Project strategy / Approach of work & methodology
 - Environmental Impact Assessment, if required.
 - Site details including photographs with date & time stamping
 - Solar resource assessment
 - Technology selection (Module, Inverter and BOS)
 - Design , Simulation, and layout of SPV plant
 - Grid connectivity and metering scheme
 - Means of financing and project budget
 - Financial, Economic & Risk Analysis
 - Time frame / schedule of implementation