

Tender No.: CREST/EOI/2018-19/5

Dated: 11.05.2018.

Invitation of Expression of Interest through e-tendering for Empanelment of Manufacturers/ System Integrators for Rooftop Grid Connected SPV Power Plants of capacity 1kWp to 500kWp in Chandigarh

PART-I

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| Submitted by: Name and address of bidder | |
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Chandigarh Renewable Energy and Science & Technology Promotion Society (CREST)

(Under the Aegis of Department of Science & Technology & Renewable Energy, Chandigarh Administration), 1st Floor, Paryavaran Bhawan, Sector-19-B, Chandigarh. ☎ 0172-2703982/2771919;
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Chandigarh Renewable Energy and Science & Technology Promotion Society (CREST).
(Under the Aegis of Department of Science & Technology & Renewable Energy, Chandigarh Administration), 1st Floor, Paryavaran Bhawan, Sector-19-B, Chandigarh. ☎ 0172-2703982, 2771919, E-mail: crestchandigarh@gmail.com

Expression of Interest from EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects for design, manufacture, supply, installation and commissioning of different capacity Roof Top Solar Power Projects in Chandigarh, varying from 1 kWp to 500 kWp are invited .

Joint Electricity Regulatory Commission for Goa and UTs (JERC) has approved Net Metering and Gross Metering Policy for Chandigarh under which Roof Top Solar PV Power Projects of capacities varying from 1 kWp to 500 kWp are to be installed on different categories of buildings i.e. Homes, Institutions, Commercial/ Private / Govt. Buildings/ warehouses & Industries etc.

In order to facilitate the public, CREST, the State Nodal Agency is going to empanel the EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects for installation of SPV Power Plants in U.T., Chandigarh and in the process of compiling information of rates of different capacity rooftop solar power projects which are to be displayed on the website of CREST for the information of the Chandigarh residents. The residents of Chandigarh interested to install SPV power plant and avail subsidy from MNRE, GOI through CREST for the same shall have to install the SPV Power Plant from any one of the empanelled agency of CREST. Beneficiary have the freedom to select an agency of their choice from the list of empanelled agencies published for the installation of solar power plants. EPC Companies desirous of getting their information displayed may upload the technical detail of their systems/ equipments and pricing in the Performa available upto 02nd June, 2018 at 1700 Hrs. The terms and conditions alongwith technical specifications are mentioned in DNIT.

CREST is inviting tender only for rate standardization for supply, installation and commissioning and comprehensive maintenance contract for five years of Solar Photovoltaic Power Plants in Chandigarh and display the same in CREST website. CREST will not allot any work to the empanelled agencies through this tender. The empanelled agencies are to contact & get their work for private residents/institution at their own.

**Chief Executive Officer,
CREST**

DETAILED NOTICE INVITING TENDER

CREST invites offers for rate standardization for supply, installation and commissioning and comprehensive maintenance contract for five years of Solar Photovoltaic Power Plants (SPVPP) in Chandigarh through e-tendering to be uploaded on the website of Chandigarh Administration at <https://etenders.chd.nic.in> as per following details.

| Sr. No. | Category of systems | Minimum financial turn over during last three years | Average Capacity of single system installed. |
|----------------|-----------------------------------|--|---|
| I | 1 kWp to upto 5 kWp | Rs. 10.00 Lakh. | 2 kWp |
| ii. | More than 5 kWp to upto 10 kWp | Rs. 20.00 Lakh. | 5 kWp |
| iii. | More than 10 kWp to upto 20 kWp | Rs. 50.00 Lakh. | 10 kWp |
| iv. | More than 20 kWp to upto 50 kWp | Rs. 100.00 Lakh. | 20 kWp |
| v. | More than 50 kWp to upto 100 kWp | Rs. 150.00 Lakh. | 50 kWp |
| vi. | More than 100 kWp to upto 500 kWp | Rs. 750.00 Lakh. | 100 kWp |

The tenderers, who have satisfactorily completed SPV projects of installation & commissioning of Solar Photo Voltaic power plants with at least one single SPVPP of capacity as mentioned in the column No. (4) of the above table, anywhere in India alongwith minimum average financial turn over in last three years as mentioned in Colum no (3). The tenderer should have its office cum Service Centre in or around Chandigarh within a radius of 50 KM with qualified staff. Tenderer can quote for any category, as per their eligibility.

The tender document can be downloaded /uploaded by the bidders from the website of Chandigarh Administration at <https://etenders.chd.nic.in> from 11th May, 2018 at 1700 Hrs. to 02nd June, 2018 at 1700 Hrs. The tender document should be uploaded in the prescribed manner up to 1700 Hrs on 2nd June, 2018 & the technical bid of tenders shall be opened on 5th June, 2018 at 12:30 PM. The date of opening of price bid of the tenderers who qualify in the technical bid to be intimated. A pre-bid meeting shall be organized on 17th May, 2018 at 12:30 PM at this office.

CREST reserves all rights to accept/reject any or all tenders in full/part without assigning any reasons.

**Chief Executive Officer
CREST**

TENDER NOTICE
CHANDIGARH ADMINISTRATION
CHANDIGARH RENEWABLE ENERGY AND SCIENCE & TECHNOLOGY PROMOTION SOCIETY

e-Tender Notice

E - tenders are hereby invited by CEO, CREST from the manufacturers of SPV modules / Suppliers/ System Integrators/ EPC contractors having specific experience of supply, installation, testing & commissioning of SPV Power Plants to be uploaded on the <https://etenders.chd.nic.in> in three bid system:-

| | |
|--|--|
| Scope of Work | Design, Manufacture, Supply, Erection, Testing & Commissioning along-with Comprehensive Maintenance contract for 5 years for different capacity varying from 1 kWp to 500 kWp Grid-Connected SPV Power Plants in Chandigarh. |
| Cost of Tender Documents (Non Refundable) | Rs.1000/- (to be submitted through Demand Draft favoring CREST, Payable at Chandigarh.) |
| Earnest Money Deposit (EMD) (Refundable, interest free) | Rs. 50,000/- (to be submitted through Demand Draft favoring CREST, Payable at Chandigarh.) |
| Pre-bid meeting | 17.05.2018 at 12.30 PM |
| Downloading of e-tenders Documents | Start Date: 11.05.2018 at 1700 Hrs End date: 02.06.2018 up to 1700 Hrs |
| Date of Submission of e- Tender | Start Date : 18.05.2018 at 1200 Hrs End Date : 02.06.2018 at 1700 Hrs. |
| Last Date for Submission of hard copy of Eligibility Documents required for Post- Qualification including signed and stamped copy of DNIT & all other necessary documents as uploaded in e-bid. | After 02.06. 2018 at 1700 Hrs. up to 05.06.2018 at 1200 Hrs. |
| Opening technical bid (Online) | Date: 05.06.2018 at 1230 Hrs |
| Opening of Price-Bid. | To be intimated to all the Post-Qualified bidders separately. |

1. The DNIT with detailed terms and conditions can be downloaded/ Uploaded by the bidders from the website of Chandigarh Administration at <https://etenders.chd.nic.in>.
2. The tender document should be uploaded in the following manner:-
 - i) **Bid- 1:** Shall contain Earnest Money Deposit alongwith cost of Tender Document to be submitted in physical form upto 1200 Hrs on 05.06.2018.
 - ii) **Bid- 2:** Shall contain post qualification documents such as annual financial turnover and completion certificate of work & technical specifications etc as required in the tender document.
 - iii) **Bid -3:** The price schedule shall be uploaded separately.
3. The Bidders should upload in Electronic Format on the website scanned copies of eligibility documents also within the prescribed time limit.

**Chief Executive Officer,
CREST**

CHECK LIST FOR CONTRACTORS FOR SUBMISSION OF TENDER

| Sr. No. | Documents to be submitted | Submitted |
|----------------|--|--------------------------|
| 1 | The bidder should upload affidavit/ certificate from CA mentioning financial turnover of last three years along with the technical bid. However, complete balance sheet, copy of Audited Financial statement with profit and loss account for the last three years if required may be asked from the contractor after opening of technical bid | <input type="checkbox"/> |
| 2 | Detail of service centre after sale of service of equipment with telephone facility | <input type="checkbox"/> |
| 3 | Proof of execution of similar nature of work with copy of certificates of satisfactory completion certificate from an authority for which the work was executed. | <input type="checkbox"/> |
| 4 | Registration certificate of the firm which is issued by the registrar of companies or other competent authority under which firm is registered. | <input type="checkbox"/> |
| 5 | The firm should also upload an Undertaking on its letterhead that all the terms and conditions of the DNIT are acceptable to the Bidder. | <input type="checkbox"/> |
| 6 | Notarized affidavit on Indian non judicial stamp paper that bidder/ firm has never been blacklisted. | <input type="checkbox"/> |
| 7 | The agency should have valid GST registration certificate. Copy of this certificate has to be submitted. | <input type="checkbox"/> |
| 8 | The agency should have valid PAN No. Copy of the same has to be submitted. | <input type="checkbox"/> |

- Please Tick in the box for the submitted documents during tender submission.

1. Eligibility Criteria and other terms & conditions:

- 1.1 This invitation open to all EPC companies, manufacturers, suppliers & system integrators of Solar PV Power Projects who have not been debarred/black listed by any Govt. organization for design, manufacture, supply, installation and commissioning of different capacity Roof Top Solar Power Projects.
- 1.2 The offers shall be accompanied with a set of complete technical literature, operation and maintenance manual of the product in English/ Hindi Language.
- 1.3 Material shall be strictly as per laid down specifications and if there is any left out specification, in the Information Document the same shall be considered as per the latest MNRE specifications and guidelines. Any amendments/ modification issued time to time will be incorporated.
- 1.4 The SPV modules shall be warranted for 25 years and complete SPV systems would be warranted by the manufacturer for five years, from the date of commissioning of the Project. After Installation & Commissioning Solar roof top power project shall be jointly visited by a committee of supplier, user and officer of CREST.
- 1.5 The companies should have their service network in or around Chandigarh within a radius of 50KM and shall provide address of service centers. The proof of service centres / service agreement / MOU / registration certificate has to be submitted. If not having then the same has to be opened within one month of Shortlisting and undertaking for the same is to be submitted during bid submission.
- 1.6 All disputes relating to this work shall be subject to the jurisdiction of Chandigarh only.
- 1.7 Incomplete and Conditional tenders are liable to be rejected.
- 1.8 The CEO, CREST has full rights to accept or reject any or all the tenders without assigning any reason thereof.
- 1.9 The CEO, CREST reserves the right for any omission/ correction in the Notice Inviting Tender.
- 1.10 Average Financial Turn Over of the tenderer or its group company/s with same directors during the last three years ending 31.03.2017/2018 shall be allowed. CA certificate for the same will be provided by the bidder.
- 1.11 The tenderer shall quote the rate both in figure as well as in words.
- 1.12 The bidder should also submit an undertaking on its letterhead that all the terms & conditions of the DNIT are acceptable to the bidder.
- 1.13 The bidder should submit a notarized affidavit on Indian Non judicial stamp paper of Rs.10/- that the proprietor/firm/ bidder has never been black listed by any organization.”
- 1.14 The agency should have valid GST registration certificate. Copy of this certificate has to be submitted.
- 1.15 The agency should have valid PAN No. Copy of the same has to be submitted.
- 1.16 Registration certificate of the firm which is issued by the registrar of companies or other competent authority under which firm is registered has to be submitted. Copy of this certificate has to be submitted.
- 1.17 The validity of empanelment is only for up to 31st March, 2019 from the date of empanelment. It may be extended at the discretion of CREST.**
- 1.18 The empanelled agency shall not claim any subsidy / incentive from MNRE / any other organization for the project sanctioned by CREST. An undertaking to this effect has to be submitted with each completion report/ subsidy claim. CREST shall submit the all subsidy claim details to MNRE, GOI.

- 1.19 Empanelment of agencies will be made for each category separately (i.e. 1 kWp to upto 5 kWp, More than 5 kWp to upto 10 kWp and so on). For an each particular category, 15 Nos. of bidders will be shortlisted for empanelment. The short listing of 15 Nos. bidders shall start from lowest rate bidder onwards. The CREST may shortlist more than 15 bidders, if the rate offered at highest empanelled level is tied among two or more bidders.
- 1.20 In case, a bidder shortlisted for empanelment in higher category, but not shortlisted for empanelment in lower category, then, the bidder may get empanelled in lower different categories also if, the bidder agrees to get empanelled at the L-1 rate received through this EOI tender for that particular category and in that case, the shortlisted bidders may be more than 15 for each different categories.
- 1.21 **The finally shortlisted agencies shall be empanelled with CREST for installation of Solar Power Plants in Chandigarh only after the submission of performance bank guarantee valid upto 6 years in form of an irrevocable bank guarantee bond of any local scheduled bank situated in Tricity (Chandigarh, panchkula & Mohali), in favour of CREST, in prescribed form given in Annexure-E. The Performance Bank Guarantee should be submitted within 15 days from the acceptance of EOI. The amount of performance bank guarantee will be as per following manner for different categories:**

| Sr. No. | Category of System | Amount of Performance Bank Guarantee | CFA Claim Limit to the beneficiary of SPV Power Plants installed by empanelled agencies |
|---------|-----------------------------------|--------------------------------------|---|
| 1. | 1 kWp to upto 5 kWp | Rs. 1.00 Lakh. | Rs. 3.00 Lakh. |
| 2. | More than 5 kWp to upto 10 kWp | Rs. 1.50 Lakh | Rs. 4.50 Lakh. |
| 3. | More than 10 kWp to upto 20 kWp | Rs. 2.00 Lakh. | Rs.6.00 Lakh. |
| 4. | More than 20 kWp to upto 50 kWp | Rs.3.75 Lakh. | Rs.11.25 Lakh. |
| 5. | More than 50 kWp to upto 100 kWp | Rs.5.50 Lakh. | Rs.16.50 Lakh. |
| 6. | More than 100 kWp to upto 500 kWp | Rs.7.50 Lakh. | Rs.22.50 Lakh. |

Further, after crossing the limit of CFA Claimed (for each different Categories) by beneficiary of SPV Power Plants installed by each empanelled agencies, the additional performance bank guarantee amounting of Rs.1.00 Lakh per Rs.3.00 Lakh CFA Claim, valid for 6 years will be submitted by empanelled agencies in form of an irrevocable bank guarantee bond of any local scheduled bank situated in tricity (Chandigarh, Panchkula and Mohali) in favour of CREST. The required additional bank guarantee shall be submitted before taking work order leading to further claim of CFA within 15 days after reaching the limit, failing which the bidder will be debarred from the list of empanelled vendors.

If any empanelled agency takes further work order from the beneficiary without submission of the bank guarantee then the empanelled agency shall be debarred from the said tender and bank guarantee already submitted will be forfeited.

In case of upgradation to higher categories, the empanelled agencies will have also to submit the required additional performance bank guarantee valid for 6 years as per above said manner.

1.22. Upgradation of empanelled agencies to higher categories:-

The agencies empanelled through this EOI under a particular category shall be upgraded to higher category, if the empanelled agency, install minimum aggregate capacity of SPV Power Plants in Chandigarh under this EOI tender, as per following manner:

| Sr. No. | Minimum aggregate capacity of SPV Power Plant installed in Chandigarh under this EOI. | Upgradation to Category of System |
|---------|---|-----------------------------------|
| 1. | 5 kWp | More than 5 kWp to upto 10 kWp |
| 2. | 10 kWp | More than 10 kWp to upto 20 kWp |
| 3. | 20 kWp | More than 20 kWp to upto 50 kWp |
| 4. | 50 kWp | More than 50 kWp to upto 100 kWp |
| 5. | 100 kWp | More than 100 kWp to upto 500 kWp |

The agency shall be empanelled in next higher categories at the L-1 rate received through this EOI tender for this particular category.

- 1.23. If the bidder is shortlisted for empanelment in more than one categories, then the shortlisted bidder shall submit the required performance bank guarantee corresponding to higher empanelled category for empanelment in CREST.
- 1.24 If, any empanelled agency does not execute any SPV Power Plant in Chandigarh under this EOI, then, the performance bank guarantee will be released after the expiry of validity of this EOI at the request of empanelled agency and also the empanelled party will be debarred from future tenders of CREST for non-performance.
- 1.25 CREST is at liberty in adding new vendors for faster execution of Solar City Program at L1 rates, if it is felt that the progress of the Solar City Program is slow but not before 3 Months from the date of empanelment. CREST will take periodic review and only then decision for adding new vendors will be taken.
- 1.26 Any agency getting empanelled with CREST will not have the right to refuse for installation of SPV Power Plants in Chandigarh at his approved rates. If, any agency refuses to install SPV Power Plants in Chandigarh at his approved rates and complaint is received in the office, CREST shall have the right to take necessary action against the firm for forfeiture of performance bank guarantee including blacklisting.
- 1.27 If any beneficiary wants to install solar power plant and approaches CREST, then the beneficiary will be referred to the L1 party and if the L1 party refuses for installation of SPV Power Plant at his approved rates, then action against the firm for forfeiture of performance bank guarantee including blacklisting will be initiated.
- 1.28 Documents for release of capital subsidy to the beneficiary will be submitted by the bidder within 7 days from the day of installation of Bi-Directional Energy Meter.
- 1.29 The bidder is free to bill anywhere from India.
- 1.30 If any empanelled vendor installs the SPV Power Plant after taking advance from the beneficiary but not installed as per specifications mentioned in the EOI tender then the empanelled vendor will be asked to modify/correct the installation and if the vendor denies to do so then CREST shall have full liberty

to get the system modified/ corrected at the cost of the empanelled vendor by forfeiture of performance bank guarantee and action as deemed fit shall be taken including blacklisting and debarring from all the future tenders of CREST.

2 Scope of Supply:

The SPV power plants should be supplied & installed by the companies as per specifications given in technical specifications which comply with the MNRE, GOI Guidelines. Following parts for each SPV projects are mainly required to be supplied:

| Sr. No. | Brief Description | Units | Make |
|---------|---|---|---|
| 1. | SPV modules for a total capacity as per specifications. (Minimum 250Wp) | 1 Set | Complaint to bid document spec's As per IEC 61215 2 nd edition and MNRE, GOI latest specifications/ standards. |
| 2. | SPV module rooftop mounting structure suitable for accommodating SPV modules including foundation as per specifications on rooftop.(MS Galvanized / Aluminum/ Stainless Steel/ MS Painted / Prefabricated Galvanized Iron.) | 1 Set | As per specifications. |
| 3. | Inverter as per specifications (1kVA and above) | As per Spec. | IEC 61683 / IS 61683 IEC 60068-2 (1, 2, 14, 30) / Equivalent BIS Std. |
| 4. | Array Junction Boxes with SPD | 1 Set | IP 65(for outdoor)/ IP 54(for indoor) |
| 5. | Main Junction Boxes with SPD and MCB/MCCB, Uni-directional solar meter and necessary protection as per CED rules and safety regulations | 1 Set | IP 65(for outdoor)/ 54(for indoor) |
| 6. | DC distribution units | 1 Set | as per specifications |
| 7. | AC Distribution Switchgear units | 1 Set | as per specifications |
| 8. | DC Cable requirement as per design (PVC insulated armoured / unarmoured Copper as per BIS Codes) | Meters As required at site for full plant commissioning | IEC 60227 / IS 694 IEC 60502 / IS 1554 (Pt. I & II) |
| 9. | AC Cable requirement as per design (PVC insulated armoured / unarmoured Copper/ Aluminum cables as per BIS Codes) | Meters As required at site for full plant commissioning | IEC 60227 / IS 694 IEC 60502 / IS 1554 (Pt. I & II) |
| 10. | Lightning arrester complete set as per specifications | 1 Set | |
| 11. | Earthing as per specifications | 1 Set | As per requirement |
| 12. | Remote monitoring system for all capacities SPV Power Plants | 1 Set | As per DNIT |
| 13. | Jet Pump with GI Pipe for 10 kWp and onwards | 1 Set | |

| | | | |
|-----|--|---------------------|-------------|
| 14. | Bi-directional Energy Meter (For SPV Power Plants capacities 1 to 5kWp, cost of Bi-Directional Meter will be borne by the beneficiary and for capacities more than 5kWp, the Bi-Directional Meter will be as part of the SPV Power Plant and the cost shall be borne by the EPC-Contractor.) | | |
| 15. | High Power (415V/11kV) evacuation Substation, if required/ applicable, as per regulation/ requirement from 100 kWp and onwards | 1 Set | |
| 16. | The process and expenditure of meter testing and electrical inspection | As per requirement | |
| 17. | CMC of the SPV Power Plant for a period of 5 years from date of commissioning of the power plant. | | As per DNIT |
| 18. | Engineering, electrical drawings and installations and O&M manuals | 1 Sets | |
| 19. | Danger board | As per requirements | |

The above list is not exhaustive. The bidder is supposed to supply any other material which is required for successful commissioning of the project.

***The technical specifications are valid as amended by MNRE from time to time.**

3. WARRANTY

- i. The Solar power projects shall be warranted for five years after the date of commissioning of the project for replacement in case of any manufacturing, operation failure, non performance as per design standards.
- ii. The PV module(s) shall be warranted for a minimum period of 25 years from the date of commissioning of the project. The PV modules must be warranted for their output peak watt capacity, which should not be less than 90% at the end of Ten (10) years and 80% at the end of Twenty five (25) years.
- iii. The Warranty Card to be supplied with the system must contain the details of the system. The bidder will have to be furnishing a warranty certificate of the systems on a required stamp paper for the same.

4. Comprehensive Maintenance Contract during Warranty period of five years:

- a. Visit to the site on call basis to provide maintenance services within two days of lodging of complaint.
- b. Corrective & remedial maintenance services to set right the malfunction of the SPV-projects include supply and replacement of all damaged parts/ components including PCU, Inter connected cables/ parts and fuse etc. with new parts.

5. OPERATION & MAINTENANCE MANUAL

- An Operation, Instruction and Maintenance Manual in English/Hindi languages should be provided with the Solar PV projects. The following minimum details must be provided in the Manual:
- Basic principles of Photovoltaic.
- A small write-up (with a block diagram) on the Solar PV project - its components, PV module, inverter, junction boxes and expected performance shall be provided.
- Type, Model number, Voltage & capacity of inverter, used in the system.
- The make, model number, country of origin and technical characteristics of all the component are required to be provided.
- Clear instructions on regular maintenance and trouble shooting of the Solar PV Projects.
- DO's and DONT's.
- Name, address and Mobile No. of the contact person for repair and maintenance, in case of non-functionality of the SPV Projects.

6. PRICE:

The price quoted shall be on turnkey basis including warranty / CMC of 5 years of the system and should be inclusive of all duties and taxes on material in respect of this contract, any GST, if applicable shall be payable by the Contractor and Government/CREST/ Beneficiary will not entertain any claim whatsoever in respect of the same.

If, the empanelled agency fails to follow the terms and conditions of DNIT during installation of SPV Power Plants and warranty/CMC period, CREST shall have right to take necessary action against the firm for blacklisting including legal action and forfeiture of Earnest Money Deposit or Performance Bank Guarantee.

The Earnest Money Deposit amount will be refunded after the submission of required performance bank guarantee validity of six years and the performance bank guarantee will be returned after the completion of six years from the date of empanelment subject to the satisfaction of CEO, CREST.

Further, if the finally shortlisted agencies do not submit the required performance bank guarantee for empanelment within 30 days from the date of issue of empanelment, the earnest money deposited will be forfeited. The Earnest Money Deposit amount will be refunded to non shortlisted agencies.

**Chief Executive Officer,
CREST**

General Technical Specifications

1. Solar Photovoltaic Modules

Each solar PV plant array capacity should not be less than the capacity of the same SPV Plant capacity and it should comprise of solar mono / multi crystalline modules of minimum 250 watts. The Photovoltaic modules must be tested & approved by one of the IEC authorized test centers , Test Certificates can be from any of the NABL / BIS accredited testing / calibration laborites the module type must be qualified as per IEC 61215(Second Edition). In addition PV modules must qualify to IEC 61730 Part I to II for safety qualification testing. SPV module conversion efficiency should not be less than 15.0% under STC.

The module shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period. The Bidder will have to furnish a CORPORATE GURANTEE on a required stamp paper for the same.

IDENTIFICATION AND TRACEABILITY

Each PV module used in any solar power project must use a **RF Identification Tag (RFID)**, which must contain the Information required as per MNRE guidelines:

- i. Name of the manufacturer of PV Module
- ii. Name of the manufacturer of solar cells
- iii. Month and year of the manufacturer (separately for solar cells and modules.
- iv. Country of Origin (separately for solar cells and modules
- v. I-V Curve for the module
- vi. Peak wattage , I_m , V_m and FF for the module
- vii. Unique Serial No and Model No of the Module
- viii. Date and year of obtaining IEC PV module qualification certificate.
- ix. Name of the test lab issuing IEC certificate

2. SPV PANEL ARRAY STRUCTURES

The supplier shall specify installation details of the PV modules and the support structures with appropriate diagrams and drawings. Such details shall include, but not limited to the following:

- Determination of true south at the site;
- Array tilt angle to the horizontal, with permitted tolerance;
- Details with drawings for fixing the modules;
- Details with drawings of fixing the junction/terminal boxes;
- Interconnection details inside the junction/terminal boxes;
- Structure installation details and drawings;
- Electrical grounding (earthing);
- Inter-panel/Inter-row distances with allowed tolerances; and
- Safety precautions to be taken.

The array structure shall support SPV modules at a given orientation to absorb and transfer the mechanical loads to the roof properly. The portion of array structure if any lying within the column shall be of GI of superior quality/ Alluminium. All nuts and bolts shall be of very good quality stainless steel. Strict care should be taken during

execution to avoid any damage to the roof surface of the buildings and to ensure no leakage should occur.

- i. Wherever required, Suitable number of PV panel structures shall be provided. Structures shall be of flat-plate design and can be with combination of I, C and L or any sections as per structure design requirement.
- ii. Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Galvanizing should meet ASTM A-123 hot dipped galvanizing or equivalent which provides at least spraying thickness of 70 microns as per IS5909, if steel is used.
- iii. **MS Galvanized / Aluminum/ Stainless Steel/ MS Painted / Prefabricated Galvanized Iron structures with adequate strength and in accordance with relevant BIS standards shall be used with proof that the design of the structure can withstand a wind speed upto 170KM per Hour.**
- IV. Each structure should have angle of inclination as per the site conditions to take maximum insulation.
- V. Each panel frame structure be so fabricated as to be fixed on the rooftop column/wall structures. The structures shall be designed for simple mechanical and electrical installation. There shall be no requirement of welding or complex machinery at the installation site. All nuts and bolts shall be of very good quality stainless steel except foundation bolts which will be of MS (GI Coated).
- VI. If, possible, 4 Ft. offset from boundary of rooftop from all sides should be kept while installing structure for modules.
- VII. The cost of civil work / grouting of structure shall be in the scope of the bidder only and no extra cost to be demanded by the empanelled vendor.
- VIII. **No damage in any way should be caused to the building rooftops while installation of SPV Power Plant. If any damage done it will wholly be the responsibility of the bidder and cost shall be recovered from the bidder.**
- IX. **In case the bidder installs SPV Power Plant on raised structure with lower edge at 7 feet and above, then the party shall submit Structure Safety Certificate from Chartered Structure Engineer that structure is safe upto the windspeed of 170km/hr.**

3. **POWER CONDITIONING UNIT (STRING INVERTORS):**

The power conditioning units of each different capacity SPV Power Plants totaling should not be less than the each SPV Power Plant capacity and it should be provided to convert DC power produced by SPV modules, in to AC power. A multi function power conditioning system combining the functionality of a grid interactive solar inverter with a highly efficient conversion unit having following **Technical Specification:**

| | | |
|-------------------|---|--|
| Type | : | Self commuted, current regulated, high frequency IGBT based with Trench Gate Structure |
| Output voltage | : | Single Phase, 230V, AC/ 3 phase, 415V, AC (+12.5%, - 20%V, AC) as per requirement. |
| Frequency | : | 50 Hz \pm 1 Hz |
| Continuous rating | : | Not less than system capacity individually |

| | |
|-----------------------------|---|
| DC input Operating range | : it should in between 100 V to 1000 V |
| Total Harmonic Distortion | : less than 3 % |
| Operating temperature Range | : 0 to 55 deg C |
| Housing cabinet | : PCU to be housed in suitable cabinet with minimum IP65 standard |
| Inverter efficiency | : >95 % at full load. |
| Power Control | : MPPT |

The bidder shall use the original parts in case of any fault in the PCU/Inverter during the CMC 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.

Other important Features/Protections required in the PCU

- Authentic tracking of the solar arrays maximum power point tracking (MPPT).
 - Array ground fault detection.
 - LCD and piezoelectric keypad operator interface Menu driven
 - Automatic fault conditions reset for all parameters like voltage, frequency and/or black out.
 - MOV and gas filled spark gap technology type surge arresters on AC and DC terminals for over voltage surge protection from any source.
 - PCU should be rated to operate at 0 to 55 deg. Centigrade above ambient temp
 - All parameters should be accessible through an industry standard communication link.
 - The PCU should go in sleep mode when there is no grid supply.
 - The string inverter should have display of adequate size on its front panel to show various parameters.
- 3.1 Since the PCU is to be used in solar photo voltaic energy system, it should have high operational efficiency. The idling current at no load must not exceed 2 percent of the full-load current.
- 3.2 A suitable Surge Protection Device separately at output (A.C. side) shall be provided for each SPV Power Plant.
- 3.3 The PCU output shall be 230V, AC for single phase and 415V, AC, 50 Hz for 3 phase.
- 3.4 The PCU shall include appropriate self protective and self diagnostic features to protect itself and the PV array from damage in the event of PCU component failure or from parameters beyond the PCU's safe operating range due to internal or external causes. The self-protective features shall not allow signals from the PCU front panel to cause the PCU to be operated in a manner which may be unsafe or damaging. Faults due to malfunctioning within the PCU, including commutation failure, shall be cleared by the PCU protective devices and not by the existing site utility grid service circuit breaker.

The PCU shall go to shut down/standby mode, with its contacts open, under the following conditions before attempting an automatic restart after an appropriate time delay; in sufficient solar power output etc.

a) Insufficient Solar Power Input.

When the power available from the PV array is insufficient to supply the losses of the PCU, the PCU shall go to a standby/shutdown mode. The PCU control shall prevent excessive cycling during rightly shut down or extended periods of insufficient solar radiation.

The power conditioning units / inverters should be applicable IEC/ equivalent BIS standard for efficiency measurement and environmental testing as per standard code IEC 61683 and IEC 60068 2(6,21,27,30,75,78). The charge controller/ MPPT units should qualify IEC 62093 and IEC 60068 2 (6,21,27,30,75,78). The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 62208 specifications.

The PCU's should be tested from the MNRE approved test centres / NABL /BIS accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses. Party must supply and upload the test report of PCU /inverter along with the tender document.

b) Utility-Grid Over or Under Frequency

- 3.5 The PCU shall restart after an over or under frequency shutdown when the utility grid voltage has returned to the within limits for minimum of two minutes.
- 3.6 The PCU generated harmonics measures at the point of connection to the utility services when operating at the rated power shall not exceed a total harmonic current distortion of 3 percent, a single frequency current distortion of 3 percent and single frequency voltage distortion of 1 percent, when the first through the fiftieth integer harmonics of 50 Hz are considered.
- 3.7 The PCU Power factor at the point of utility service connection shall be 0.95 lagging or leading when operating at above 25 percent of the rated output, but may be less than 0.95 lagging below 25 percent of the rated output.
- 3.8 The high voltage and power circuits of the PCU shall be separated from the low-voltage and control circuits. All conductors shall be made of standard copper.
- 3.9 The PCU shall withstand a high voltage test of 2000 V rms, between either the input or the output terminals and the cabinet (chassis).
- 3.10 Full protection against accidental open circuit and reverse polarity at the input shall be provided.
- 3.11 The PCU shall not produce Electromagnetic Interference (EMI) which may cause malfunctioning of electronic and electrical instruments including communication equipment, which are located within the facility in which the PCU is housed.
- 3.12 The PCU shall have an appropriate display on the front panel to display the instantaneous AC power output and the DC voltage, current and power input. The display shall be visible from outside the PCU enclosure. Operational status of the PCU, alarms, trouble indicators and ac and the dc disconnect

switch positions shall also be communicated by appropriate messages or indicator lights on the front cover of the PCU enclosure.

3.13 Electrical safety, earthing and protection:

- A) Internal Faults: In built protection for internal faults including excess temperature, commutation failure, overload and cooling fan failure (if fitted) is obligatory.
- B) Over Voltage Protection: Over Voltage Protection against atmospheric lightning discharge to the PV array is required. Protection is to be provided against voltage fluctuations in the grid itself and internal faults in the power conditioner, operational errors and switching transients.
- C) Earth fault supervision: An integrated earth fault device shall have to be provided to detect eventual earth fault on DC side and shall send message to the supervisory system.
- D) Cabling practice: Cable connections must be made using PVC Cu cables, as per BIS standards. All cable connections must be made using suitable terminations for effective contact. The PVC Cu cables must be run in GL trays with covers for protection.
- E) Fast acting semiconductor type current limiting fuses at the main busbar to protect from the grid short circuit contribution.

3.14 The PCU shall include an easily accessible emergency OFF button located at an appropriate position on the unit.

3.15 The PCU shall include ground lugs for equipment and PV array grounding. The DC circuit ground shall be a solid single point ground connection in accordance with WEC 69042.

3.16 All exposed surfaces of ferrous parts shall be thoroughly cleaned, primed, and painted or otherwise suitably protected to survive a nominal 10 years design life of the unit.

3.17 The PCU enclosure shall be weatherproof and capable of surviving *climatic changes and should keep the PCU* intact under all conditions. Moisture condensation and entry of rodents and insects shall be prevented in the PCU enclosure.

3.18 Components and circuit boards mounted inside the enclosures shall be clearly identified with appropriate permanent designations, which shall also serve to identify the items on the supplied drawings.

3.19 All doors, covers, panels and cable exists shall be gasketed or otherwise designed to limit the entry of dust and moisture. All doors shall be equipped with locks. All openings shall be provided with grills or screens with openings no larger than 0.95 cm.

3.20 The design and fabrication of the PCU at the site temperature, incident sunlight and the effect of ambient temperature on component life shall be considered carefully. Similar consideration shall be given to the heat sinking and thermal for blocking diodes and similar components.

3.21 Factory Testing:

- A) Preparation of all controls, protective and instrumentation circuits shall be demonstrated by direct test if feasible or by simulation operation conditions for all parameters that cannot be directly tested.
- B) Operation of start up, disconnect and shutdown controls shall also be tested and demonstrated. Stable operation of the PCU and response to control signals shall also be tested and demonstrated.
- C) Factory testing shall include measurement of phase currents, efficiencies, harmonic content and power factor.
- D) A factory Test Report (FTR) shall be supplied along with the unit. The FTR shall include detailed description of all parameters tested qualified and warranted.

3.22 Operating Modes:

The following operating modes are to be made available:

Night or Sleep mode: Where the inverter is almost completely turned off, with just the timer and control system still in operation, losses should not exceed 2 watts per 5 kilowatt.

In case of Grid Failure, the PCU should go in sleep mode/ turned off immediately.

Standby mode: Where the control system continuously monitors the output of the solar generator until pre-set value is exceeded (typically 20 watts)

Operational or MPP tracking mode: The control system continuously adjust the voltage of the generator to optimize the power available. The power conditioner must automatically re-enter stand-by mode when input power reduces below the standby mode threshold. Front Panel display should provide the status of the PCU, including AC Voltage, Current, Power output & DC Current, Voltage and Power input, pf and fault Indication (if any)

3.24. Harmonics Standard :

As per the standard of IEEE 519, the permissible individual harmonics level shall be less than 3% (for both voltage and current harmonics) and Total Harmonics Distortion (THD) for both voltage and current harmonics of the system shall be less than 5%.

Technical and interconnection requirements

| | | |
|--------------------------------------|--|--|
| Overall conditions of service | State Distribution/Supply Code | State Distribution/Supply Code |
| Overall Grid Standards | Central Electricity Authority (Grid Standard) Regulations 2010 | Central Electricity Authority (Grid Standard) Regulations 2010 |
| Equipment | BIS / IEC / IEEE | BIS / IEC / IEEE |
| Meters | Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time | Central Electricity authority (Installation & operation of meters) Regulation 2006 as amended time to time |

| | | |
|---|---|--|
| Safety and supply | Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010 | Central Electricity Authority(measures of safety and electricity supply) Regulations, 2010 |
| Harmonic Requirements Harmonic Current | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 |
| Synchronization | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | Photovoltaic system must be equipped with a grid frequency synchronization device. Every time the generating station is synchronized to the electricity system. It shall not cause voltage fluctuation greater than +/- 5% at point of connection. |
| Voltage | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | The voltage-operating window should minimize nuisance tripping and should be under operating range of 80% to 110% of the nominal connected voltage. Beyond a clearing time of 2 second, the photovoltaic system must isolate itself from the grid. |
| Flicker | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | Operation of Photovoltaic system should not cause |
| Frequency | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | When the Distribution system frequency deviates outside the specified conditions (50.5 Hz on upper side and 47.5 Hz on lower side), There should be over and under frequency trip functions with a clearing time of 0.2 seconds. |
| DC injection | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | Photovoltaic system should not inject DC power more than 0.5% of full rated output at the interconnection point or 1% of rated inverter output current into distribution system under any operating conditions. |
| Power Factor | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | While the output of the inverter is greater than 50%, a lagging power factor of greater than 0.9 should operate. |
| Islanding and Disconnection | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013 | The photovoltaic system in the event of fault, voltage or frequency variations must island/disconnect itself within IEC standard on stipulated period. |
| Overload and Overheat | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013. | The inverter should have the facility to automatically switch off in case of overload or overheating and should restart when normal conditions are restored. |
| Paralleling Device | IEEE 519 CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2013. | Paralleling device of photovoltaic system shall be capable of withstanding 220% of the normal voltage at the interconnection point. |

The installation should be as per the technical compliance and latest installation practices of MNRE, JERC, CED guidelines and all other statutory regulations specified. Any amendments / modifications issued time to time will be incorporated.

Energy Meter Configuration options:

The metering system for rooftop solar system, under net-metering arrangement, shall be as under:-

One Bi-directional Energy Meter as main meter and One No. Uni-directional Energy meter as solar meter with necessary CTs/PTs, as per requirement.

For SPV Power Plants capacities 1 to 5kWp, cost of Bi-Directional Meter will be borne by the beneficiary and for capacities more than 5kWp, the Bi-Directional Meter will be as part of the SPV Power Plant and the cost shall be borne by the EPC-Contractor.

The metering system for rooftop solar system, under Gross-metering arrangement, shall be as under:-

One Bi-directional energy meter as Main meter and one No. Bi-directional energy meter as check meter in case of Gross Metering with necessary CTs/ PTs, as requirement.

For SPV Power Plants capacities 1 to 5kWp, cost of Bi-Directional Meter will be borne by the beneficiary and for capacities more than 5kWp, the Bi-Directional Meter will be as part of the SPV Power Plant and the cost shall be borne by the EPC-Contractor.

| Sr. No. | Meter Description | Accuracy | Load of Consumer | Voltage |
|---------|--|----------------------|------------------------------|---|
| 1. | Single Phase 10-60A, whole current | Class-I | Up to 10kW | Single Phase LT 230V. Grid System Stability: to be examined by the Distribution Licensee. |
| 2. | 3 Phase 10-60A, whole Current | Class-I | More than 10kW & up to 25kW | Three Phase LT 400 V |
| 3. | LT AC 3 Phase 4 Wires CT operated static DLMS & AMR Compliant energy meter | Class-0.5S or better | More than 25kW & up to 100kW | Three Phase LT 400 V |
| 4. | HT TPT Meter, DLMS Compliant & AMR Compatible | Class-0.5S or better | Above 100 kW and upto 4 MW | Three Phase HT (11kV) |

The Solar power generated at rooftops will be collected at one termination point/ multiple termination point, in the same building from where it will be fed on LT side / HT side.

If required, any protection device/ adapter panel/breaker/switchgear/ RMU panel be provided to terminate the each SPV Power Plant output on LT side / HT side by the party at its own cost.

Online Monitoring:

The bidder will provide the online monitoring device for monitoring of Solar generation either by providing web enabled uni-directional solar meter or web enabled Solar inverter or separate remote monitoring device. The online monitoring device should be SIM/Wifi enabled and have GPRS facility through

which the data will be transferred. The required internet connection to the smart energy meter or the web enabled solar inverter or separate remote monitoring device will be in the scope of empanelled agencies from 10 kWp and above for the entire period of CMC of 5 years and the required internet connection to the smart energy meter or web enabled solar inverter or separate remote monitoring device will be in the scope of beneficiary from 1 kWp to upto less than 10 kWp. The empanelled agency may develop its own web portal / app or can use the third party app.

Meter Testing & Electrical Clearance:

All installation work should be done as rules & regulations of Indian Electricity Act. & Electricity Department, U.T., Chandigarh and JERC, solar power – grid connected ground mounted and solar rooftop and metering regulations-2015 for the State of Goa & Union Territories. The bidder/ empanelled agency shall have to take the clearance from SDO/Electrical Inspector, UT, Chandigarh as the case may be at its own cost before connecting to the Grid. The process and expenditure of meter testing and electrical inspection to be met by bidder/ empanelled agency.

4. SUBSTATION:

High power evacuation substation with Dry type/ Oil type minimum same or higher capacity of transformer of same capacity of SPV Power Plant, 415V/11kV, 50Hz step up alongwith all protections, switchgears, required vacuum circuit breakers (630 Amps), RMU panel, Metering panel and cables etc alongwith required civil work will be housed in prefabricated structure or Outdoor type as per requirement be provided for 100 kWp to upto 500 kWp, if required.

(The system should be as per latest specifications of U.T., Chandigarh Electricity Department.)

5. Array Junction Box with Surge Protection Device (SPD):

There should be a separate Array Junction Box with Metal Oxide Varistors (MOV) based Surge Protection Device with fuses to be provided for each string inverter on D.C. Side.

Further, on A.C. Side, the Surge Protection Device should be provided in ACDB, besides the existing SPD device in PCU.

In case, the inverter has provision of inbuilt array junction box, then the separate array junction box is not required but the surge protection device should be provided separately on D.C. and A.C. both side in addition to Inverters.

6. COMMON AC DISTRIBUTION PANEL BOARD (ACDPB)

6.1. Common AC Distribution Panel Board (DPB) shall control the AC power from inverter. AC Distribution panel (ACDP) should consist of appropriate size of MCB/MCCB with appropriate breaking capacity as incomer and suitable numbers of MCB/MCCB with appropriate size breaking capacity out going switches.

6.2. The panel should have space for Solar Energy Meter.

7. CABLES:-

- a) ISI marked **as per given brands** PVC insulated Copper Cond. Cable of various sizes as per load requirement for connecting all the modules / arrays to Jn. Boxes and from Jn. Boxes to AJB and from AJB to inverter. Copper/ Aluminum **armored** Cables of appropriate size from Inverter onwards in A.C. side
- b) Cabling: Cabling shall be carried out as per IE Rules. All other cabling above ground should be suitably mounted on cable trays with proper covers.
- c) Wires: Only copper wires of appropriate size **based on load requirements** of reputed make as specified in DNIT shall have to be used on DC side up to inverter and from inverter to ACDB. However aluminum cables can be used on A.C side of transmission after ACDB.

PVC/XLPE insulated armoured sheathed cables required for the plant will be provided by the manufacturer. All cable schedules/ layout drawings have to be got approved from the purchaser prior to installation)

- d) Cables Ends: All connections are to be made through suitable cable/lug/terminals; crimped properly & with use of Cable Glands.
- e) Cable Marking: All cable/wires are to be marked with proper manner by good quality ferule or by other means so that the cable can be easily identified. All cable schedules/ layout drawings have to be got approved from the purchaser prior to installation.

8. LIGHTNING PROTECTION:

There shall be the required number of suitable lightning arrestors installed in the array area. Lightning protection shall be provided by the use of metal oxide arrestors and suitable earthing such that induced transients find an alternate route to earth. Protection shall meet the safety rules as per Indian Electricity Act and Electricity Department, U.T., Chandigarh.

9. EARTHING PROTECTION:

Each array structure of the PV yard should be grounded/ Earthing properly as per IS:3043-1987. In addition the lightning arrester/masts should also be provided inside the array field. Provision should be kept for shorting and grounding of the PV array at the time of maintenance work. All metal casing/shielding of the plant should be thoroughly grounded in accordance with Indian electricity Act./IE Rules and Electricity Department, U.T., Chandigarh. Earth Resistance should be tested in presence of the representative of Department after earthing by calibrated earth tester. PCU and ACDB should also be earthed properly.

10. COMPREHENSIVE MAINTENANCE:

All the equipments (but in case of SPV Modules the guarantee period is 25years) shall be provided with comprehensive Maintenance for 5 years against unsatisfactory performance and/or break down due to defective design, workmanship of material. The equipments or components, or any part thereof, so found defective during Comprehensive Maintenance period shall be forthwith repaired or replaced free of cost to the satisfaction of the beneficiary.

11. JET PUMP:

As per site requirement, minimum 1 No. 1/2 HP BIS / as per requirement approved surface pumps shall be installed for each SPV Power Plant for 10kWp and above. Suitable Nos of water outlets shall be provided through B-class ISI Marked GI Pipes for cleaning of the modules.

12. Drawings & Manual:

One set of Engineering, Electrical drawings and installation and O&M manuals are to be supplied. Bidder shall provide complete technical data sheets for each equipment giving details to the specifications along with makes.

13. SCOPE OF CMC OF SPV POWER PLANT FOR A PERIOD OF 5 YEAR FROM DATE OF COMMISSIONING

- a) Proper CMC of the SPV Power Plant for a period of five years after commissioning along with supply of consumable items as and when necessary and submission of daily performance data of the power plant shall come, under the CMC contract.

The break down maintenance of the entire system including supply of necessary spare parts, if any, are already under the coverage of warranty clause of the specific condition for a period of 60 months from date of commissioning of power plant. The CMC schedule of the SPV power plant during the 5 years contract period shall be as detailed below:

- b) The security of the power plant will rest with the supplier/agency till such time operation and maintenance of the power plant is not handed over to the purchaser/department.
- c) The deputed personnel shall be qualified and well trained so that they can handle any type of operation hazard quickly and timely.
- d) The deputed personnel shall be in a position to check and test all the equipment regularly, so that, preventive actions, if any, could be taken well in advance to save any equipment from damage. Any abnormal behavior of any equipment shall be brought to the notice of Engineer-in-Charge immediately for appropriate action.
- e) During CMC period of 5 years of the power plant, if there is any loss or damage of any component of the power plant due to miss management/miss handling or due to any other reasons, what-so-ever, the supplier/firm shall be responsible for immediate replacement/rectification. The damaged component may be repaired, if it is understood after examination that after repairing performance of the component shall not be degraded, otherwise the defective component shall have to be replaced by new one without any extra cost.

Financial Bid

Name of Work: Invitation of Expression of Interest for empanelment of manufacturers & system integrators for design, manufacture, supply, installation and commissioning of different capacity Roof Top Grid Connected Solar Power Projects of capacity varying from 1 kWp to 500 kWp in Chandigarh.

Performa for submission of rates of different capacity of roof top Solar PV Power Projects under Net Metering/gross metering Policy of U.T., Chandigarh.

| Sr. No. | Name of Bidder: | | |
|---------|--|---------------------------------|--------------------------------|
| | Description | Rate per kWp in figure (in Rs.) | Rate per kWp in words (in Rs.) |
| 1. | 1 kWp to upto 5 kWp | | |
| 2. | More than 5 kWp to upto 10 kWp | | |
| 3. | More than 10 kWp to upto 20 kWp | | |
| 4. | More than 20 kWp to upto 50 kWp | | |
| 5. | More than 50 kWp to upto 100 kWp | | |
| 6. | More than 100 kWp to upto 500 kWp without substation and fed to LT side. | | |
| 7. | More than 100 kWp to upto 500 kWp with required high power (415V/11kV) evacuation substation and fed to HT side. | | |

NOTE

- Rates quoted will be inclusive of all Taxes and duties as applicable.
- In case there is difference between Figure Rate & Words Rate, then the rates given in words column will be accepted by CREST for Comparison.

Signature & stamp of
Authorized person of bidder

ANNEXURES (A TO F)

Annexure – B

**PERFORMA OF WARRANTY CERTIFICATE-CUM-COMPREHENSIVE MAINTENANCE
CONTRACT WITH PURCHASER/CONSUMER BY EMPANELLED AGENCIES
AFTER SUCCESSFUL COMMISSIONING OF SPV POWER PLANT**
(On a required stamp paper)

Order No.

Date:

We _____(Name of empanelled agency with registered address)_____ do hereby certify that the _____(make of modules)_____ SPV Modules as used for _____(Name of the project)_____ shall have warranty of 25 years with degradation of power generated not exceeding 20% of the minimum rated power over the 25 years period and not more than 10% after 10 years period.(Detail lists of Solar PV Modules enclosed)

Further, We _____(Name of empanelled agency with registered address)_____ do hereby certify that the whole system of the _____(Name of the project)_____ shall have warranty and comprehensive maintenance contract for the period of 5 years from the date of commissioning of the project.

Further, it is also to certify that the Module Mounting Structure installed at _____for this project will withstand the wind speed of 170km/hr. In case of any mis-happening due to the wind speed upto 170km/hr then the damaged parts will be replaced free of Cost.

Further, if, we _____(Name of empanelled agency with registered address)_____ fails to provide the 5 years warranty and comprehensive maintenance contract of whole system and 25 years warranty of SPV Modules as mentioned above, then we are liable for legal action including blacklisting of the firm by CREST/ Consumer/ Purchaser.

Signature _____

Name _____

Designation with stamp _____

TURNOVER RECORD FORM

To be certified by Chartered Accountant

Name of Company:-

| Annual turnover data for past three years | | | | |
|---|---------|-------------------|-----------------|---------------|
| Sr. No. | Year | Turnover (in Rs.) | Profit (in Rs.) | Loss (in Rs.) |
| 1 | 2 | 3 | 4 | 5 |
| 1. | 2013-14 | | | |
| 2. | 2015-16 | | | |
| 3. | 2016-17 | | | |
| 4. | 2017-18 | | | |

Signature with seal of the company

Signature with seal of the Chartered Accountant.

Annexure-D

(On the letter head of the bidder)

CERTIFICATE OF ACCEPTANCE FROM THE BIDDER

I, the bidder _____ agrees / accepts all the terms and conditions of DNIT No. CREST/EOI/2018-19/5.

Name & Seal of the Authorized
Person of the Company

Annexure – E

BG No. -----
Date of Issue-----
Date of Expiry-----

FORM OF PERFORMANCE GUARANTEE/BANK GUARANTEE BOND

In consideration of the U.T Administration, Chandigarh (hereinafter called “The Government”) having offered to accept the terms and conditions of the proposed agreement between M/s.....(hereinafter called “the said contractor(s)” and **Chandigarh Renewable Energy and Science & Technology Promotion Society (CREST)** (hereinafter called “CREST”) for the acceptance of empanelment issued vide letter No. (hereinafter called “the said agreement”) having agreed to production of an irrevocable Bank Guarantee for Rs.(Rupeesonly) as a security/guarantee from the contractor(s) for compliance of his obligations in accordance with the terms and conditions in the said agreement.

1. We.....(hereinafter referred to as the “Bank”) hereby undertake to pay to the Chandigarh Renewable Energy and Science & Technology Promotion Society (CREST) an amount not exceeding Rs.(Rupeesonly) on demand by the CREST.
2. We.....do hereby undertake to pay the amounts due and payable under this Guarantee without any demur, merely on a demand from the CREST stating that the amount claimed is required to meet the recoveries due or likely to be due from the said contractor(s). Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs..... (Rupees.....only).
3. We, the said Bank, further undertake to pay to the CREST any money so demanded notwithstanding any dispute or disputes raised by the contractor(s) in any suit or proceeding pending before any court or Tribunal relating thereto, our liability under this present being absolute and unequivocal.

The payment so made by us under this bond shall be a valid discharge of our liability for payment there under, and the contractor(s) shall have no claim against us for making such payment.

4. We.....further agree that the Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said agreement, and it shall continue to be enforceable till all the dues of the CREST under or by virtue of the said agreement have been fully paid, and its claims satisfied or discharged, or till the CEO, CREST, on behalf of the CREST, certifies that the terms and conditions of the said agreement have been fully and properly carried out by the said contractor(s), and accordingly discharges his guarantee.
5. We.....further agree with the CREST that the CREST shall have the fullest liberty without our consent, and without effecting in any manner our

obligations hereunder, to vary any of the terms and conditions of the said agreement or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time any of the powers exercisable by the CREST against the said contractor(s), and to forbear or enforce any of the terms and conditions relating to the said agreement, and we shall not be relieved from our liability by reason of any such variation or extension being granted to the said contractor(s) or for any forbearance, act of omission on the part of the CREST or any indulgence by the CREST to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.

6. This Guarantee will not be discharged due to the change in the constitution of the bank or the contractor(s).
7. We.....lastly undertake not to revoke this (indicate the name of the bank) Guarantee except with the previous consent of the CREST in writing.
8. This Guarantee shall be valid up to.....unless extended on demand by the CREST. Notwithstanding anything mentioned above, our liability against this Guarantee is restricted to Rs.....(Rupeesonly), and unless a claim in writing is lodged with us on or before_____ on the date of expiry or extended date of expiry of this Guarantee all liabilities under this Guarantee shall stand discharged.

Dated the..... day of.....For.....