Bidding Document

EXPRESSION OF INTEREST

FOR

EMPANELMENT OF VENDORS FOR "DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING INCLUDING WARRANTY, COMPREHENSIVE OPERATION & MAINTENANCE OF GRID-CONNECTED ROOFTOP SOLAR PLANT OF VARIOUS CAPACITIES UNDER PHASE-II OF GCRTS SCHEME OF MNRE IMPLEMENTED BY HESCOM UNDER CAPEX MODEL

Tender Enquiry No. – HESCOM/SEE(PMC)/EEP3/GCRTS/2021-22

ISSUED BY

Superintending Engineer (Ele),
Project Monitoring Cell,
Corporate Office, HESCOM,
Hubli- 560001.

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Interpretations

1. Words comprising the singular shall include the plural & vice versa.
2. An applicable law shall be construed as reference to such applicable law including its amendments or re-enactments from time to time.
3. A time of day shall save as otherwise provided in any agreement or document be construed as a reference to Indian Standard Time.
4. Different parts of this contract are to be taken as mutually explanatory and supplementary to each other and if there is any differentiation between or among the parts of this contract, they shall be interpreted in a harmonious manner so as to give effect to each part.
5. The table of contents and any headings or sub-headings in the contract has been inserted for case of reference only & shall not affect the interpretation of this agreement.

Disclaimer

1. Though adequate care has been taken while preparing the RFP document, the Bidders shall satisfy themselves that the document is complete in all respects. Intimation of any discrepancy shall be given to this office immediately. If no intimation is received from any Bidder within fifteen (15) days from the date of notification of RFP/ Issue of the RFP document, it shall be considered that the RFP document is complete in all respects and has been received by the Bidder.
2. HESCOM reserves the right to modify, amend or supplement this RFP document.
3. While this RFP has been prepared in good faith, neither HESCOM nor their employees 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 information, and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of this RFP, even if any loss or damage is caused by any act or omission on their part.

Place: Hubli
Date: Jan 2022

NOTICE INVITING TENDER

FOR

EMPANELMENT OF VENDORS FOR "DESIGN, SUPPLY, ERECTION, TESTING AND COMMISSIONING INCLUDING WARRANTY, COMPREHENSIVE OPERATION & MAINTENANCE OF GRID-CONNECTED ROOFTOP SOLAR PLANT OF VARIOUS CAPACITIES UNDER PHASE-II OF GCRTS SCHEME OF MNRE BEING IMPLEMENTED BY HESCOM THROUGH STATE E-PROCUREMENT PORTAL (TWO PART BIDDING e-TENDER) - https://eproc.karnataka.gov.in

The Ministry of New and Renewable Energy, Government of India (MNRE) is implementing Phase-II of Grid Connected Rooftop Solar (GCRTS) Programme wherein central financial assistance (CFA) is being provided for installation of rooftop solar (RTS) projects in residential buildings. To implement the RTS activities in respect of the aforesaid programme, respective Power Distribution companies (DISCOMs) have been designated as the implementing agency. Accordingly, HESCOM is the tendering the agency for its jurisdiction and will identify L-1 rates and empanel vendors for implementation of the programme. HESCOM is implementing the said program in its jurisdiction**.**

HESCOM invites e-bids from eligible bidders to participate in Request for Selection (RFS) for empanelment of vendors for Site Survey, Design, Installation, Supply, Erection, Testing and Commissioning including Warranty and 5 years of Comprehensive Operation and Maintenance of Roof Top Solar PV Power System for Residential Consumers in HESCOM jurisdiction**.** This RFS shall be governed by terms of sanction received from MNRE vide 318/63/2019- GCRT/Dt 19.01.2022 for HESCOM.

For the implementation of above-mentioned work, Bidders should submit their bid proposal online, complete in all aspect, on or before Last date of Bid Submission as mentioned on the Bid Information Sheet.

10.1 Bidder shall submit bid proposal along with non-refundable bid processing fee and EMD of Rs 4.50 Lakhs. Techno-Commercial bids will be opened online as per the Bid Information Sheet in presence of authorized representatives of bidders who wish to be present online. In the event of any date mentioned in bid information is declared a Holiday, the next working day shall become operative for the respective purpose mentioned herein.

Bid documents which include Eligibility criteria, "***Technical Specifications***", various conditions of contract, formats, etc. can be downloaded from https://eproc.karnataka.gov.in. Only the documents submitted at the time of Bid Submission shall be used in evaluation process. Bidders are advised to ensure that all supporting documents are submitted at the time of Bid Submission as no further

clarification/amendments would be entertained in this regard. Bidders are also encouraged to familiarize themselves with the MNRE scheme available at SPIN portal (solarroofotp.gov.in) for efficient execution.

Any amendment(s)/ corrigendum/ clarifications with respect to this Bid shall be uploaded on web page https://eproc.karnataka.gov.in. The Bidder should regularly follow up for any Amendment/ Corrigendum/ Clarification on the above website.

The bidding process under this Rooftop scheme is for 20 *MWp* comprising of CAPEX Model.

S. N	**Category**	**Proposed Capacity**	**Approx Aggregate Capacity (MW)**	**Min Capacity (MW)** *(for which the Bidder can submit its Bid)*	**Max Capacity (MW)** *(for which the Bidder can submit its Bid)*
1.	Part-A	1 kW to 3 kW	4 MW	500kWp for General Category Bidders and 50kWp for MSME	4 MW
2.	Part-B	Above 3 kW to 10 kW	3 MW		3 MW
3.	Part-C	Above 10 kW to100 kW	2 MW		2 MW
4.	Part-D	Above 100 kW to 500 kW	1 MW		1 MW

Note: For common facilities in Group Housing Societies/Residential Welfare Associations (GHS/RA) etc. the allowed RTS capacity shall be limited up to 500 kWp (@ 10 kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation. Bidders are requested to quote Minimum Capacities in each part as per above table.

Superintending Engineer (Ele),
Project Monitoring Cell,
Corporate Office, HESCOM,
Hubli- 560001.

SCOPE OF WORK:

HESCOM invites bids for empanelment of firms for Design, supply, erection, testing and commissioning including warranty, comprehensive operation & maintenance for a period of 05 years of Grid connected Rooftop solar plants of various capacities in its jurisdiction under CAPEX model.

HESCOM will empanel eligible vendors participating in this empanelment process and wish to provide their services on the price/rate discovered through transparent bidding process. The CFA pattern is as detailed below.

Type of Residential Sector	**CFA (as percentage of bench mark cost or cost discovered through competitive process whichever is lower)**
Residential sector (Maximum upto 3kW capacity)	40% of bench mark cost
Residential sector (above 3kW capacity and upto 10kW capacity)	40% upto 3kW Plus 20% for RTS system above 3kW and upto 10kW
Group Housing Societies/ Residential Welfare Associations (GHS/RWA) etc. for common facilities up to 500 kWp (@10kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation of RTS for common activity.	20%

HESCOM will not be responsible in case any empanelled vendors do not get any work order. The consumers under this scheme shall be free to install their projects from any empanelled vendors subject to the condition that project shall have to be installed/commissioned as per the MNRE Phase-II Guidelines and subsequent amendments.

The empanelled vendors will carry out the design, supply, erection, testing and commissioning including warranty, comprehensive operation & maintenance for a period of 05 years for CAPEX Model of grid interactive rooftop solar PV power plant and shall make all necessary arrangement for evacuation and injection of surplus power to the grid at the interconnection point/ points as agreed with HESCOM.

1. The detailed Scope of Work for empanelled vendors shall essentially cover but not be limited to:

1.1. Identification of prospective beneficiaries and providing necessary assistance to the prospective beneficiary in submitting online applications for installation of RTS project.

1.2. Preparation of Detailed Project Report (DPR) of the proposed Proposal of Rooftop Solar Power Plant.

1.3. Obtaining approval from HESCOM for providing grid connectivity.

1.4. Submission of proposal with all required documents to HESCOM for sanctioning of the project.

1.5. Execution of the work shall be carried out in an approved manner as per the technical specification of RFP. In case of any dispute, relevant MNRE/BIS/ ISI/NABL/ISO/IEC/IS specification shall be followed and work shall be carried out to the reasonable satisfaction of the engineer in charge.

1.6. The vendor shall complete the work of Design, supply, civil work, erection, testing and commissioning of SPV grid connected Power Plant within 6 months from the issuance of the LOI or the last date of the project timeline specified by MNRE to HESCOM i.e. 18.01.2024, whichever is earlier. In event of failure to install and commission the RTS system within the mentioned timeframe, the entire Performance Bank Guarantee will be forfeited and may also lead to disqualification of the vendor at the sole discretion of HESCOM.

1.7. The work covers Design, supply, installation, commissioning and Comprehensive Maintenance Contract (CMC) for 05 (Five) Years.

1.8. Empanelled vendors shall establish a service Centre to cater the 05 Years CMC. In case if it is not economically viable for an individual vendor then Group of vendors can establish a common service Centre. The details of all such service centres shall be submitted to Corporate office (address, contact no. etc.) which will be made available on in respective website for further reference.

1.9. All the material required for the installation of solar power plant as per the work order issued shall be kept at site in custody of the vendor, *HESCOM* shall not be responsible for any loss or damage of any material during the installation. The vendor shall be responsible and take an insurance policy for transit-cum-storage-erection for all the materials.

1.10. The vendor shall take entire responsibility of electrical safety of the installations including connectivity with the grid and follow all the safety rules and regulations applicable as per Indian Electricity Act-2003 and prevailing CEA guidelines and amendments, it shall be responsibility of the vendor to take NOC from concerned authority and engage person as per provisions as per in CEA Rules and Regulations.

The Empanelled vendor shall ensure proper safety of all the workmen, material, plants and equipment belonging to him/her. In case any accident occurs during the construction / erection or during guarantee

period for work undertaken by Empanelled Vendor thereby causing any minor or major or fatal accident will be the responsibility of the Empanelled Vendor. The successful Vendors shall follow and comply with the employer's safety rules relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment. The Empanelled vendors shall also arrange all certificates and test reports of the module and inverter and other equipment. The Empanelled Vendors must adhere to the Operation and Maintenance procedure given in **Annexure-C** of this document.

1.11. Assisting in execution of Power Purchase Agreement (PPA) in the Commission approved standard format as per KERC regulations between Consumer & HESCOM i.e., the empaneled vendor shall educate the consumer to execute PPA with HESCOM within stipulated time.

1.12. Training to the consumer on various aspects of maintenance of the system after commissioning shall be provided by the empaneled vendor.

1.13. The CFA claims of the systems installed and commissioned shall be processed with following documents:

1.13.1. Dated Claim letter from the bidder on its letter head certifying that the SPV Modules and Cells deployed in the systems installed are Indian Made (DCR Undertaking as prescribed MNRE Format as **Annexure-W**), and all the technical specifications of the components supplied and installed are in accordance with the specifications given in this document and adhere to MNRE requirement and all the information / documents provided along with the claim letter are is correct and factual.

1.13.2. Invoice of the System billed to the beneficiary.

1.13.3. Photograph of the system with placard held by the beneficiary and representative of HESCOM showing the name of the beneficiary, HESCOM's application registration number and system capacity.

1.13.4. Certificate of the beneficiary that the system is installed and commissioned in all respect with the date of commissioning, system and invertor capacity, etc. and that he has been provided the 05 (Five) Year Warranty Card and the O&M Manual.

1.13.5. Overwritten certificates/ documents shall be out rightly rejected and will not be processed for CFA payment.

1.13.6. Self-certified copies of documents will be submitted in support of claims made by the Empanelled Vendors.

1.13.7. The CFA shall be released subject to availability and release of funds from MNRE, GoI to HESCOM.

1.13.8. Third party Inspection may also be carried for disbursement of CFA. Third party Inspection may be carried out by the Agency nominated by MNRE or HESCOM.

Bid Information Sheet

S. N	Category	Proposed Capacity	Approx Aggregate Capacity (MW)	Min Capacity (MW) *(for which the Bidder can submit its Bid)*	Max Capacity (MW) *(for which the Bidder can submit its Bid)*
1.	Part-A	1 kW to 3 kW	4 MW	500kWp for General Category Bidders and 50kWp for MSME	4 MW
2.	Part-B	Above 3 kW to 10 kW	3 MW		3 MW
3.	Part-C	Above 10 kW to100 kW	2 MW		2 MW
4.	Part-D	Above 100 kW to 500 kW	1 MW		1 MW

Note: Bidder can bid for PART-A or PART-B or Part-C or PART-D as per the eligibility criterion of RFP. Bidders can also bid combination of parts under CAPEX Model and for all parts subject to meeting the eligibility criterion set forth herewith.

Broad Scope	Identification of rooftops/beneficiaries which includes but is not limited to submission of project sanction documents, EPC agreement between Empanelled Vendor and the Consumer(s) at the quoted project cost and Clearances from HESCOM as per terms and conditions of RFP for the approval of capacity 10MW for issue of project specific consent letter(s). Design, Engineering, Manufacture, Supply, Storage, Civil work, Erection, Testing & Commissioning of the Grid-connected rooftop solar PV project including comprehensive Operation and Maintenance (O&M) of the project for a period of 05 years for CAPEX Model after commissioning of project. Total timeline for the above Scope of Work up to Commissioning of project is 6 Months from the date of the Letter of Allocation (LoA) or 24 months from dated of MNRE Sanction to HESCOM, whichever is earlier. (18.01.2024)
Downloading of RFP document	The Bid Document can be downloaded from the https://eproc.karnataka.gov.in *from [25.1.2022] to [24.02.2022]*
Pre-Bid Conference/Clarification meeting	Date: Time: Venue:
Online Bid submission Deadline	Date: Time:
Date of Techno-Commercial bids opening	Date and Time: Venue:
Validity of Bid	Validity of bid shall be minimum 06 months from the date of techno-commercial bid opening date
Validity of Price	12 months after the date of issuance of Letter of Allocation (LoA)/ Work Order or 24 months from date of Sanction [*i.e.* ***19.01.2022***], whichever is earlier.

Processing Fee (Non-refundable)	The eligible bidders who wish to participate in the tender shall have to pay the Non-refundable tender processing fee as specified in the e- procurement portal https://eproc.karnataka.gov.in
Bid Bond/EMD	Refer EMD Clause in the tender Documents.
Bid Process	Two Part (Techno-Commercial Bid & Price Bid) on https://eproc.karnataka.gov.in.
Name, Designation, Address and other details of Tender Inviting Authority	Superintending Engineer(Ele), Project Monitoring Cell, Corporate Office, HESCOM, Hubli-580025
Important Note: Prospective bidders are requested to remain updated for any notices/amendments/clarifications etc. to the RFP document through the website: https://eproc.karnataka.gov.in. No separate notifications will be issued for such notices/ amendments/ clarification etc. in the print media or individually. All the information related to this RFP shall be updated in the e-procurement website.	

DEFINITIONS

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

. **'HESCOM'** means Hubli Electricity Supply Company, the implementing agency and shall include its legal representatives, successors and assigns

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 **"Beneficiary"** or **"Customer"** shall mean the residential category Consumers of HESCOM for 1-phase / 3-phase connection of Supply of Electricity

1.3 "**Bid"** shall mean the Techno Commercial and Price Bid submitted by the Bidder along with all documents/credentials/attachment's annexure etc., in response to this RFP, in accordance with the terms and conditions hereof.

1.4 **"Bidder"** shall mean Bidding Company/ Bidding consortium submitting the Bid. Any reference to the Bidder includes Bidding Company / Bidding consortium / consortium, members of a bidding consortium including its successors, executors and permitted assigns and lead member of the bidding consortium jointly and severally, as the context may require".

1.5 **"Bidding Company"** shall refer to such single company that has submitted the response in accordance with the provisions of this RFP.

1.6 **"Bidding consortium or consortium"** shall refer to a group of

companies that have collectively submitted the response in accordance with the provisions of this RFP.

1.7 **"Bid Bond"** shall mean the unconditional and irrevocable bank guarantee to be submitted along with the Bid by the Bidder under Clause of this RFP, in the prescribed Format;

1.8 **"Bid Deadline"** shall mean the last date and time for submission of Bid in response to this RFP as specified in Bid information Sheet;

1.9 **"Bid Capacity"** shall means capacity offered by the bidder in his Bid under invitation.

1.10 **"CAPEX"** CAPEX Model.

1.11 **"CEA"** shall mean Central Electricity Authority.

1.12 **"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;

1.13 **"Competent Authority''** shall mean Managing Director (MD) of HESCOM and/or a person or group of persons nominated by MD for the mentioned purpose herein;

1.14 **"Contract"** shall mean the agreement to be entered into by the HESCOM with the Empanelled Agency upon receiving the Letter of Empanelment from HESCOM for implementation of the Scheme/ Project and shall include the General and commercial terms & condition, scope of work, project requirement, technical conditions, schedules, appendixes, drawings and any other conditions specifically agreed between the parties forming a part of the contract.

1.15 **"Commissioning"** shall mean successful installation and grid-integration of the Solar Power Project by the Contractor , as defined in RFP.

1.16 **"Company"** shall mean a body incorporated in India under the Companies Act, 1956 or Companies Act, 2013, including any amendment there to.

1.17 **"Capacity Utilization Factor"** (CUF) means the ratio of the annual output of the plant in kWh versus installed plant capacity for number of days.

CUF = plant output in kWh / (installed plant capacity in kW * 365 * 24).

1.18 **"Circle"** means Operation and Maintenance Circles of HESCOM

1.19 **"DNI"** shall means Direct Normal Irradiation.

1.20 **"Date of completion of project**" shall mean that the date of completion of project with project handed over and accepted by the consumer applicant in all respect provided that the assignees, Guarantee and warranty of 05 years shall be applicable as per the RFP Document terms and condition after the date of completion of Project.

1.21 **"Division"** Shall mean Operation and Maintenance Division of HESCOM.

1.22 **"Eligibility Criteria"** shall mean the Eligibility Criteria as set forth in **Clause 5.5** of this RFP.

1.23 **"EMD"** shall mean Earnest Money Deposit declaration for which is required to be Paid as per the prevailing terms and conditions of RFP.

1.24 **"Empanelled Vendor(s) / Contractor / Project Developers(s)"** shall mean the Bidder(s) selected by HESCOM pursuant to this RFP

1.25 **"EPC"** Shall mean Engineering, Procurement and commissioning of the complete project as per the terms and condition of the RFP Document.

1.26 **"Financially Evaluated Entity"** shall mean the company which has been evaluated for the satisfaction of the Financial Eligibility Criteria.

1.27 **"Financial Year"** or "FY" shall mean the Period starting from 1 April of the first calendar year to 31 March of the consecutive calendar year.

1.28 **"Inter-connection point / Delivery / Metering Point"** shall mean the point at distribution voltage level where the power from the solar power Project is injected. Metering shall be done at this interconnection point where the power is injected into the Distribution System i.e. the Delivery Point. For interconnection with grid and metering, the EPC shall abide by the relevant KERC SRTPV Regulations and their amendments thereof.

1.29 HESCOM shall mean Distribution Company responsible for implementation of Phase-II Rooftop Solar Scheme.

1.30 "**kWp**" shall mean Kilo-Watt Peak and MWp shall mean Mega-Watt Peak.

1.31 "**kWh**" shall mean Kilo-Watthour.

1.32 **"Letter of Intent" or "LOI"** shall mean the letter issued HESCOM to the Selected Bidder to secure their Intent for award of the Project.

1.33 **"Limited Liability Partnership (LLP)"** shall mean Limited Liability Partnership as per Limited Liability Partnership Act 2008.

1.34 **"LOA"** shall mean the letter issued by HESCOM to the selected Bidder for Award of Work.

1.35 "**MNRE**" shall mean Ministry of New and Renewable Energy, Government of India.

1.36 **"Maximum Bid Capacity"** shall mean 10 MW which is the maximum capacity for which the Bidder can submit its Bid against each Part/ Category.

1.37 **"Model"** shall mean CAPEX Model.

1.38 **'Net-metering'** means the energy generated by the solar rooftop plant is first allowed for self- consumption and the excess energy is injected to the grid.

'Gross-metering' means the total energy generated by the solar rooftop plant is to be injected into the grid without allowing the generated solar energy to be consumed directly by the consumer**.**

1.39 "**O&M**" shall mean Operation & Maintenance of Rooftop Solar PV System for a period of 05 years for CAPEX Model.

1.40 **"Project"** Shall mean the project of the Design, Supply, Installation, testing & Commissioning of Grid connected Rooftop Solar Systems including five years comprehensive maintenance

1.41 **"Project Cost / Project Price"** shall mean the price offered by the Bidder for the Scope of work as per RFP document.

1.42 **"Project capacity"** means Capacity in kW allocated to the Bidder for various locations within HESCOM juridiction.

1.43 **"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= (Measured output in kW /Installed Plant capacity in kW * (1000 W/m2/Measured radiation intensity in W/m2).*

1.44 **"Parent Company"** shall mean a company that holds at least twenty six percent (26%) of the paid-up equity capital directly or indirectly in the Bidding Company as the case may be.

1.45 **"Project Sanction Documents"** shall mean the documents required for sanction of project.

1.46 **"Price Bid"** shall mean ***Price Bid*** of the Bid, containing the Bidder's quoted Price as per this RFP;

1.47 **"Project Cost"** shall mean the Cost offered by the bidder for the scope of work as per the RFP document.

1.48 **"PV System" or "SPV " or " SPV System"** shall for the purpose of this tender mean the Grid-connected Rooftop Solar Photo-Voltaic (PV) system including the PV modules, grid-connected inverter(s), module mounting structure(s), cables and connectors, safety and Earthing equipment, interconnection equipment, and inverter with remote monitoring with other components for Rooftop Solar System that shall be supplied,

installed, commissioned and maintained by the Empanelled Agency.

1.49 **"Qualified Bidder"** shall mean the Bidder(s) who, after evaluation of their Techno Commercial Bid stand qualified for opening and evaluation of their Price Bid;

1.50 "**RFP**" shall mean Request for Proposals (RFP) /Bid Document/ Tender Document.

1.51 "**Renewable Energy Meter/Solar Generation Meter"** refers to a unidirectional energy meter, installed and used solely to record the renewable energy generation from the Renewable Energy System installed at the consumer's premises.

1.52 **"Rooftop Owner"** shall means owner of roofs at various locations within HESCOM Jurisdiction consisting of single or multiple rooftops.

1.53 **"Consent Letter"** shall mean the letter provided by HESCOM for a single or group of PV systems after the approval of the project sanction documents submitted by the contractor.

1.54 **"Scheme"** shall mean Phase-II Grid Connected Rooftop Solar Scheme for Providing Grid-connected Rooftop Solar System for Residential Consumers announced by the Ministry of New and Renewable and Renewable Energy, Government of India.

1.55 **"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.

1.56 ***"SNA"*** shall mean State Nodal Agency.

1.57 **"Solar Power Developer (SPD)"** shall mean Empanelled Vendor(s) to whom the project is/are allocated.

1.58 **"Specification"** shall mean the RFP Document forming a part of the contract along with Proforma, schedules, appendixes and Annexures.

1.59 **"Sub-Division"** shall mean Operation and Maintenance Sub-

Division of HESCOM.

1.60 **"Central Financial Assistance (CFA)"** shall mean subsidy to be provided by MNRE under the ambit of Phase-II Rooftop Solar Scheme.

1.61 **"System"** shall mean the Grid connected Rooftop Solar System as per RFP Document that shall be supplied, installed, commissioned and maintained with all other ancillary required by the vendor for satisfactory operation of the System.

1.61 **"Tendered Capacity"** shall mean the Total aggregate capacity in kW indicated by the Vendors through this bidding process as per terms and conditions specified therein.

1.63 **Ultimate Parent Company"** shall mean a company which directly or indirectly owns at least twenty six percent (26%) paid up equity capital in the Bidding Company) and/or in the Financially Evaluated Entity and such Bidding Company and /or the Financially Evaluated Entity shall be under the direct control or indirectly under the common control of such company.

1.64 "**Wp"** shall mean Watt Peak.

1.65 **"Week"** shall mean the continuous period of seven days.

1.66 "Work" shall mean activities of Supply, Installation, testing & commissioning of the RFP Document item for which the offers are invited.

1.67 "Allocated capacity" shall mean the capacity allocated to a bidder by HESCOM based on the procedure defined in this tender document. The allocated capacity will be mentioned in the Letter of Allocation (LoA).

1.68 "Installed Capacity" shall mean the capacity of Grid connected Rooftop Solar Photovoltaic Systems installed and commissioned by the bidder during the empanelment period.

ABBREVIATIONS

Abbreviations	Full Forms
DSC	Digital Signature Certificate
AC	Alternating Current
ACDB	Alternating Current Distribution Board
Ah	Ampere-hour
ALMM	Approved List of Models and Manufacturers
BOQ	Bill of Quantity
BIS	Bureau of Indian Standards
CCA	Controller of Certifying Authorities
CEA	Central Electricity Authority
CFA	Central Financial Assistance
CEI	Chief Electrical Inspector
CMC	Comprehensive Maintenance Contract
EP	Empanelled Partner
CUF	Capacity Utilization Factor
DC	Direct Current
DCDB	DC Distribution Board
DPR	Detailed Project Report
DG	Diesel Generator
DISCOM	Distribution Company
DPB	Distribution Panel Board
DSP	Digital Signal Processor
EMC	Electromagnetic Compatibility
EMD	Earnest Money Deposit
EMI	Electromagnetic Interference
EN	European Norms
EOI	Expression of Interest
EPDM	Ethylene Propylene Diene Monomers
FF	Fill Factor
FOR	Freight on Rail/Road
FRP	Fibre-reinforced plastic
GHI	Global Horizontal Irradiance
GHS	Group Housing Society
GI	Galvanised Iron
GPRS	General Packet Radio Service
GPS	Global Positioning System
GRP	Glass Reinforced Plastic
GST	Goods and Services Tax

HDPE	High Density Polythylene
Hz	Hertz
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGBT	Insulated-gate bipolar transistor
Imp	Peak Power Current
INR	Indian Rupees
IP	Ingress Protection
IS	Indian Standard
Isc	Short Circuit Current
ISI	Indian Standards Institute
ISO	International Standards Organization
ITB	Instructions to Bidders
JB	Junction Box
SERC	State Electricity Regulatory Commission
JSON	JavaScript Object Notation
kg	Kilogram
km/hour	kilometres per hour
kVA	kilo-volt-ampere
kW	Kilowatt
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LoA	Letter of Authorization
LoI	Letter of Intent
LPSC	Lightning Protection System Components
LT	Low Tension
MCB	Miniature Circuit Breaker
MCCB	Moulded Case Circuit Breaker
mm	Millimetre
MNRE	Ministry of New and Renewable Energy
MMS	Module Mounting Structure
MOSFET	Metal-Oxide Semiconductor Field-Effect Transistor
MOV	Metal Oxide Varistor
MPPT	Maximum Power Point Tracker
MSME	Micro, Small and Medium Enterprises
MW	Mega Watt
NIB	Notice Inviting Bid
NIT	Notice Inviting Tender
NOC	No Objection Certificate
O&M	Operations and Maintenance
PAN	Permanent Account Number

PBG	Performance Bank Guarantee
PCU	Power Conditioning Unit
PR	Performance Ratio
PGT	Performance Guarantee Test
PSU	Public Sector Undertaking
PV	Photovoltaic
PVC	Polyvinyl Chloride
PWM	Pulse width modulation
RFID	Radio Frequency Identification
RFP	Request for Proposal
RFS	Request for Selection
RTS	Rooftop Solar
RWA	Residential Welfare Association
SBD	Standard Bid Document
SIM	Subscriber Identification Module
SNA	State Nodal Agency
SPD	Surge Protection Device
SPIN	Solar Photovoltaic Installation
SPV	Solar Photo Voltaic
sq.m	square meter
STC	Standard Testing Condition
TAC	Tariff Advisory Committee
THD	Total Harmonic Distortion
TIN	Taxpayer Identification Number
UV	Ultraviolet
V	Volt
VA	Volt Ampere
Vmp	Peak Power Voltage
Voc	Open Circuit Voltage
W	Watt
XLPE	Cross-linked polyethylen
XLPO	Cross-linked Polyolefin
XML	Extensible Mark-up Language

SECTION-I

A: Introduction, Bid details and instructions to the Bidders

B: Conditions of Contract

A. INTRODUCTION, BID DETAILS AND INSTRUCTIONS TO THE BIDDERS

INTRODUCTION

1. The Ministry of New and Renewable Energy, Government of India (MNRE) is implementing Phase-II of Grid Connected Rooftop Solar (GCRTS) Programme wherein central financial assistance (CFA) is being provided for installation of rooftop solar (RTS) projects in residential buildings. To implement the RTS activities in respect of the aforesaid programme, respective Power Distribution companies (DISCOMs) have been designated as the implementing agency. Accordingly, HESCOM is the tendering agency for its jurisdiction and will identify L-1 rates and empanel vendors for implementation of the programme.

1.1 This tender document is in accordance with MNRE Phase II guidelines vide notification 318/331/2017 dated 20.08.2019. The guidelines/scheme documents/amendments for Phase-II of GCRTS programme can be seen on SPIN portal (www.solarrooftop.gov.in).

HESCOM may register interested applicants for RTS installation under the scheme and the same may be shared with empanelled vendors for installation. For identification of applicants/ consumers, HESCOM may assist empanelled vendors. However, the entire responsibility of finding the applicants/ consumers lies with the vendors. HESCOM/MNRE bears no responsibility in this regard.

1.2 This scheme with an aggregate capacity of 10 MWp for HESCOM only envisages installation of grid-connected Rooftop solar projects on the roofs of consumers as specified by **MNRE vide Order No. 318/331/2017 – Grid Connected Rooftop Dated 20th August 2019** and their amendments issued from time to time i.e. broadly in following categories:

Sl. No.	Category	Coverage of Buildings
(i)	Residential	All types of Residential buildings and Group Housing Societies/Residential Welfare Associations (GHS/RWA)

The Ministry of New and Renewable Energy (MNRE), Government of India vide OM No. 318/38/2018-GCRT dated 18.08.2021 has notified the Benchmark cost for Rooftop Solar Plants for FY 2021-22 as under:

S.No.	*Capacity Range**	**Benchmark Cost *(INR/Wp)* *excluding GST*** General Category States /UTs
1.	*1 kWp*	46923
2.	*2 kWp*	43140
3.	*3 kWp*	42020
4.	*Above 3-10 kWp*	40991
5.	*Above 10-100 kWp*	38236
6.	*Above 100-500 kWp*	35886

*The project capacity shall be considered as Inverter capacity or the SPV module array capacity, whichever is lower, for the purpose of determining CFA.

Note:

i. All the above benchmark costs are inclusive of total system cost including Photo-Voltaic solar modules, inverters, balance of systems including cables, Switches/Circuit Breakers /Connectors/ Junction Boxes, mounting structure, earthing, Lightening arrester, cost of meters (if any other than net meter), local connectivity cost, cost of civil works, foundations etc. and its installation, commissioning, transportation, insurance, capital cost of online monitoring, comprehensive maintenance charges for five years, applicable fees and taxes etc.

ii. The above-mentioned benchmark costs are excluding net metering cost and battery back-up costs.

iii. The above-mentioned benchmark cost is indicative only and rates will be discovered through this bidding process. **Prevailing MNRE benchmark cost should NOT be considered as the ceiling rate for any bidding agency.**

The CFA structure applicable is as Tabulated below (As per MNRE Guidelines or as applicable at the time of commissioning of the project):

Type of Residential Sector	**Central Financial Assistance (CFA)** (as percentage of benchmark cost or cost discovered through competitive process, whichever is lower)
Residential sector (maximum up to 3 kW capacity)	40 % of Benchmark Cost/discovered cost, whichever is lower

Residential sector (above 3 kW capacity and up to 10 kW capacity)	40 % up to 3 kW Plus 20% for RTS system above 3 kW and up to 10 kW. (Percentage of benchmark cost/discovered cost, whichever is lower)
Group Housing Societies/Residential Welfare Associations (GHS/RWA) etc. for common facilities up to 500 kWp (@ 10 kWp per house), with the upper limit being inclusive of individual rooftop plants already installed by individual residents in that GHS/RWA at the time of installation of RTS for common activity.	20% of Benchmark Cost/discovered cost, whichever is lower

Note: *Central Financial Assistance (CFA) disbursement will be governed as per MNRE Office Memorandum No.318/331/2017-GCRT Dated 3rd September 2019 on "Clarification on applicability of CFA individual residential households for installation of rooftop solar system under Phase-II of Grid-connected Rooftop Solar Programme".*

1.3 On behalf of HESCOM, the Superintending Engineer(Ele), Project Monitoring Cell, Corporate Office, which expression shall also include its successors and permitted assigns, hereby invites interested vendors to participate in the bidding process for the selection of Empanelment of vendors for implementation of Grid-connected Rooftop Solar Projects for 10 MWp aggregate capacity as per RFP.

1.4 The bidders who are techno-commercially qualified wish to provide their services on the project cost discovered through transparent E-bidding process, shall be empanelled for implementation of the said project. The CFA shall be calculated as indicated in the above table on the basis of discovered price or MNRE benchmark cost, whichever is lower. The tenure of empanelment shall be 12 Months from the date of empanelment letter issued by HESCOM or upto the last date of the sanction period allocated by MNRE to HESCOM i.e. [18.01.2024], whichever is earlier. Depending on requirement and with approval of MNRE, HESCOM may extend the tenure of empanelled vendors for implementation of the project.

1.5 The Bidders are 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 nonresponsive.

1.6 The bidder shall be deemed to have examined the bid document and MNRE scheme, to have obtained own information in all matters whatsoever that might affect carrying out the works in line with the scope of work specified elsewhere in the document at the offered rates and to have satisfied to the level of sufficiency. The bidder shall be deemed to be in knowledge of 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, bidder 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. SIZE OF THE PROJECTS AND BID DETAILS:

2.1 The size of each project shall be in the range for each part as under:

Part-A : 1 kWp to 3 kWp.
Part-B : Above 3 kWp to 10 kWp.
Part-C : Above 10 kWp to 100 kWp.
Part-D : Above 100 kWp to 500 kWp.

One part may however comprise of several rooftop units. Each Rooftop unit can separately connect with the grid and may have separate meters.

2.2 Entire allocated capacity is bifurcated into different parts, bidders may quote one or more than one part:

Aggregate Capacity 20 MWp
(04 Different Parts)

S. N	**Category**	**Proposed Capacity**	**Approx Aggregate Capacity (MW)**	**Min Capacity (MW)** *(for which the Bidder can submit its Bid)*	**Max Capacity (MW)** *(for which the Bidder can submit its Bid)*
1.	Part-A	1 kW to 3 kW	4 MW	500kWp for General Category Bidders and	4 MW
2.	Part-B	Above 3 kW to 10 kW	3 MW		3 MW

3.	Part-C	Above 10 kW to100 kW	2 MW	50kWp for MSME	2 MW
4.	Part-D	Above 100 kW to 500 kW	1 MW		1 MW

The bids are invited from the prospective bidders for the tendered capacity based on the Project Cost. In this part, bidders are required to quote the Project Cost for the capacity proposed by the bidder (*in between the minimum and maximum range*). CFA shall be provided to the successful bidders as per the provisions laid down in the MNRE scheme.

However, MNRE vide Office Memorandum **No. 318/331/2017- Grid Connected Rooftop Dated 19th February 2021** has kept a provision of minimum **1% of the total allocated capacity under the tender to L1 bidder** and in the case L1 vendor does not execute the allocated capacity, as a penalty his/her bank guarantee will be encashed and he/she shall be blacklisted for 5 years from all Government Tenders.

2.3 Bids not in conformity with above provisions & sub-clauses will not be considered and shall be treated as nonresponsive/incomplete, and will be summarily rejected by HESCOM.

2.4 Offer of the Vendors who will quote less than the minimum tendered capacity in respective category will be treated as non-responsive and shall be summarily rejected. However, Offer of the Vendors who have quoted more than the maximum tendered capacity in respective category will be limited to the maximum category wise tendered capacity.

3. Components/Package of Grid Connected Rooftop Solar PV System:

The bidders shall quote price of the complete package essentially covering - "design, supply, erection, testing and commissioning including warranty and 05 years of comprehensive operation & maintenance of grid-connected rooftop solar PV plant. For the purpose of this tender, the components of a Grid Connected Rooftop Solar PV System shall essentially comprise but not be limited to crystalline solar PV Panels/modules of required number, Inverters/PCU, module mounting structures of minimum 300mm ground clearance at the lowest point from the roof surface, total Cable/wiring up to 30 m in length, cable conduits, required array junction boxes, DC distribution box, AC distribution box, various connectors, nut- bolts, civil and mechanical works, Protection-Earthing, lightning, surges, drawling & manual and other miscellaneous works. The price

shall also be inclusive of all taxes, duties and transit insurance of all components as mentioned in the benchmark cost of MNRE. However, the price quoted by the bidders shall be exclusive of GST (Goods and Services Tax).

The empanelled vendor shall not be allowed to charge any extra amount other than the L-1 price for the package of Grid Connected Rooftop Solar PV system as indicated above. However, in case of any customization desired by the beneficiary/consumer, the vendor is allowed to charge extra amount to the beneficiary/consumer, on actual basis, subject to signing of a declaration in this regard in the format attached at Annexure-Y.

4. INSTRUCTIONS TO THE BIDDERS

4.1. Procedure proposed to be adopted by HESCOM for implementation of the scheme:

a. The MNRE has allocated a capacity of 10 MW for HESCOM for the financial year 2021-22.
To encourage installation of Solar Rooftop Plants across all areas in HESCOM jurisdiction, the capacity allocation of 10 MW is proposed and applications from the Consumers will be received till the proposed capacity allocation is reached. The applications will be processed on first come first serve basis.

b. Bidders are required quote their maximum capacity for one or more/all parts (PART A, PART B, PART C, PART D) as detailed in clause 2.0. A bidder can participate in more than one category and can quote different rates for different categories.

c. HESCOM is developing simplified and user-friendly online portal for implementation of the SRTPV scheme wherein all the stages of implementation i.e., from application registration to commissioning can be tracked online.

d. Interested Consumers for this scheme are required to apply online through HESCOM web portal. Only online applications will be accepted under this scheme and there is no scope for offline application.

e. Identification and Survey of prospective beneficiaries and facilitating/assisting registration of the SRTPV project through HESCOM online portal is in the scope of the successful bidder.

f. HESCOM, through its online portal will provide option for SRTPV applicants to select any one of the empanelled agencies among the agencies empanelled by HESCOM for carrying of installation of their SRTPV plant. This option would be enabled for the applicants at the time of execution of Power Purchase Agreement.

g. Payments:

The Consumer has to make the following payments.

Application & Facilitation fees: (To HESCOM)

Sl No	Capacity of the proposed SRTPV Plant	Registration Fee in Rs.	Facilitation Fee in Rs.	Total Amount in Rs.
1	From 1kWP upto and inclusive of 5 kWP	500/-	1000/-	1500 plus applicable GST.
2	Above 5kWP upto to and inclusive of 50 kWp	1000/-	2000/-	3000 plus applicable GST.
3	Above 50 kWP and upto 500 kWp	2000/-	5000/-	7000 plus applicable GST.

h. Cost of Installation & Commissioning: (To Empanelled agency)

Consumer has to pay the amount exclusive of CFA amount for the registered capacity towards the cost of installation directly to the empaneled vendor. The cost per kW will be the cost discovered through this RFP for that capacity category.

i. Cost of Metering:

Consumer has to pay the cost of the bi-directional meter and the related necessary components of metering system.

j. Technical Feasibility: Technical feasibility for the applications will be provided by the concerned sub divisional officers of HESCOM. The applications will be rejected if they are not technically feasible.

k. The **Power Purchase Agreement (PPA)** will be executed with the registered applicants, if the installation of SRTPV plant is found to be technically feasible. The PPA will be executed in accordance with KERC SRTPV regulations on Non-Judicial stamp paper of Rs. 200. The cost of the stamp paper shall be borne by the Consumer.

l. The empanelled agency has to install and commission the SRTPV plant in accordance with timelines mentioned is subsequent sections of this RFP.

m. Consumer has to co-ordinate with empanelled agency and HESCOM at all stages of implementation i.e., from application to registration to commissioning to enable installation of SRTPV plant in accordance with KERC /HESCOM guidelines.

4.2. Timelines & Capacity Allocation:

HESCOM, through its online portal will enable receipt of application from the interested domestic Consumers of HESCOM for participation in this scheme. The online portal will be enabled for registration of applications under this scheme only after empanelment of the agencies through this RFP.

The following is the timeline for implementation of the scheme:

The activities listed against the timeline mentioned below shall be completed within the empanelment duration.

Sl. No	Activity	Responsibility	Timeline (Max Working Days)
1	Submission of online applications	Consumer and empanelled vendor	Zero date (T)
2	Acknowledgement of application by Hescom	HESCOM	T+02
3	Site Verification/technical Feasibility & issuance of Letter of Approval (LOA)Technical feasibility	HESCOM	T+15
4	Acceptance of LOI by the empaneled agencies	Empaneled Agency	T+30
5	Submission of Performance Bank Guarantee by the empaneled agencies and signing of Contract Agreement.	Empaneled Agency	T+45
6	Issue of Work Award to the empaneled agencies	HESCOM	T+60
7	Execution of Agreement	HESCOM & Consumer	T+90
8	Installation of Rooftop Solar System including meters	HESCOM, Empaneled Vender & Consumer	T+90-180 days
9	Meter Procurement Intimation	Consumer	15 days (Prior intimating HESCOM on system readiness)
10	Submit work Completion Report/Certificate	Consumer & Empaneled Vender	T+90-180(From LOA) (Depending on capacity)
11	Inspection by CEIG (if applicable)	CEIG	15-20
12	Issuance of Safety Certificate	CEIG (If applicable)	5-10
13	Intimation to install meter	Consumer	7-10

14	Inspection by HESCOM, Installation of meter and Commissioning of the System	HESCOM	15-20 (after CEIG approval)
15	Inspection for Release of CFA	HESCOM	7-10
16	Billing Process	HESCOM	After synchronization with Grid

However, HESCOM reserves the right to modify/change the timelines mentioned above and the successful bidders have to abide by the modified/changed timelines.

4.3. Bidders should not be blacklisted from any of the agency with direct or indirect control of Central Government Ministries/ Departments/ Public Sector Units (PSUs)/ Institutions, State Government Departments/ Organizations /Institutions etc.

4.4. Bidder should have valid PAN & GST Registration Numbers as per statutory requirement.

4.5. Bidder must meet the eligibility criteria independently as Bidding Company or as a Bidding Consortium with one of the members acting as the Lead Member of the Bidding Consortium. Bidder will be declared as a Qualified Bidder based on meeting the eligibility criteria (Technical and Financial) and as demonstrated based on documentary evidence submitted by the Bidder during the bidding process.

4.6. In case of a Bidding Consortium, the Financial Eligibility criteria like Annual turnover or Net worth as indicated in **Clause 5.5.2**, shall be fulfilled by the Lead Member or Parent Company of the Lead Member while the Technical Eligibility Criteria shall be fulfilled by consortium members. In case bidder is a consortium, a Consortium Agreement along with Resolution shall be furnished as per the **Format-10**.

4.7. Financial Consortium is not allowed in this Bidding Process. Consortium is only permitted for Technical partnership as per **Format- 10**. Further in-case where the bidding company has used the financial eligibility criteria of its parent company then it needs to be ensured that no change in the controlling equity of the Bidding Company is done before 2 years from the date of commissioning of the sanctioned capacity, requires prior approval of HESCOM. All members of the consortium should be registered under the Company Act.

4.8. Bidder including its member of the consortium can submit only one bid against RFP**.**

4.9. Bidder can however use the technical and financial strength of its Parent Company to fulfil the Technical and/or Financial Eligibility criteria. In such case, Bidders shall submit an Undertaking from the Parent Company as per **Format - 9** and also furnish a certificate of relationship of Parent Company or Affiliate with the Bidding Company as per **Format-8**, Company Secretary certificate towards shareholding pattern of the Parent Company and the Bidding Company along with a Board resolution from the Parent Company.

5. Milestones for completion of Installation and Commissioning under this Contract:

The milestones for completion of Installation and Commissioning under this contract are as indicated in the table below: -

Sl No	Activities	Timeline
M1	Submission of PERT Chart & Drawings from the date of LOA	15 days
M2	Offering all the materials for inspection at the manufacturing units along with IS/BIS of the materials from the date of LOA	30 days
M3	Erection & Installation	90 days
M4	Inspection and Commissioning of the System by HESCOM from the date of completion of the installation work	15-20 days

6. E-TENDER

SPECIAL INSTRUCTIONS TO BIDDERS FOR E- TENDERING GENERAL

E-Tendering is a new methodology for conducting Public Procurement in a transparent and secured manner. For conducting electronic tendering, HESCOM has decided to use the designated State e-procurement portal https://eproc.karnataka.gov.in for e-tendering process.

To participate in bidding process, bidders must have **'Digital Signature Certificate (DSC)'** as per Information Technology Act-2000 to participate in online bidding. This certificate will be required for digitally signing the bid. Bidders can get above mention digital signature certificate from any approved vendors (CCA). Bidders, who

already possess valid Digital Signature Certificates, need not to procure new Digital Signature Certificate.

6.1 **SUBMISSION OF BID-PARTS**

TECHNO - COMMERCIAL DOCUMENTS

All the documents to be submitted through online mode only i.e. through e-procurement portal https://eproc.karnataka.gov.in

No offline documents would be accepted.

All the documents in support of qualifying requirements shall be scanned and uploaded in the e-procurement portal. **Failure to furnish the documentary evidences/supports electronically would result in outright rejection of their offers.**

The bids will be uploaded in two parts, one technical bid and the price bid.

Note: The Bidder should also upload the scanned copies of all original documents along with other requisite forms and formats as Bid Annexure during Online Bid-Submission.

6.2 **Special Note on Security and Transparency of Bids**

Security related functionality has been rigorously implemented in e-procurement portal in a multidimensional manner. Starting with 'Acceptance of Registration by the Service Provider', provision for security has been made at various stages in Electronic Tender's software.

In such cases, if the information/declaration/details contained in the electronic forms is found to be false, forged, incomplete or in-eligible, the bid shall be summarily rejected and the tendering authority may initiate blacklisting/criminal/legal proceedings depending on the severity of the case.

6.3 In case of any discrepancy between the values mentioned in figures and in words, the value mentioned in words shall prevail.

6.4 **Other Instructions**

It shall be the sole responsibility of the bidders to regularly visit the website/tender portal/state portal/SPIN portal for any amendment or update on the tender process of project.

6.5 **ELIGIBILITY CRITERIA/ PRE QUALIFYING REQUIREMENTS**

The MNRE has allocated a capacity of 10 MW for HESCOM for the financial year 2020-21.

For the pre-qualifying requirements defined below the following terminology is applicable:

"Bidder" shall mean Bidding Company/ Bidding consortium submitting the Bid. Any reference to the Bidder includes Bidding Company / Bidding consortium / consortium, members of a bidding consortium including its successors, executors and permitted assigns and lead member of the bidding consortium jointly and severally, as the context may require".

"Bidding Company" shall refer to such single company that has submitted the response in accordance with the provisions of the tender documents.

"Bidding consortium or consortium" shall refer to a group of companies that have collectively submitted the response in accordance with the provisions of the tender documents.

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

In case of a Bidding Consortium the Financial Eligibility criteria like Annual turnover shall be fulfilled by the Lead Member or Parent Company of the Lead Member while the Technical Eligibility Criteria shall be fulfilled by consortium members.

The Pre-Qualifying Requirements are stipulated in below table:

Sl No.	**Requirement Description**	**Documents to be uploaded**
	Technical Requirements:	
1	The bidder should be a registered company in India under the Companies Act, 1956 or 2013 including any amendment thererto Or The bidders should be a Limited Liability Partnership firm. Or The bidders should be a Proprietor firm.	Certificate for registration under Companies Act, 1956 or 2013/ Certificate of incorporation and updated Memorandum of Association (MoA)

Sl No.	Requirement Description	Documents to be uploaded
2	The bidder must have PAN No. issued by the competent authorities shall be uploaded	Necessary document to be uploaded
3	The bidder must have GST No. issued by the competent authorities shall be uploaded	Necessary document to be uploaded
4	The Bidder should be a System Integrator or a Solar Module Manufacturer and should be in Solar EPC (Engineering Procurement & Construction)/ Panel Manufacturing business for at least a period of 03 years as on date of bid submission.	a. Solar Module Manufacturer shall upload the Registration certificate for Manufacturing of PV Module issued by any State/ Central Government Department. b. A System Integrator shall upload copies of work orders /POs/certificate of installation from the clients for proof of installation of solar rooftop plants along with commissioning report issued by any DISCOM/ State Nodal Agency / Any Government department in India.
5	The Bidder should have successfully completed the following quantity of works as an EPC, during previous five years i.e 2015-16, 2016-17, 2017-18, 2018-19 and 2019-20 as on date of bid submission, For General Category bidders: a. **For System Integrator/Solar Module Manufacturer** Cumulative 300 kWp of ON-Grid connected Solar Rooftop PV projects in above said 5 years. b. **(1) For MSME :** The Bidders who are local MSMEs and registered under	Copies of the Work Orders/PO's/ Certificates of installation from the client along with commissioning report/ certificate issued by any DISCOM/ State Nodal Agency / Any Government department in India not below the rank of Executive Engineer(Ele) or equivalent rank not older than 6 months shall be uploaded. Performance certificate fo continuous two year satisfactory functioning issued by an officer not below the rank of Executive Engineer or equivalent rank. The performance certificate shall not be older than 6 months from the date of submission of bid.

Sl No.	Requirement Description	Documents to be uploaded
	the MSME Development Act, 2006 in the State of Karnataka as per Section D, Division 35, Group 351 having NIC 5-digit code of 35105 (Electric power generation using solar energy) are **exempted from the technical eligibility requirements.** **OR** b. (1) Vendors registered with DIPP under Renewable Energy sector only in line with Office Order of Department for Industrial Policy & Promotions issued vide no. 12 (11)/2017-SI dated 22.06.2017 are **exempted from the technical eligibility requirements.**	
6	The Bidder should **not have been Defaulted** against any Work/Service against any of the previous Orders placed by any State /Central Government/ Public sector undertakings/ Private Sector as on the date of submission of bid.	Necessary Self-declaration letter by Authorized signatory with name & seal.
7	The Bidder should **not be Blacklisted** by any State /Central Government / Public sector undertakings/ Private Sector as on the date of submission of bid.	Necessary Self-declaration letter by Authorized signatory with name & seal.
Financial Requirements		
8	a) The Annual turnover of the Bidder should not be less than **Rs.1.5 Crores** in any one of the financial years 2015-16, 2016-17, 2017-18, 2018-19 and 2019-20 for General category. b. The Bidders who are local MSMEs and registered under the MSME Development Act, 2006 in the State of Karnataka as per Section D, Division 35, Group 351	Audited Annual Reports of Balance Sheet and Profit & Loss accounts for the years 2015-16, 2016-17, 2017-18, 2018-19 and 2019-20 for General caterogy.

Sl No.	Requirement Description	Documents to be uploaded
	having NIC 5-digit code of 35105 (Electric power generation using solar energy) are **exempted from the Financial eligibility requirements.** **OR** b. (1) Vendors registered with DIPP under Renewable Energy sector only in line with Office Order of Department for Industrial Policy & Promotions issued vide no. 12 (11)/2017-SI dated 22.06.2017 are **exempted from the Financial eligibility requirements.**	
9	The liquid assets of the bidder before the date of bid submission shall not be less than **Rs 37.5 lakhs for only General category and and no liquid asset required for MSME category.** Liquid asset shall include the following • Cash at Bank. • Term deposits. • credit facility	The cash at bank and term deposits and credit facility before the date of bid submission shall be supported by certificates issued from the Nationalized/ Scheduled Commercial Bank.
10	In case of a Bidding Consortium, the Financial Eligibility criteria like Annual turnover as indicated in **Clause 5.5.2**, shall be fulfilled by the Lead Member or Parent Company of the Lead Member while the Technical Eligibility Criteria shall be fulfilled by consortium members. In case bidder is a consortium, a Consortium Agreement along with Resolution shall be furnished as per the **Format-10**. Financial Consortium is not allowed in this Bidding Process. Consortium is only permitted for	Necessary document shall be uploaded

Sl No.	Requirement Description	Documents to be uploaded
	Technical partnership as per **Format- 10**. Further in-case where the bidding company has used the financial eligibility criteria of its parent company then it needs to be ensured that no change in the controlling equity of the Bidding Company is done before 2 years from the date of commissioning of the sanctioned capacity, requires prior approval of HESCOM. All members of the consortium should be registered under the Company Act.	
General Requirements		
11	*As per the Government Order No. FD 908 EXP-12/2019 Bengaluru dated: 21.07.2020. A certificate for having read the clauses is required to be submitted/uploaded by the tenderer separately in the following format:* *"I have read the clause regarding restrictions on procurement from a Bidder of a country which shares a land border with India; I certify that this Bidder is not from such a country or, if from such a country, has been registered with the Competent Authority. I hereby certify that this Bidder fulfils all requirements in this regard and is eligible to be considered. (Where applicable, evidence of valid registration by the Competent Authority shall be attached.)"*	Self-declaration certificate to be uploaded
12	*The bidder shall declare their minimum and maximum capacity to execute the said work.*	Self-declaration certificate to be uploaded

Note :

a) Bidder must meet the eligibility criteria independently as Bidding Company or as a Bidding Consortium with one of the members acting as the Lead Member of the Bidding Consortium. Bidder will be declared as a Qualified Bidder based on meeting the eligibility criteria (Technical and Financial) and as demonstrated based on documentary evidence submitted by the Bidder during the bidding process.

b) Bidder including its member of the consortium can submit only one bid against RFP.

c) Bidder can however use the technical and financial strength of its Parent Company to fulfil the Technical and/or Financial Eligibility criteria. In such case, Bidders shall submit an Undertaking from the Parent Company as per **Format - 9** and also furnish a certificate of relationship of Parent Company or Affiliate with the Bidding Company as per **Format-8**, Company Secretary certificate towards shareholding pattern of the Parent Company and the Bidding Company along with a Board resolution from the Parent Company.

7. BID SUBMISSION BY THE BIDDER

6.1 Bids are required to be submitted their bids through e-procurement portal only.

6.2 Strict adherence to the formats wherever specified, is required. Wherever, information has been sought in specified formats, the Bidder shall refrain from referring to brochures /pamphlets. Non-adherence to formats and / or submission of incomplete information may be a ground for declaring the Bid as non-responsive. Each format has to be duly signed and stamped by the authorized signatory of the Bidder then scanned and uploaded in the Techno-Commercial Bid Part.

6.3 The Bidder shall furnish documentary evidence in support of meeting Eligibility Criteria as indicated in the RFP.

8. BID SUBMITTED BY A BIDDING COMPANY

The Bidding Company should designate one person to represent the Bidding Company in its dealings with HESCOM. 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 also upload, along with Bid, a Power of Attorney (**as per Format-6**), authorizing the signatory of the Bid.

9. CLARIFICATIONS AND PRE-BID MEETING

9.1 HESCOM will not enter into any correspondence with the Bidders, except to furnish clarifications on RFP Documents, if necessary. The Bidders may seek clarifications or suggest amendments to RFP online, through e-mail to reach the designated officials of HESCOM i.e. the Superintending Engineer(Ele), Project Monitoring Cell, Hubli e mail id : seepmc.hescom@gmail.com and queries raised in the e-procurement portal before the date and time mentioned for pre bid queries in the e-procurement portal https://eproc.karnataka.gov.in. However, any amendment in the EoI shall be at the sole discretion of the HESCOM and in accordance with the MNRE scheme.

9.2 The Bidder(s) or their authorized representative(s) is /are invited to attend pre-bid meeting(s), which will take place on date(s) as specified in the e-procurement portal.

9.3 The purpose of the pre-bid meeting will be to clarify any issues regarding the RFP including in particular, issues raised in writing and submitted by the Bidders.

9.4 HESCOM is not under any obligation to entertain/ respond to suggestions made or to incorporate modifications sought for.

10. AMENDMENTS TO RFP BY **HESCOM**

9.1. At any time prior to the deadline for submission of Bids, HESCOM may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the RFP document by issuing clarification(s) and/or amendment(s). However, any amendment to the RFP shall be at the sole discretion of the tendering authority and in accordance with the MNRE scheme.

9.2. The clarification(s)/ amendment(s) (if any) shall be notified on e-procurement website and no separate communication in this regard would be sent to the bidders.

9.3. HESCOM 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.

9.4. In case any amendment is notified after submission of the Bid (prior to the opening of Techno-Commercial Bid), due date /time may be extended and it will be for the Bidders to submit fresh Bids/supplementary bids by the revised date any, if notified by the HESCOM for the purpose.

9.5. All the notices related to RFP, which are required to be publicized shall be uploaded on https://eproc.karnataka.gov.in

11. BIDDING PROCESS

10.2 **BID FORMATS – For each part**

The Bidders are advised to submit bids against each Four Parts i.e. for Part A, Part B, Part C and Part D for one or more LOTs as in the manner provided in **Clause 6 of Section-I** and submit requisite document as per **Clause 5.5**.

PRICE BID(S): The Bidder shall submit online Price Bid for Part-A, Part-B, Part-C and Part-D separately as per **SECTION-IV** against each part.

10.3 **VALIDITY OF BID**

10.2.1. The bid and the Price Schedule included shall remain valid for the validity of MNRE sanction i.e. (24 months from 19.01.2022) or timeline specified in the work order, whichever is earlier. The bidders shall have no right to withdraw, revoke or cancel their offer or unilaterally vary the offer submitted or any terms thereof during the entire process. Bidders are not allowed to revoke or cancel offer or vary any term & conditions in regard thereof. Confirmation regarding the Bid offer validity shall be clearly mentioned in the covering letter.

10.2.2. In exceptional circumstances when letter of allocation is not issued, HESCOM may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing.

10.4 **COST OF BIDDING**

The bidder shall bear all the costs associated with the preparation and submission of their offer, and the implementing agency will not be responsible or liable for those costs, under any conditions. The Bidder shall not be entitled to claim any costs, charges and expenses of and incidental to, or incurred by bidder, through or in connection with submission of bid even though HESCOM may elect to modify/withdraw the invitation of Bid.

10.5 **BID BOND/EMD : As mentioned above.**

10.6 **PERFORMANCE BANK GUARANTEE (PBG)**

Performance Bank Guarantee:

The bidder has to submit the PBG in the following manner:

Performance Bank Guarantee for Installation and Commissioning (I&C): The bidder shall furnish the performance bank guarantee for installation and commissioning based on the allocated capacity.

The value of PBG for the allocated capacity for each part shall be calculated as below:

PBG Value (In Rs. Lakhs) = INR [*(cost discovered/kW)*] Lakhs X 5% X Allocated Capacity in KWp.

The total value of PBG to be submitted by the successful bidder is the sum of value of PBG for each part and LOT.

The PBG shall be submitted within 15 days from the date of issue of LOI/LOA/Work Order, whichever is issues first, and be valid for 15 months. Bidders should submit Single PBG based on the total allocated capacity in each category. The Performance Bank Guarantee shall be released after completion of the empanelment period with the compliance of entire obligations in the contract.

Further, any delay in submission of PBG for I & C period beyond 15 days, HESCOM at its sole discretion may cancel the allocated capacity. Such Vendors (who have not submitted PBG) shall be debarred from participating in HESCOM's future tenders for a period as decided by Competent Authority. Part PBG shall not be accepted.

Performance Bank Guarantee for Operation and Maintenance: The bidder shall furnish the performance bank guarantee for O&M based on the installed capacity.

The value of PBG for the installed capacity for each part shall be calculated as below:

PBG Value (In Rs. Lakhs) = INR [*(cost discovered/kW)*] Lakhs X 5% X installed Capacity in KWp.

The total value of PBG to be submitted by the successful bidder for O&M is the sum of value of PBG for each part.

The PBG shall be submitted within 30 days from the end of the empanelment period and be valid for 05 year + 3 months. Bidders should submit Single PBG based on the installed capacity in each category. The Performance Bank Guarantee shall be released after completion of the O&M period with the compliance of entire obligations in the contract.

Further, any delay in submission of PBG for O&M period beyond 30 days, HESCOM at its sole discretion may forfeit 100% of PBG for the I&C period. Such Vendors (who have not submitted PBG) shall be debarred from participating in HESCOM's future tenders for a period as decided by Competent

Authority. Part PBG shall not be accepted.

The Performance Bank Guarantee shall be denominated in Indian Rupees and shall be in the following forms: Bank guarantee from the List of banks as given in **Annexure-B.**

The PBG shall be forfeited as follows without prejudice to the Bidder being liable for any further consequential loss or damage incurred to the Plant.

10.5.1. If the Empanelled Vendor is not able to commission the projects to the satisfaction of HESCOM, PBG (for I&C period) amount on pro-rata basis by the empanelled vendor shall be 100% encashed.

10.5.2. In all the above cases corresponding unidentified/non-commissioned capacity shall stand cancelled.

10.5.3. If the empanelled vendor is unable to submit the PBG (for O&M period), the PBG (for I&C period) shall be encashed.

12. OPENING OF BIDS

The Techno-Commercial Bid will be opened as mentioned in the e-procurement portal. However, Price Bids of Techno-Commercially responsive Bidders will be opened in e-procurement portal after completion of Techno-Commercial evaluation. Separate intimation regarding date of opening of Price Bid will not be issued.

a) The Office of the under signed will open the bids on the specified date & time.
b) The bidder's representatives who are present shall sign in a register.
c) The Office of the undersigned will examine the Bids to determine whether they are complete whether the Bidder satisfies the eligibility criteria; whether required sureties have been furnished; whether the documents have been properly signed and whether the Bids are generally in order.

13. RIGHT TO WITHDRAW THE RFP AND TO REJECT ANY BID

13.1.1 This RFP may be withdrawn or cancelled by the HESCOM at any time without assigning any reasons thereof. HESCOM 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.

13.1.2 HESCOM reserve the right to interpret the Bid submitted by the Bidder in accordance with the provisions of the RFP and make its own judgment regarding the interpretation of the same. In this regard HESCOM shall have no liability towards any Bidder and no Bidder shall have any recourse to HESCOM with respect to the selection process. HESCOM shall evaluate the Bids using the evaluation process specified in Section -I, at its sole discretion. HESCOM decision in this regard shall be final and binding on

the Bidders.

13.1.3 HESCOM 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 of bid by HESCOM will be full and final.

14. ZERO DEVIATION

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.

15. EXAMINATION OF BID DOCUMENT

15.1 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.

15.2 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 as to the adequacy of their bids. 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, the bidder has to complete in accordance with the Bid document.

15.3 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 HESCOM.

15.4 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**

1.0. SCOPE OF WORK

1.1. The Bidders shall be obliged to complete the Work as per the articulated detailed Scope of work under **Clause No. 1 and in accordance with the package of Grid Connected Rooftop Solar PV project defined above.**

2.0. PROJECT COST

2.1 The Project cost shall include all the costs related to above Scope of Work. Bidder shall quote for the entire facilities on a "single responsibility" basis such that the total Bid Price covers all the obligations mentioned in the Bidding Documents in respect of Design, Supply, Erection, Testing and Commissioning including Warranty, Operation & Maintenance (for a period of 5 years), goods and services including spares required if any during O&M period. The Bidder has to take all permits, approvals and licenses, insurance etc., provide training and such other items and services required to complete the scope of work as mentioned above.

2.2 The Project cost is on lump sum turnkey basis and the bidder is responsible for the entire Scope of work as per RFP.

2.3 The Project cost shall remain firm and fixed and shall be binding on the Successful Bidder till completion of work for payment of CFA amount irrespective of the actual cost of execution of the project. No escalation will be granted on any reason whatsoever. The bidder shall not be entitled to claim any additional charges, even though it may be necessary to extend the completion period for any reasons whatsoever.

2.4 The Project cost shall be inclusive of all duties, taxes and transit insurance etc excluding GST. The prices quoted by the firm shall be complete in all respect and no price variation /adjustment shall be payable by HESCOM. However, statutory variation of taxes and duties may be paid by the roof top owner.

2.5 Operation & Maintenance of Solar PV Power Plant would include wear, tear, overhauling, machine breakdown, insurance, and replacement of defective modules, invertors / Power Conditioning Unit (PCU) spares, consumables & other parts for a period of 05 years projects.

2.6 The Project cost shall be specified in consent letter based on Empanelled Vendor's quote for each part. The project cost shall be in accordance with all terms, conditions, specifications and other conditions of the Contract as accepted by HESCOM and incorporated into the consent letter.

2.7 The Bidder shall complete the Price Bid as per applicable **Formats** online only.

3.0. INSURANCE

3.1. The Empanelled Vendor shall be responsible and take an Insurance Policy for all the materials to cover all risks and liabilities for supply and storage of materials at site, installation, testing and commissioning. However, this shall not include insurance of commissioned plant after handing over to the beneficiary.

3.2. Before commencement of work, the Empanelled Vendor 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. The Empanelled Vendor 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.

3.3. The bidder shall also take appropriate insurance during O&M period.

3.4. The Insurance covers as mentioned in **clause No 3.1** is mandatory and in case of any violation of not taking Insurance Cover may result in imposition of Penalty. Penalty shall be deducted from the Vendors claim for CFA as under and the CFA, in such cases shall be released only on submission of Indemnity Bond as per the format attached as per **Annexure N**. The provision of penalty for not taking insurance is one time only, on repetition of the same, the sanctioned of the particular site will be waived-Off.

4.0. WARRANTEES AND GUARANTEES

The Empanelled Vendor shall provide warrantee covering the rectification of any and all defects in the design of equipment, materials and workmanship including spare parts for a period of 5 years from the date of commissioning for projects.

5.0. Penalty Provisions

5.1. Penalty will be imposed on bidder by HESCOM if following conditions are encountered. The Bank Guarantee submitted by the bidder will be encashed and the bidder shall be blacklisted for 5 years from all Government tenders if:

i. If bidders demand for additional amount/remuneration against the installation of work on and above the discovered L1 rate for the identified package.

ii. If bidders are defaulting in submission of Bank Guarantee/Required Relevant Documents during the bidding/empanelment process.

iii. If bidders denied implementing projects in allocated districts/regions/clusters etc.
iv. Non- performance of the RTS plant based on PR as mentioned in the **clause No. 2.14.**
v. If bidders are failed to comply with DCR, ALMM and other mandatory requirements of Phase-II Guidelines and issued Amendments.
vi. Penalties may lead to the encashment of Partial/full Performance Bank Guarantee and subsequently debarring or blacklisting from the future State/Central Government Tender.
vii. To ensure the performance of the empanelled vendors, and declaration to take the liabilities of paying /submitting 10% CPG apart from other penal provisions of the tender in the event of non-performance of failure to fulfilment of contract obligations or terms and conditions of EoI required to be submitted on appropriate value of non-judicial stamp paper**.**

6.0. TYPE AND QUALITY OF MATERIALS AND WORKMANSHIP

6.1. 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 **Section- III (Technical specifications)** of the bid document.

6.2. The specifications of the components should meet the technical specifications mentioned in **Section III.**

6.3. 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.

7.0. OPERATION & MAINTENANCE (O&M) GUIDELINES TO BE MANDATORILY FOLLOWED BY BIDDERS.

The bidder shall be responsible for all the required activities for successful operation and maintenance of the Rooftop Solar PV system for a period of 5 years from the date of commissioning of the plant.

7.1. Below mentioned guidelines, shall be followed for O&M practices, which is not limited to **Annexure-C.**

i. O&M of Solar Power Plant shall be compliant with grid requirements to achieve committed energy generation.
ii. Deputation of qualified and experienced engineer/ technicians till the

O&M period at project site as & when required.

iii. Quarterly checks of the Modules, PCUs and BoS shall be carried out as a part of routine preventive and breakdown maintenance.

iv. Immediate replacement of defective Modules, Invertors/PCUs and other equipment as and when required.

v. Supply of all spares, consumables and fixtures as required. Such stock shall be maintained for all associated equipment and materials as per manufacturer/ supplier's recommendations.

vi. All the equipment testing instrument required for Testing, Commissioning and O&M for the healthy operation of the Plant shall be maintained by the Bidder. The testing equipment must be calibrated once every 2 years from NABL accredited labs and the certificate of calibration must be kept for reference as required.

vii. If negligence/ mal-operation on part of the Bidder's operator results in failure of equipment, such equipment should be repaired/ replaced by the Bidder free of cost.

viii. Co-ordination with Owner / HESCOM / CEIG as per the requirement for Joint Metering Report (JMR). The person in charge present at site from bidder's side shall take a joint meter reading in the presence of rooftop owner as per billing cycle. Furnishing generation data each month to HESCOM positively by 1st week of every month for the previous month. ***Failure to adhere may result in non-disbursal of CFA.***

7.2. A maintenance record register is to be maintained by the operator/technician/bidder with effect from Commissioning to record the generation, regular maintenance work carried out as well as any preventive and breakdown maintenance along with the date of maintenance, reasons for the breakdown, duration of the breakdown, steps taken to attend the breakdown, etc. ***Failure to adhere to above shall result in non-disbursal of CFA/ Encashment (Partial/Complete) of Performance Bank Guarantee/ any other penal action subject to the decision of*** **HESCOM.**

7.3. If any jobs covered in O&M Scope as per RFP are not carried out by the contractor/ Bidders during the O&M period, the designated Official shall take appropriate action as deemed fit. HESCOM reserves the right to make surprise checks/ inspection visits at its own or through authorized representative to verify the O&M activities being carried out by the Bidder. ***Failure to adhere to above guidelines will result in penal action including debarring from participation in next tender.***

7.4. The Bidders should have their service network in or around HESCOM jurisdiction within a radius of 50 Kms and shall provide address of service centre in O&M manual. A copy of the same shall also be provided to HESCOM.

7.5. The bidder shall use the original parts in case of any fault in the PCU/Inverter during the AMC period of 5 years. In case the original part/parts are not

available with the manufacturer of the PCU/Inverter (Based on certificate from the manufacturer), the bidder shall use the new parts of other standard brands available in the market or will use the repaired parts.

7.6. ***If Bidder fails to comply with the O&M guidelines, it may lead to the encashment of Performance Bank Guarantee and subsequently debarring or blacklisting from the future State/Central Government Tenders.***

8.0. METERING AND GRID CONNECTIVITY

Metering and grid connectivity of the Solar Rooftop Plants under this scheme would be the responsibility of the Empanelled Vendor in accordance with the terms and conditions laid down in bid document and prevailing guidelines/regulation of Karnataka State Electricity Regulatory Commission (KERC)/ Central Electricity Authority (CEA) and issued amendments.

9.0. PLANT PERFORMANCE EVALUATION

The Empanelled Vendor shall be required to meet minimum guaranteed generation with Performance Ratio (PR) at the time of commissioning as per the radiation levels of the location during the O&M period. PR should be shown minimum of 75% at the time of inspection for initial commissioning acceptance to qualify for release of CFA. The PR will be measured at Inverter output level during peak radiation conditions. It will be the responsibility of the bidder to make necessary arrangements, including required instruments for measurement of Ratio.

10.0. PROGRESS REPORT

The bidder shall submit the monthly progress report to HESCOM in Prescribed Performa during the period of installation. HESCOM will have the right to depute its representatives to ascertain the progress of contract at the premises of works of the empanelled vendors.

11.0. Submission of Project Completion Report (PCR)

The Empanelled Vendor shall submit the Project Completion Report in (soft copy and signed copy) after commissioning of the project as per the Scope of EoI to HESCOM as per the Format given in Annexure J. Non submission of the report shall be considered as "Breach of Contract" and shall attract punitive actions as per the relevant provisions of the Contract including non-release of CFA. However, the decision of Engineer–in -charge shall be final in this regard.

12.0. Submission of O&M Report (OMR)

The bidder shall submit the quarterly O&M Report mandatorily to HESCOM as per the Format enclosed at **Annexure H**. Non submission of the report shall be considered as "Breach of Contract" and shall attract punitive actions as per the relevant provisions of the Contract including non-release of CFA. However, the decision of Engineer–in -charge shall be final in this regard.

13.0. INVOICE TO CONSUMER

The selected bidders shall raise the Tax invoice to the consumers after completion of the project as per the **Annexure I**. The tax invoice should contain all invoice able items with the applicable tax as per GoI GST slabs. The net invoice amount shall not exceed per kW discovered rate.

14.0. CHANGE IN LAW

In the event a Change in Law results in any adverse financial loss/ gain to the Empanelled Vendor then, in order to ensure that the Empanelled Vendor is placed in the same financial position as it would have been had it not been for the occurrence of the Change in Law, the Empanelled Vendor/ HESCOMs on behalf of residential consumer shall be entitled to compensation by the other party, as the case may be, subject to the condition that the quantum and mechanism of compensation payment shall be determined and shall be effective from such date as decided by HESCOM.

In these Guidelines, the term Change in Law shall refer to the occurrence of any of the following events after the last date of the bid submission, including (i) ***the enactment of any new law*; or (ii) *an amendment, modification or repeal of an existing law*; or (iii) *the requirement to obtain a new consent, permit or license;* or (iv) *any modification to the prevailing conditions prescribed for obtaining an consent, permit or license, not owing to any default of the empanelled vendor*; or (v) *any change in the rates of any Taxes which have a direct effect on the Project.*** However, Change in Law shall not include any change in taxes on corporate income or any change in any withholding tax on income or dividends.

The bidders are required to study carefully the conditions of the tender document, the enclosed specifications and the relevant provision of the relevant BIS/IS/MNRE specifications wherever necessary before submitting the proposal. Technical particulars of the material offered must comply with the enclosed specifications and the relevant provisions of the BIS/IS/MNRE as far as possible.

Any changes in the constitution of the firm/company shall be notified forth with by the Empanelled Vendor in writing to the Company and such change shall not relieve the tenderer from any liability under the contract.

Bidder will have to submit GST registration certificate number and GST clearance certificate from the competent authority concerned along with the proposal without which proposals may not be considered provided that the purchasing authority has

reason to believe (to be recorded in writing) that the bidder has not been able to submit clearance certificate of GST on bona-fide grounds, the authority may consider the tender asking the bidder to furnish the certificate later on but in any case before the execution of the agreement by the successful bidder.

The bidder shall sign on each page at the end in token of acceptance of all the terms and it would be attached /uploaded with the proposal along with the declaration. He should also sign at the bottom of each of the pages of his tender.

The authorisation for installing SPV system can be repudiated at any time by HESCOM if the systems are not supplied and installed to its satisfaction. The reasons for repudiation shall be recorded by the HESCOM. In case of non-performance in any form and shape of the terms & conditions of the agreement, HESCOM has power to cancel the authorisation pertaining to the supply and installation of systems.

If a bidder imposes conditions, which are in addition to/or in contravention with the conditions mentioned herein, then the submitted tender is liable to be summarily rejected. In any case none of such conditions will be deemed to have been accepted unless specifically mentioned in the letter of authorisation issued by HESCOM.

If any question is raised or issue arises between the consumer and Empanelled Vendor and matter is taken to a consumer court, HESCOM shall not be responsible in any manner and shall not be made a party in it.

15.0. PROJECT INSPECTION

All project progress will be monitored by HESCOM and the projects can be inspected for quality at any time during commissioning or after the completion of the project by officer(s) from MNRE and/or HESCOM and/or any agency/ experts designated / authorized by MNRE and/or HESCOM from time to time. HESCOM shall depute a technical person from its office or from list of empanelled experts/ agencies updated from time to time for inspection/ third party verification, monitoring of system installed to oversee the implementation as per required standards. The cost of inspection at the time of commissioning shall be borne by the implementing agency. However, if the project is not found to be installed in an appropriate manner, all arrangement for the next visit of the authorized representative of the implementing agency shall be made by the vendor. There shall be no separate charges/fees for the inspections. The inspection shall be broadly governed by the following mechanism:

15.1 After complete installation of the system, the Bidders shall immediately intimate to HESCOM in writing for such inspections. HESCOM will complete the

inspection of the PV system within 30 days of the receipt of the intimation. Visual inspection shall be carried for 100% of SPV systems. All cost pertaining to this inspection shall be borne by the implementing agency.

15.2 The material/installation found sub-standard or faulty is to be replaced by the bidder with new material as per the specifications. The systems shall be offered for inspection again after necessary rectification. Expenses for such re-inspection shall be borne by the Bidders. HESCOM at its discretion may also pick up samples from the lot of systems being supplied by the vendor at random from the warehouse for quality check only. The samples picked up will be tested for acceptance test as decided by HESCOM at MNRE/ Government approved laboratory in presence of representatives of supplier and HESCOM as per relevant IEC/IS/BIS/ HESCOM specifications.

15.3 The test results will be binding on the suppliers and HESCOM, in general will not allow re-sampling. If the material fails in any of the acceptance tests carried out, those components that fail the test shall be rejected, and the Bidder shall have to supply and install the new component as per the specifications. The loss of generation during such time when the system is taken away for testing shall be at the cost of the Bidder, who shall compensate the Beneficiary for such loss of generation as per the pro-rata PR as per EoI.

15.4 The Bidders will offer Solar PV Systems for inspection at their site/warehouse by MNRE or HESCOM or its authorized quality inspection agency. MNRE/HESCOM may carry out random testing/inspection of SPV systems at the site. However, all costs towards such inspection shall be borne by MNRE/ HESCOM.

15.5 HESCOM reserves the right to inspect any number of SPV systems, at the addresses of the beneficiaries given by the Bidders. Pre-dispatch inspection of the components is not mandatory as 100% visual inspection is being carried out HESCOM and declaration for DCR modules is being furnished by the bidder. However, pre-dispatch inspection may be carried out by HESCOM at the works of OEM (Original Equipment Manufacturer), where SPV (Solar Photovoltaic) panels are being manufactured. Any cost towards pre-dispatch inspection shall be solely borne by HESCOM.

15.6 **Cost of inspection:** All the expenses related to inspection team like lodging, boarding, travelling, air tickets to be borne by HESCOM.

16.0. SETTLEMENT OF DISPUTE

a) A Party claiming that a Dispute has arisen under this Agreement must give the other Party a written notice of the particulars of the Dispute.

b) Any dispute(s) or difference(s) arising out of or in connection with the Contract shall, to the extent possible, be settled amicably between the parties.
c) If the party fails to resolve such a dispute or difference by mutual consultancy within thirty (30) days from the commencement of such dispute and difference, either party may require that the dispute be referred to arbitration under the Arbitration and Conciliation Act, 1996 (Indian) and Subsequent Amendments made thereon, to be adjudicated by a sole arbitrator to be appointed by mutual agreement of both the parties and the award of the arbitrator shall be final and conclusive and binding upon both the parties. (The date of commencement of the dispute shall be taken from the date when this clause reference is quoted by either party in a formal communication clearly mentioning existence of dispute or as mutually agreed).
d) The place of arbitration shall be in Bangalore. The arbitral procedure shall be conducted in English language.
e) The cost of arbitration including the fees of arbitrator shall be borne by both the parties equally.
f) During the settlement of disputes and Arbitration proceedings, both parties shall be obliged to carry out their respective obligations under the contract.
g) The courts of Bangalore only shall have the jurisdiction.

17.0. FORCE MAJEURE

17.1. Notwithstanding the provisions of clauses contained in this EoI document; the contractor shall not be liable to forfeit (a) PBG for delay and (b) termination of contract; if the Contractor is unable to fulfil his obligation under this contract due to force majeure conditions.

17.2. For purpose of this clause, "Force Majeure" means an event beyond the control of the contractor and not involving the contractor's fault or negligence and not foreseeable, either in its sovereign or contractual capacity. Such events may include but are not restricted to Acts of God, wars or revolutions, fires, floods, epidemics, quarantine restrictions, Grid Problems/ shutdowns and fright embargoes etc. Whether a “Force majeure” situation exists or not, shall be decided by HESCOM and MNRE and this decision shall be final and binding on the contractor and all other concerned.

17.3. In the event that the contractor is not able to perform his obligations under this contract on account of force majeure, then the Contractor will be relieved of the obligations during the force majeure period. In the event that such force majeure extends beyond Six (06) months, HESCOM has the right to terminate the contract in which case, the PBG shall be refunded to the vendor.

17.4. If a force majeure situation arises, the contractor shall notify HESCOM in writing promptly, not later than 14 days from the date such situation arises. The

contractor shall notify HESCOM not later than 3 days of cessation of force majeure conditions. After examining the cases, HESCOM shall decide and grant suitable additional time for the completion of the work, if required.

18.0. LANGUAGE

All documents, drawings, instructions, design data, calculations, operation, maintenance and safety manuals, reports, labels and any other date shall be in English Language only. The contract agreement and all correspondence between HESCOM and the bidder shall be in English language. O&M manual and warranty card should be in English & Kannada languages.

19.0. OTHER CONDITIONS

19.1. The Empanelled Vendor shall not transfer, assign or sublet the work under this contract or any substantial part thereof to any other party without the prior consent of HESCOM in writing.

19.2. The Empanelled Vendor or its subcontractors shall not display the photographs of the work and not take advantage through publicity of the work without written permission of HESCOM / consumer.

19.3. The Empanelled Vendor or its subcontractors shall not make any other use of any of the documents or information of this contract, except for the purposes of performing the contract.

19.4. HESCOM will not be bound by any Power of Attorney granted/ issued by the Empanelled Vendor or its subcontractors or by any change in the composition of the firm made during or subsequent to the execution of the contract. However, recognition to such Power of Attorney and change (if any) may be given by HESCOM after obtaining proper legal advice, the cost of which will be chargeable to the Empanelled Vendor concerned.

19.5. **SUCCESSORS AND ASSIGNEES:**

In case HESCOM or Empanelled Vendor may undergo any merger or amalgamation or a scheme of arrangement or similar re-organization & this contract is assigned to any entity(ies) partly or wholly, the contract shall be binding mutatis mutandis upon the successor entities & shall continue to remain valid with respect to obligation of the successor entities.

20.0. SEVERABILITY:

It is stated that each paragraph, clause, sub-clause, schedule or annexure of this contract shall be deemed severable & in the event of the unenforceability of any paragraph, clause sub-clause, schedule or the remaining part of the paragraph, clause, sub-clause, schedule annexure & rest of the contract shall continue to be in full force & effect.

21.0. COUNTERPARTS:

This contract may be executed in one or more counterparts, each of which shall be deemed an original & all of which collectively shall be deemed one of the same instruments.

22.0. RIGHTS & REMEDIES UNDER THE CONTRACT ONLY FOR THE PARTIES

This contract is not intended & shall not be construed to confer on any person other than the HESCOM & Empanelled Vendor hereto, any rights and / or remedies herein.

23.0. CORRESPONDENCE

Bidder requiring any Techno-Commercial clarification of the bid documents may contact in writing or by E Mail.

Name & Designation	Contact Number	Email id
Superintending Engineer(Ele), PMC	9449057833	seepmc.hescom@gmail.com/ eep3.hescom@gmail.com

Verbal clarifications and information given by HESCOM or its employees or its Representatives shall not be in any way entertained.

HESCOM's role is limited to selection of vendors and disbursement of CFA after successful installation of the solar PV plant. The vendor will be solely responsible for plant performance and maintenance and any liability arising on this account shall lie solely with the vendors, provided the beneficiary has given proper access and facilitation to the vendor for regular O&M and there has not been alteration in solar irradiance due to alteration in building or its surrounding over which the vendor has no control.

SECTION – II

[Bid Evaluation Criteria, payment clause and CFA Disbursement]

1. EVALUATION CRITERIA AND CFA DISBURSEMENT

1.1 BID EVALUATION AND CFA DISBURSEMENT

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 Techno-Financial Eligibility Criteria as per **Qualifying Requirements**
Step III	Evaluation of Price Bid for all Techno-Commercial Qualified Bidders
Step IV	Successful Bidders(s) selection /empanelment

1.2 RESPONSIVENESS CHECK OF TECHNO COMMERCIAL BID

The Techno-Commercial Bid submitted by Bidders shall be scrutinized to establish responsiveness to the qualifying requirements laid down in the EoIAny of the following may cause the Bid to be considered "*Non-responsive*", at the sole discretion of HESCOM:

i. Bids that are incomplete, i.e. Not accompanied by any of the applicable formats inter alia covering letter, "EMD Declaration Letter etc.
ii. Bid not signed by authorized signatory and /or stamped in the manner indicated in this EoI.
iii. Material inconsistencies in the information /documents submitted by the Bidder, affecting the Eligibility Criteria.
iv. Information not submitted in the formats specified in this EoI.
v. Bid being conditional in nature.
vi. Bid not received by the Bid Deadline.
vii. Bid having Conflict of Interest.
viii..
ix. Bidder delaying in submission of additional information or clarifications sought by HESCOM as applicable.
x. Bidder makes any misrepresentation.

Each Bid shall be checked for compliance with the submission requirements set forth in this EoI before the evaluation of Bidder's fulfilment of Eligibility Criteria is taken up. **Clause 5.5 of Section-I** shall be used to check whether each Bidder meets the stipulated requirement.

1.3 PRELIMINARY EXAMINATION

1.3.1 HESCOM 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.

1.3.2 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.

1.4. EVALUATION OF BIDDER'S FULFILMENT OF ELIGIBILITY CRITERIA

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 5.5 of Section-I**. Non-availability of information and related documentary evidence for the satisfaction of Eligibility Criteria may cause the Bid non- responsive.

1.5. EVALUATION OF PRICE BID

Price Bid (s) of the Qualified Bidders shall be opened online. The evaluation of Price Bid shall be carried out based on the information furnished in Financial Bid (Price Bid). The Price Bid submitted by the Bidders shall be scrutinized to ensure conformity with the RFP. Any Bid not meeting any of the requirements of this RFP may cause the Bid to be considered "**Non-responsive**" at the sole decision of HESCOM.

1.6. PART-A, PART-B, PART-C & Part-D:

i. The Price bids for the CAPEX **PART-A, PART-B, PART-C & Part-D** for each category shall be evaluated separately, lowest quoted bidder in each category shall be declared as L1 and CFA will be determined on the basis of discovered rate and prevailing Benchmark Cost for that respective category, whichever is lower.

ii. The Project Cost shall be calculated up to two decimal places. However, in case of a tie, capacity shall be allocated to the bidder having the maximum proposed capacity as per the covering letter.

iii. Total Project cost shall be considered during evaluation as mentioned in **formats annexed with this RFP.**

1.7. SUCCESSFUL BIDDER(S) SELECTION

i. Bids qualifying in **Clause 5.5 of Section-I** shall only be evaluated in this stage.

ii. Project Cost quoted in all Price Bids of Qualified Bidders shall be ranked from the lowest to the highest for **PART-A, PART-B, PART-C & PART-D** separately.

iii. **Allocation of Capacity and Empanelment of Vendors for CAPEX Part-A, Part-B, Part-C & Part D.**

1.8. **PART-A, PART-B, PART-C & PART-D:** Based on the price bid quoted by the bidders, HESCOM shall arrange the bids in the ascending order i.e. L1, L2, L3, _ _ _ (L1 being the lowest quote).

1.8.1. Lowest bidder will be declared as the L1 against each Part/Category. The L1 bidder's quoted capacity shall be allocated to the L1 successful bidder subject to the condition that it should not be less than 5% of aggregated capacity for respective part/category. On acceptance, capacity will be allocated to the L1 bidder. In case L-1 bidder did not accept the maximum bid capacity or 5% of L1 aggregated capacity for the respective part/category, then Submitted Bank Guarantee will be encashed, and L-1 bidder shall be blacklisted from all the Government Tenders for 5 Years.

1.8.2. The bids will be arranged in ascending order Starting from L1, L2, L3……. The Approved Lowest Rate against each part/category will be the project cost and bidder will be allocated their quoted capacity as on the cover letter. The remaining bidders, i.e. L2, L3, L4……., will be given 14 Days' time to submit the letter of acceptance of L1 Rate. The bidders, who provide their consent to work on L1 Rate, will be allocated their quoted capacity in the order of merit, till the entire capacity is exhausted. If quantity/capacity is left unallocated in any category, HESCOM reserves the right to reallocate the left-over capacity to the bidders' subject to their consent and at the sole discretion of HESCOM.

1.8.3. The selection process shall stand completed once the Tender Capacity has been achieved through the summation of the capacity offered by the Successful Bidders.

1.8.4. At any step during the selection of Successful Bidder(s) in accordance with the provision laid down in RFP, HESCOM reserves the right to increase/decrease the Tender Capacity of the capacity indicated to achieve the balance Tender Capacity and select the Successful Bidder with the lowest Project Cost/ lowest evaluated price amongst the remaining Bids.

1.8.5. The Letter(s) of Intent (LoI) shall be issued to all such Empanelled Vendors(s) selected as per the provisions laid down in RFP document.

1.8.6. Each Empanelled Vendor shall acknowledge the LoI and return duplicate copy with signature of the authorized signatory of the Empanelled Vendor to HESCOM within Fifteen (15) days of issue of LoI.

1.8.7. If the Empanelled Vendor, to whom the LoI has been issued does not fulfil any of the conditions specified in Bid document, HESCOM reserves the right to annul/cancel the award of the LoI of such Empanelled Vendor.

1.8.8. The vendors have to submit the Performance Bank Guarantee (PGB) of appropriate value as per **Clause No. 10.5** (**As per Format-4**) along with submission of signed copy of LoI for further issuance of Letter of Allocation.

1.8.9. HESCOM at its own discretion, has the right to reject any or all the Bids without assigning any reason whatsoever, at its sole discretion.

1.9. **Duration of Empanelment**

The Successful Bidders selected above shall be empanelled for one year or upto 24 Months from Date of MNRE Sanction [19.01.2022], whichever is earlier and HESCOM shall be issued Letter of Allocation (LOA) indicating the allocated capacity & Project Cost etc.

1.9.1. The list of the empanelled bidder/firm will be uploaded on HESCOM's Portal/Website.

2.0. INCREASE/DECREASE OF BIDDER ALLOCATED CAPACITY

2.1. **HESCOM reserves the right to increase/decrease the Bidder(s) Allocated Capacity at the sole discretion of HESCOM based on the registration of applications.**

2.2. **In case capacity is enhanced by HESCOM based on the registration of applications, Empanelled Vendor shall submit the equivalent amount of PBG to HESCOM within 15 days from the date of issue of LoI, failing which sanctioned capacity shall stands cancelled.**

2.3. **TRANSFER OF CAPACITY**

Capacity can be transferred from PART A, B, C & D or vice-versa, in such case lowest rate of that part shall be the reference price for capacity execution.

Note: It is the discretion of HESCOM to increase/decrease/transfer the Empanelled Vendor allocated capacity on bidder's request.

3.0. NOTIFICATION TO SUCCESSFUL BIDDERS

The name and contact details of Empanelled Vendors shall be notified indicating the allocated capacity and the offered price on HESCOM website www.HESCOM.karnataka.gov.in and also shall be notified individually through letter of allocation.

4.0. PROJECT ALLOCATION AND SANCTION

4.1. The identification of the projects (roof tops) at the 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 for which they intend to Bid and as prescribed in the RFP, 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 PBG amount submitted by them.

4.2. The Successful Bidders selected as described in **Clause No. 3 of Section-II** above shall be empanelled for timeline specified in the Work order or 24 months from Date of MNRE Sanction, whichever is earlier. HESCOM shall issue Letter of Allocation (LOA) indicating the allocated capacity & Project Cost etc.

4.3. For identification of projects, HESCOM may provide help. However, the entire responsibility of finding the buildings lies with the Bidder.

4.4. Documentation like finalizing the Project report and entering into agreements with the buildings/rooftops owners lies with the Empanelled Vendor within the above-mentioned time frame even for the buildings/rooftops identified by HESCOM for preferential installation.

4.5. After the Project Consent Documents have been submitted by the Empanelled Vendor/ Project Developer and accepted by HESCOM, it will issue the Consent Letter(s) for the Project (s) indicating the CFA amount(s) which will be disbursed in line with the provisions of the RFP document. The Empanelled Vendor shall complete the design, engineering, manufacture, supply, storage, civil work, erection, testing & commissioning of each project 6 months from the date of issue of the Consent Letter or upto 24 Months from Date of MNRE Sanction [*19.01.2024*] whichever is earlier from the date of issuance of MNRE capacity Allocation Letter.

4.6. If the Empanelled Vendor fails to commission the sanctioned project within specified time, no CFA will be disbursed by HESCOM.

5.0. CFA DISBURSEMENT & PAYMENT CLAUSES:

5.1. For PART-A, Part-B, Part-C & Part-D

The vendor shall be allowed to charge only balance of the project cost, excluding CFA amount, from the consumer. The proportion of admissible CFA shall be disbursed by HESCOM to the empanelled vendor directly after successful commissioning of the project as per MNRE Operational Guidelines issued vide OM No. 318/ 331/2017- Grid Connected Rooftop Dated 20th August 2020 and

their amendments. The admissible CFA would be 40% of the benchmark cost or tender cost, whichever is lower, for capacity up to 3 kW. For project capacity above 3 kWp and up to 10 kWp, the admissible CFA would be 20% of project cost or the MNRE benchmark cost, whichever is lower. For CFA calculation, the project capacity would be decided based on PV array capacity or inverter capacity, whichever is lower. The consumers are allowed to install the capacity higher than 10 KW, however, the quantum of CFA would be limited to 10 KW capacity only. The maximum permissible limit for group housing societies would be up to 500 kW and the admissible CFA would be 20% of the benchmark cost or tender cost, whichever is lower.

The net amount of project cost (i.e. project cost - CFA) shall be paid by the concerned roof top owner to any of the empanelled vendors as per the following methodology:

- 20% payment in advance after signing of agreement.
- 20% payment after installation of structure
- 20% payment after installation of SPV modules and inverters at site
- 20% payment after completing plant installation (including net-metering) and submission of written inspection request to the implementing agency
- Final 20% payment after commissioning of the plant and injection of power to the grid.

It shall be noted that beneficiary/customer shall be solely responsible for financial transaction with the vendor for the net of CFA (Total cost – Admissible CFA) amount. The beneficiary/customer are advised to thoroughly check the documents/claims of the vendors and shall make only online payments wherever required. HESCOM in no way shall be responsible for disputes arising out of payments of agreements between vendor and the beneficiary.

5.2. The CFA as calculated under **Clause No. 5 of Section-II** for Parts under CAPEX Model will be released on submission of following documents-

5.2.1. Joint Commissioning Report (JCR) **as per Annexure-O**.
5.2.2. Copy of Insurance Policies as per Clause No. 2.8 of Section-II
5.2.3. Claim Letter as per the **Annexure - M**.
5.2.4. Guarantee certificate on Letter Head of the Vendor.
5.2.5. Geo-coordinates and photos of the site

5.3. The CFA shall be released by HESCOM, only after receipt of the same from MNRE.

5.4. The CFA shall be released to the Vendor only after the completion and successful commissioning of the Project(s) as per terms & conditions vide **Clause No. 5 of**

5.5. The whole or part of the CFA shall be recovered from the Vendor's PBG or future Payments (to be released), in case of violation of any Terms & Conditions of MNRE/ HESCOM.

5.6. The above Payment terms are Subject to the following conditions stated herein below:

i. The Paying Authority, should ensure before making any payment towards completion of work as per PERT Chart pertaining to the work concerned.
ii. The work is going according to the plan.
iii. Notwithstanding anything contained to the contrary in the Bid documents, storage insurance for materials stored at the site by the contractor shall be to the account of the Contractor alone and no amount whatsoever is payable by the HESCOM.

6.0. OTHER CONDITIONS

Bidder has to obtain all the necessary approvals/Consents/Clearances required for Erection, Testing, Commissioning and O&M of the project including Grid connectivity. HESCOM shall not have any responsibility in this regard.

7.0. TAX EXEMPTIONS:

Price bids are invited inclusive of Taxes and duties excluding GST. However, Tax exemptions including certificates of any sort, if available may be dealt with the concerned Department of Govt. of India/ Karnataka by the bidder. HESCOM in no case will be responsible for providing any tax exemptions to the bidder.

8.0. Eligibility of standalone system:

Standalone system is not allowed under this scheme. The system should be Grid-connected Rooftop Solar System.

9.0. Requirement of approvals on makes of the Components:

The Modules and Cells should be manufactured in India and should be complied with the prevailing Approved List of Models and Manufacturers of Solar Photovoltaic Modules (*Requirement for Compulsory Registration*) Order 2019 - Implementation issued vide OM NO. 283/54/2018-GRID SOLAR -Part (I) Dated 10th March 2021 and subsequent amendments Rest of the components can be procured from any source. However, these items should meet the Technical specification and standards mentioned in EoI. A reference bidders' Declaration format associated with Implementation of ALMM (**Annexure T)** order will also be required to be signed by the bidder as per the format provided vide MNRE OM No. 283/54/2018-GRID SOLAR -Part (I) Dated 2nd June 2021**.**

10.0. 11. OPERATION OF THE SYSTEM DURING WEEKENDS AND GENERAL HOLIDAYS AND CALCULATION OF CUF

N/A

11.0. LIQUIDATED DAMAGES (LD) FOR DELAY IN PROJECT IMPLEMENTATION

HESCOM will issue the consent letter(s) for the Project (s) indicating the CFA amount(s) which will be disbursed in line with the provisions of the RFP document. The Bidder shall complete Design, Engineering, Manufacture, Supply, storage, civil work, erection, testing & commissioning of each project within stipulated timeline.

12.1 If the bidder fails to commission the sanctioned project within specified time, the project will get cancelled and CFA will not be disbursed by HESCOM.

13 TIME OF COMPLETION OF SANCTIONED CAPACITY

13.1 The Empanelled Vendor shall complete the roofs identification, submission of project sanction documents as per the requirement of HESCOM, Design, Engineering, Manufacture, Supply, storage, civil work, erection, testing & commissioning of each project within 6 months from the date of issue of consent letter or 24 Months from date of sanction Order from MNRE to DISCOM i.e. [19.01.2022] (Excluding any Extension any further extension), whichever is earlier.

13.2 The period of execution given in time schedule includes the time required for mobilization as well as testing, rectifications if any, re-testing and completion in all respects to the entire satisfaction of the Engineer-in- Charge.

14 UPDATING THE PROJECT PROGRESS ON MONTHLY BASIS

Empanelled Vendor's authorized representative, in whose name power of attorney has been executed and submitted along with the bid, shall update the project progress on biweekly basis in the consent letter. Empanelled Vendor should update the info as per the requirement. Non-updating of the progress shall be considered as no progress and shall attract punitive actions as per the relevant provision of the Contract. However, the decision of Engineer–in - charge shall be final in this regard.

15 INSPECTION AND AUDIT BY THE GOVERNMENT

The Empanelled vendor shall permit the HESCOM to inspect the site, accounts and records relating to the performance and to have them audited by auditors appointed by the HESCOM, if so required by the HESCOM any time.

16 COMMISSIONING /COMPLETION CERTIFICATE:

Application for completion/commissioning certificate:

When the Empanelled Vendor fulfils his obligation under the Contract, he shall be eligible to apply for Completion/Commissioning Certificate. The Engineer- in-

Charge shall normally issue the Completion Certificate to the Empanelled Vendor within one month after receiving any application therefore from the Empanelled Vendor after verifying from the completion documents and satisfying himself that the work has been completed in accordance with and as set out in Contract documents. The Empanelled Vendor, after obtaining the Completion Certificate, is eligible to avail the CFA as per the Clause No. 5 of Section-II.

17 DEDUCTIONS FROM THE CONTRACT PRICE:

17.1 All costs, damages or expenses which HESCOM may have paid or incurred, which under the provisions of the Contract, the Empanelled Vendor is liable/will be liable, will be claimed by HESCOM. All such claims shall be billed by HESCOM to the Contractor within 15 (fifteen) days of the receipt of the payment request and if not paid by the Empanelled Vendor within the said period, HESCOM may, then, deduct the amount from any moneys due i.e., PBG or becoming due to the contractor or Empanelled Vendor under the contract or may be recovered by actions of law or otherwise, if the Empanelled Vendor fails to satisfy HESCOM of such claims.

18 CORRUPT OR FRAUDULENT PRACTICES

HESCOM requires that Empanelled Vendors/ Contractors should follow the highest standard of ethics during the execution of contract. In pursuance of this policy HESCOM defines, for the purposes of this provision, the terms set forth as follows:

18.1 **"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

18.2 **"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 HESCOM / 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 them of the benefits of free and open competition;

18.3 A firm will be declared 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/ HESCOM schemes.

19 DEBARRED FROM PARTICIPATING IN HESCOM'S TENDER

19.1 **HESCOM** reserves the right to carry out the performance review of each Bidder from the time of submission of Bid onwards. In case it is observed that a bidder has not fulfilled its obligations in meeting the various timelines envisaged, in addition to the other provisions of the EoI, such Bidders may be debarred from participating in HESCOM's any future tender for a period as decided by HESCOM.

SECTION – III

TECHNICAL SPECIFICATIONS

TECHNICAL SPECIFICATIONS

The proposed projects shall be commissioned as per the technical specifications given below. Any shortcomings will lead to cancelation of CFA in full or part as decided HESCOM. Domestic Modules are to be used failing which it will be assumed that system is not matching the requirement of the scheme and bidder's PBG shall be forfeited. Competent Authority's decision will be final and binding on the bidder.

1. DEFINITION

A Roof Top Solar (RTS) Photo Voltaic (PV) system shall consist of following equipment/components:

1. Solar Photo Voltaic (SPV) modules consisting of required number of Crystalline PV modules
2. Inverter/PCU
3. Module Mounting structures
4. Energy Meter
5. Array Junction Boxes
6. DC Distribution Box
7. AC Distribution Box
8. Protections – Earthing, Lightning, Surge
9. Cables
10. Drawing & Manuals
11. Miscellaneous

1. Solar PV modules

1.1. The PV modules and Solar Cell used should be made in India.

1.2. The PV modules used must qualify to the latest edition of IEC standards or equivalent BIS standards, i.e. IEC 61215/IS14286, IEC 61853-Part I/IS 16170-Part I, IEC 61730 Part-1 & Part 2 and IEC 62804 (PID). For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701.

1.3. The rated power of solar PV module shall have maximum tolerance up to +3%.

1.4. The peak-power point current of any supplied module string (series connected modules) shall not vary by +1% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.

1.5. The peak-power point voltage of any supplied module string (series connected modules) shall not vary by + 2% from the respective arithmetic means for all modules and/or for all module strings (connected to the same MPPT), as the case may be.

1.6. The temperature co-efficient power of the PV module shall be equal to or better than -0.45%/°C.

1.7. Solar PV modules of minimum capacity 250 Wp to be used.

1.8. The PV Module efficiency should be minimum 16%.

1.9. Solar PV modules of minimum fill factor 75%, to be used.

1.10. All electrical parameters at STC shall have to be provided

1.11. The PV modules shall be equipped with IP 65 or better protection level junction box with required numbers of bypass diodes of appropriate rating and appropriately sized output power cable of symmetric length with MC4 or equivalent solar connectors. The IP level for protection may be chosen based on following conditions:

i. An IP 65 rated enclosure is suitable for most outdoor enclosures that won't encounter extreme weather such as flooding.

ii. An IP 67 rated enclosure is suitable at locations which may encounter temporary submersion at depths of up to one meter.

iii. An IP 68 enclosure is recommended if there may exist situations of submergence for extended periods of time and at substantial depths.

1.12. All PV modules should carry a performance warranty of >90% during the first 10 years, and >80% during the next 15 years. Further, module shall have performance warranty of >97% during the first year of installation—degradation of the module below 1 % per annum.

1.13. 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 five (05) years from the date of commissioning:

1.14. Defects and/or failures due to manufacturing.

1.15. Defects and/or failures due to quality of materials.

1.16. Nonconformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty, the manufacturer will repair or replace the solar module(s), at the Owners sole option.

1.17. PV modules must be tested and approved by one of the NABL accredited and BIS approved test centers.

1.18. Modules deployed must use a RF identification tag laminated inside the glass. The following information must be mentioned in the RFID used on each module:

i. Name of the manufacturer of the PV module
ii. Name of the manufacturer of Solar Cells.
iii. Month & year of the manufacture (separate for solar cells and modules)
iv. Country of origin (separately for solar cells and module)
v. I-V curve for the module Wattage, Im, Vm and FF for the module
vi. Unique Serial No and Model No of the module
vii. Date and year of obtaining IEC PV module qualification certificate.
viii. Name of the test lab issuing IEC certificate.
ix. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.
x. Nominal wattage +3%.
xi. Brand Name, if applicable.

1.19. Other details as per IS/IEC 61730-1 clause 11 should be provided at appropriate place. In addition to the above, the following information should also be provided:

i. The actual Power Output Pmax shall be mentioned on the label pasted on the back side of PV Module.
ii. The Maximum system voltage for which the module is suitable to be provided on the back sheet of the module.
iii. Polarity of terminals or leads (colour coding is permissible) on junction Box housing near cable entry or cable and connector.

1.20. Unique Serial No, Model No, Name of Manufacturer, Manufacturing year, Make in India logo and module wattage details should be displayed inside the laminated glass.

2. Inverter/PCU

2.1. The output power factor of inverter should be suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustain fault in feeder line and against the lightning on feeder.

2.2. All the Inverters should contain the following clear and indelible Marking Label & Warning Label as per IS16221 Part II, clause 5. The equipment shall, as a minimum, be permanently marked with:

i. The name or trademark of the manufacturer or supplier;
ii. A model number, name or other means to identify the equipment,
iii. A serial number, code or other marking allowing identification of manufacturing location and the manufacturing batch or date within a three-month time period.
iv. Input voltage, type of voltage (a.c. or d.c.), frequency, and maximum continuous current for each input.
v. Output voltage, type of voltage (a.c. or d.c.), frequency, maximum continuous current, and for a.c. outputs, either the power or power factor for each output.
vi. The Ingress Protection (IP) rating

2.3. Marking shall be located adjacent to each fuse or fuse holder, or on the fuse holder, or in another location provided that it is obvious to which fuse the marking applies, giving the fuse current rating and voltage rating for fuses that may be changed at the installed site.

2.4. In case the consumer is having a *3-ϕ* connection, *1-ϕ/3-ϕ* inverter shall be provided by the vendor as per the consumer's requirement and regulations of the State.

2.5. Inverter/PCU shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

2.6. The Inverter should have a provision of remote monitoring of inverter data through sim card. Required website/mobile app platform, where the user (Consumer) can access the data, should be provided/explained to consumer while installation. Additionally, if inverter has the facility of in-built wi-fi module, that should also be explained to the consumer. On demand, Inverter should also have provision to feed the data to the remote monitoring server using relevant API/ protocols. All the inverter data should be available for monitoring by giving web access.

2.7. For CFA calculation, minimum of following two shall be considered:

i. Solar PV array capacity in KWp
ii. Inverter Capacity in KW

2.8. Integration of PV Power with Grid & Grid Islanding:

i. The output power from SPV would be fed to the inverters/PCU which converts DC produced by SPV array to AC and feeds it into the main electricity grid after synchronization.
ii. 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, if not available in inverter.
iii. MCB/MCCB or a manual isolation switch, besides 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.

3. Module Mounting Structure (MMS):

3.1. Supply, installation, erection and acceptance of module mounting structure (MMS) with all necessary accessories, auxiliaries and spare part shall be in the scope of the work.
3.2. Module mounting structures can be made from three types of materials. They are Hot Dip Galvanized Iron, Aluminium and Hot Dip Galvanized Mild Steel (MS). However, MS will be preferred for raised structure.
3.3. MMS Steel shall be as per latest IS 2062:2011 and galvanization of the mounting structure shall be in compliance of latest IS 4759. MMS Aluminium shall be as per AA6063 T6. For Aluminium structures, necessary protection towards rusting need to be provided either by coating or anodization.
3.4. All bolts, nuts, fasteners shall be of stainless steel of grade SS 304 or hot dip galvanized, panel mounting clamps shall be of aluminium and must sustain the adverse climatic conditions. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts.
3.5. The module mounting structures should have angle of inclination as per the site conditions to take maximum insolation and complete shadow-free operation during generation hours. However, to accommodate more capacity the angle of inclination may be reduced until the plant meets the specified performance ratio requirements.
3.6. 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.

The PV array structure design shall be appropriate with a factor of safety of minimum 1.5.The upper edge of the module must be covered with wind shield so as to avoid build air ingress below the module. Slight clearance must be provided on both edges (upper & lower) to allow air for cooling.

3.7. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed. The Empanelled Agency shall be fully responsible for any damages to SPV System caused due to high wind velocity within guarantee period as per technical specification.

3.8. The structures shall be designed to allow easy replacement, repairing and cleaning of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels. Necessary testing provision for MMS to be made available at site.

3.9. Adequate spacing shall be provided between two panel frames and rows of panels to facilitate personnel protection, ease of installation, replacement, cleaning of panels and electrical maintenance.

3.10. The structure shall be designed to withstand operating environmental conditions for a period of minimum 25 years.

3.11. The Rooftop Structures maybe classified in three broad categories as follows (drawings at **Annexure-X**):

i. Ballast structure

a. The mounting structure must be Non-invasive ballast type and any sort of penetration of roof to be avoided.
b. The minimum clearance of the structure from the roof level should be in between 70-150 mm to allow ventilation for cooling, also ease of cleaning and maintenance of panels as well as cleaning of terrace.
c. The structures should be suitably loaded with reinforced concrete blocks of appropriate weight made out of M25 concrete mixture.

ii. Tin shed

a. The structure design should be as per the slope of the tin shed.
b. The inclination angle of structure can be done in two ways-
   b.1. Parallel to the tin shed (flat keeping zero-degree tiling angle), if the slope of shed in Proper south direction
   b.2. With same tilt angle based on the slope of tin shed to get the maximum output.
c. The minimum clearance of the lowest point from the tin shade should be more then 100mm.
d. The base of structure should be connected on the Purlin of tin shed with the proper riveting.
e. All structure member should be of minimum 2 mm thickness.

iii. **RCC Elevated structure:** It can be divided into further three categories:

A. Minimum Ground clearance (300MM – 1000 MM)

a. The structure shall be designed to allow easy replacement of any module and shall be in line with site requirement. The gap between module should be minimum 30MM.
b. Base Plate – Base plate thickness of the Structure should be 5MM for this segment.
c. Column – Structure Column should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.
d. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side (y-axis) and 40MM in flange side (x-axis).
e. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 60MM in Web side and 40MM in flange side in Lip section.
f. Front/back bracing – The section for bracing part should be minimum 2MM thickness.
g. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.
h. For single portrait structure the minimum ground clearance should be 500MM.

B. Medium Ground clearance (1000MM – 2000 MM)

a. Base Plate – Base plate thickness of the Structure should be Minimum 6MM for this segment.
b. Column – Structure Column should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.
c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in C-Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.
d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.
e. Front/back bracing – The section for bracing part should be minimum 2MM thickness.

f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

C. Maximum Ground clearance (2000MM – 3000 MM)

a. Base Plate – Base plate thickness of the Structure should be minimum 8 MM for this segment.
b. Column – Structure Column thickness should be minimum 2.6MM in square hollow section (minimum 50x50) or rectangular hollow section (minimum 60x40) or 3MM in C-Channel section.
c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.
d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 80MM in Web side and 50MM in flange side in Lip section.
e. Front/back bracing – The section for bracing part should be minimum 3MM thickness.
f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

D. Super elevated structure (More than 3000 MM)

D.1. Base structure

a. Base Plate – Base plate thickness of the Structure should be 10MM for this segment.
b. Column – Structure Column minimum thickness should be minimum 2.9MM in square hollow section (minimum 60x60) or rectangular hollow section (minimum 80x40).
c. Rafter - Structure Rafter minimum thickness should be minimum 2.9MM in square hollow section (minimum 60x60) or rectangular hollow section (minimum 80x40).
d. Cross bracing – Bracing for the connection of rafter and column should be of minimum thickness of 4mm L-angle with the help of minimum bolt diameter of 10mm.

D.2. Upper structure of super elevated structure –

a. Base Plate – Base plate thickness of the Structure should be minimum 5MM for this segment.

b. Column – Structure Column should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.
c. Rafter - Structure rafter should be minimum 2MM in Lip section / 3MM in Channel section. The minimum section should be 70MM in Web side and 40MM in flange side in Lip section.
d. Purlin - Structure purlin should be minimum 2MM in Lip section. The minimum section should be 60MM in Web side and 40MM in flange side in Lip section.
e. Front/back bracing – The section for bracing part should be minimum 2MM thickness.
f. Connection – The structure connection should be bolted completely. Leg to rafter should be connected with minimum 12 diameter bolt. Rafter and purlin should be connected with minimum 10 diameter bolt. Module mounting fasteners should be SS-304 only and remaining fasteners either SS-304 or HDG 8.8 Grade.

D.3. If distance between two legs in X-Direction is more than 3M than sag angle/Bar should be provide for purlin to avoid deflection failure. The sag angle should be minimum 2MM thick, and bar should be minimum 12Dia.

D.4. Degree - The Module alignment and tilt angle shell be calculated to provide the maximum annual energy output. This shall be decided on the location of array installation.

D.5. Foundation – Foundation should be as per the roof condition; two types of the foundation can be done- either penetrating the roof or without penetrating the roof.

a. If penetration on the roof is allowed (based on the client requirement) then minimum 12MM diameter anchor fasteners with minimum length 100MM can be use with proper chipping. The minimum RCC size should be 400x400x300 cubic mm. Material grade of foundation should be minimum M20.
b. If penetration on roof is not allowed, then foundation can be done with the help of 'J Bolt' (refer IS 5624 for foundation hardware). Proper Neto bond solution should be used to adhere the Foundation block with the RCC roof. Foundation J - bolt length should be minimum 12MM diameter and length should be minimum 300MM.

3.12. Material standards:

i. Design of foundation for mounting the structure should be as per defined standards which clearly states the Load Bearing Capacity &

other relevant parameters for foundation design (As per IS 6403 / 456 / 4091 / 875).

ii. Grade of raw material to be used for mounting the structures so that it complies the defined wind loading conditions (As per IS 875 - III) should be referred as follows (IS 2062 – for angles and channels, IS 1079 – for sheet, IS 1161 & 1239 for round pipes, IS 4923 for rectangular and square hollow section)

iii. Test reports for the raw material should be as per IS 1852 / 808 / 2062 / 1079 / 811.

iv. In process inspection report as per approved drawing & tolerance should be as per IS 7215.

v. For ascertaining proper welding of structure part following should be referred:
   a. D.P. Test (Pin Hole / Crack) (IS 822)
   b. Weld wire grade should be of grade (ER 70 S - 6)

vi. For ascertaining hot dip galvanizing of fabricated structure following should be referred: -
   a. Min coating required should be as per IS 4759 & EN 1461.
   b. Testing of galvanized material
      - Pierce Test (IS 2633)
      - Mass of Zinc (IS 6745)
      - Adhesion Test (IS 2629)
      - CuSO4 Test (IS 2633)
      - Superior High-Grade Zinc Ingot should be of 99.999% purity (IS 209) (Preferably Hindustan Zinc Limited or Equivalent).

vii. Foundation Hardware – If using foundation bolt in foundation then it should be as per IS 5624.

3.13. Design Validation- The Structure design and drawing should be duly verified by a licensed Structural designer before installation for all types of structure arrangements including the extension made, as per specification.

4. Metering

4.1. A Roof Top Solar (RTS) Photo Voltaic (PV) system shall consist of following energy meters:
   i. Net meter: To record import and export units
   ii. Generation meter: To keep record for total generation of the plant.

4.2. The installation of meters including CTs & PTs, wherever applicable, shall be carried out by the Empanelled Vendor as per the terms, conditions and procedures laid down by the concerned SERC/DISCOMs.

5. Array Junction Boxes:

5.1 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 aluminum /cast aluminum alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JBs shall be such that input & output termination can be made through suitable cable glands. Suitable markings shall be provided on the bus-bars for easy identification and cable ferrules will be fitted at the cable termination points for identification.

5.2 Copper bus bars/terminal blocks housed in the junction box with suitable termination threads Conforming to IP 65 or better standard and IEC 62208 Hinged door with EPDM rubber gasket to prevent water entry, Single /double compression cable glands should be provided.

5.3 Polyamide glands and MC4 Connectors may also be provided. The rating of the junction box shall be suitable with adequate safety factor to interconnect the Solar PV array.

5.4 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.

5.5 Junction boxes shall be mounted on the MMS such that they are easily accessible and are protected from direct sunlight and harsh weather.

6 DC Distribution Box (DCDB):

6.1 May not be required for small plants, if suitable arrangement is available in the inverter.

6.2 DC Distribution Box are to be provided to receive the DC output from the PV array field.

6.3 DCDBs shall be dust & vermin proof conform having IP 65 or better protection, as per site conditions.

6.4 The bus bars are made of EC grade copper of required size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the inverter along with necessary surge arrestors. MCB shall be used for currents up to 63 Amperes, and MCCB shall be used for currents greater than 63 Amperes.

7 AC Distribution Box (ACDB):

7.1 AC Distribution Panel Board (DPB) shall control the AC power from inverter, and should have necessary surge arrestors, if required. There is interconnection from ACDB to mains at LT Bus bar while in grid tied mode.

7.2 All switches and the circuit breakers, connectors should conform to IEC 60947:2019, part I, II and III/ IS 60947 part I, II and III.

7.3 The isolators, cabling work should be undertaken as part of the project.

7.4 All the Panel's shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on *1-ϕ/3-ϕ*, 415 or 230 volts, 50 Hz (or voltage levels as per CEA/State regulations).

7.5 The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.

7.6 All indoor panels will have protection of IP 54 or better, as per site conditions. All outdoor panels will have protection of IP 65 or better, as per site conditions.

7.7 Should conform to Indian Electricity Act and CEA safety regulations (till last amendment).

7.8 All the 415 or 230 volts (or voltage levels as per CEA/State regulations) AC devices / equipment like bus support insulators, circuit breakers, SPDs, Voltage Transformers (VTs) etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

i. Variation in supply voltage: as per CEA/State regulations
ii. Variation in supply frequency: as per CEA/State regulations

7.9 The inverter output shall have the necessary rated AC surge arrestors, if required and MCB/ MCCB. RCCB shall be used for successful operation of the PV system, if inverter does not have required earth fault/residual current protection.

8 Protections

The system should be provided with all necessary protections like earthing, Lightning, and Surge Protection, as described below:

8.1 Earthing Protection

i. The earthing shall be done in accordance with latest Standards.
ii. Each array structure of the PV yard, Low Tension (LT) power system, earthing grid for switchyard, all electrical equipment, inverter, all junction boxes, etc. shall be grounded properly as per IS 3043-2018.
iii. All metal casing/ shielding of the plant shall be thoroughly grounded in accordance with CEA Safety Regulation 2010. In addition, the lightning arrester/masts should also be earthed inside the array field.
iv. Earth resistance should be as low as possible and shall never be higher than 5 ohms.
v. For 10 KW and above systems, separate three earth pits shall be provided for individual three earthings viz.: DC side earthing, AC side Earthing and Lightning arrestor earthing.

8.2 Lightning Protection

i. The SPV power plants shall be provided with lightning & over voltage protection, if required. The main aim in this protection shall be to reduce the overvoltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc.

ii. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors (LAs). Lightning protection should be provided as per NFC17-102:2011/IEC 62305 standard.

iii. The protection against induced high-voltages shall be provided by the use of Metal Oxide Varistors (MOVs)/Franklin Rod type LA/Early streamer type LA.

iv. The current carrying cable from lightning arrestor to the earth pit should have sufficient current carrying capacity according to IEC 62305. According to standard, the minimum requirement for a lightning protection system designed for class of LPS III is a 6 mm^2 copper/ 16 mm^2 aluminum or GI strip bearing size 25*3 mm thick). Separate pipe for running earth wires of Lightning Arrestor shall be used.

8.3 Surge Protection

i. Internal surge protection, wherever required, shall be provided.

ii. It will consist of three SPD type-II/MOV type surge arrestors connected from +ve and –ve terminals to earth.

9 CABLES

9.1 All cables should conform to latest edition of IEC/equivalent BIS Standards alongwith IEC 60227/IS 694, IEC 60502/IS 1554 standards.

9.2 Cables should be flexible and should have good resistance to heat, cold, water, oil, abrasion etc.

9.3 Armored cable should be used and overall PVC type 'A' pressure extruded insulation or XLPE insulation should be there for UV protection.

9.4 Cables should have Multi Strand, annealed high conductivity copper conductor on DC side and copper/FRLS type Aluminum conductor on AC side. For DC cabling, multi-core cables shall not be used.

9.5 Cables should have operating temperature range of -10°C to +80°C and voltage rating of 660/1000 V.

9.6 Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop less than 2% (DC Cable losses).

9.7 The size of each type of AC cable selected shall be based on minimum voltage drop. However; the maximum drop shall be limited to 2%.

9.8 The electric cables for DC systems for rated voltage of 1500 V shall conform to BIS 17293:2020.

9.9 All cable/wires are to be routed in a RPVC pipe/ GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable is easily identified.

9.10 All cable trays including covers to be provided.

9.11 Thermo-plastic clamps to be used to clamp the cables and conduits, at intervals not exceeding 50 cm.

9.12 Size of neutral wire shall be equal to the size of phase wires, in a three phase system.

9.13 The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25 years.

10 DRAWINGS & MANUALS:

10.1 Operation & Maintenance manual/user manual, Engineering and Electrical Drawings shall be supplied along with the power plant.

10.2 The manual shall include complete system details such as array lay out, schematic of the system, inverter details, working principle etc.

10.3 The Manual should also include all the Dos & Don'ts of Power Plant along with Graphical Representation with indication of proper methodology for cleaning, Operation and Maintenance etc.

10.4 Step by step maintenance and troubleshooting procedures shall also be given in the manuals.

10.5 Vendors should also educate the consumers during their AMC period.

11 Miscellaneous:

11.1 Connectivity: The maximum capacity for interconnection with the grid at a specific voltage level shall be as specified in the SERC regulation for Grid connectivity and norms of DISCOM and amended from time to time.

11.2 Safety measures: Electrical safety of the installation(s) including connectivity with the grid must be taken into account and all the safety rules & regulations applicable as per Electricity Act, 2003 and CEA Safety Regulation 2010 etc. must be followed.

11.3 Shadow analysis: The shadow analysis report with the instrument such as Solar Pathfinder or professional shadow analysis software of each site should be provided and the consumer should be educated to install the system only in shadow free space. Lower performance of the system due to shadow effect shall be liable for penalty for lower performance.

11.4 Firefighting system - Portable fire extinguishers/sand buckets shall be provided wherever required as per norms.

Quality Certification, Standards and Testing for Grid-Connected Rooftop Solar PV Systems/Power Plants

Solar PV Modules/Panels	
IEC 61215 and IS 14286	Design Qualification and Type Approval for Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
IEC 61701:2011	Salt Mist Corrosion Testing of Photovoltaic (PV) Modules
IEC 61853- 1:2011 / IS 16170-1:2014	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 etc)
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 method for detection of potential-induced degradation. IEC 62804-1: Part 1: Crystalline Silicon
Solar PV Inverters	
IEC 62109 or IS : 16221	Safety of power converters for use in photovoltaic power systems – Part 1: General requirements, and Safety of power converters for use in photovoltaic power systems Part 2: Particular requirements for inverters. Safety compliance (Protection degree IP 65 or better for outdoor mounting, IP 54 or better for indoor mounting)
IS/IEC 61683 latest (as applicable)	Photovoltaic Systems – Power conditioners: Procedure for Measuring Efficiency (10%, 25%, 50%, 75% & 90-100% Loading Conditions)
IEC 60068-2 /IEC 62093 (as applicable)	Environmental Testing of PV System – Power Conditioners and Inverters
IEC 62116:2014/ IS16169	Utility-interconnected photovoltaic inverters - Test procedure of islanding prevention measures
Fuses	
IS/IEC 60947 (Part 1, 2 & 3), EN 50521	General safety requirements for connectors, switches, circuit breakers (AC/DC): 1)Low-voltage Switchgear and Control-gear, Part 1: General rules 2)Low-Voltage Switchgear and Control-gear, Part 2: Circuit Breakers 3)Low-voltage switchgear and Control-gear, Part 3: Switches, disconnectors switch-disconnectors and fuse-

	combination units 4) EN 50521: Connectors for photovoltaic system-Safety requirements and tests
IEC 60269-6:2010	Low-voltage fuses - Part 6: Supplementary requirements for fuse-links for the protection of solar photovoltaic energy systems
Solar PV Roof Mounting Structure	
IS 2062/IS 4759/AA6063 T6	Material for the structure mounting
Surge Arrestors	
BFC 17-102:2011/ NFC 102:2011/ IEC 62305	Lightening Protection Standard
IEC 60364-5-53/ IS 15086-5 (SPD) IEC 61643- 11:2011	Electrical installations of buildings - Part 5-53: Selection and erection of electrical equipment - Isolation, switching and control Low-voltage surge protective devices - Part 11: Surge protective devices connected to low-voltage power systems - Requirements and test methods
Cables	
IEC 60227/IS 694, IEC 60502/IS 1554 (Part 1& 2)/ IEC69947 (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/IEC 60634 Series (Chemical earthing) (as applicable)	IEC 62561-1: Lightning protection system components (LPSC) - Part: 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
Junction Boxes	
IEC 60529	Junction boxes and solar panel terminal boxes shall be of the thermo-plastic type with IP 65 or better protection for outdoor use, and IP 54 or better protection for indoor use