

Guidelines for on Grid Solar RTPV System on Net-metering basis for CESC, Mysore Officials

1. Introduction:

This document describes the general conditions and technical requirements for connecting Solar Rooftop Photovoltaic (SRTPV) system installations to CESC, MYSORE grid in accordance with the provisions provided by Indian Electricity Act 2003, Karnataka Solar policy 2014-21 dated: 22.05.2014 and KERC's tariff order dated 10.10.2013 and distribution code approved by KERC.

2. Procedure for installation and commissioning the SRTPV system:

- a. Registration of Application
- b. Processing of Application
- c. Approval letter for submission of Technical details of proposed SRTPV system (Pre-installation)
(To be intimated within 7 working days from the date of registration)
- d. Approval for installation
(To be intimated within 3 working days from the date of submission of technical details)
- e. General guidelines
- f. Signing of Power Purchase Agreement
- g. Submission of work completion report along with necessary approvals (Approvals from Chief Electrical Inspectorate, GoK are to be given within 7 working days from the date of submission (for 10 kWp and above capacity installations)
- h. Communication of Approval for testing, commissioning and synchronizing (On receipt of documents, approval shall be given as per Format-7 within 3 working days from the date of receipt of documents)
- i. Commissioning and synchronizing of SRTPV system installation (To be achieved within 3 working days from the date of approval)
- j. Billing procedure
- k. Periodical Inspections

a. Registration of Application:

1. The application can be downloaded from CESC, MYSORE website (www.cescmysore.org) **(Format-1)**.
2. The filled-in application along with necessary documents has to be submitted to concerned O&M sub-division, CESC, MYSORE. The registration fee payable are as follows:

Sl. No.	Sanctioned load/contract demand	Registration fee
1.	Upto and inclusive of 5kWp	Rs.500/-
2.	Above 5kWp and below 50kWp (67Hp/59kVA)	Rs.1000/-
3.	Above 50kWp (67Hp/ 59kVA) and upto 500kWp.	Rs.2000/-

3. Assign the application registration number with acknowledgment.
4. Separate Application Register has to be maintained at sub-divisional office for Solar Rooftop installations **(Format-2)**.

b. Application Processing :

1. After registration, application will be forwarded to Revenue Section for verification of Name, RR No., sanctioned load, tariff, arrears if any, etc. Verification shall be completed within 2 working days **(Format-3)**.
2. After verification by Revenue section, the application will be sent to concerned Section Officer for spot inspection and submission of technical feasibility report. The report shall be submitted within 3 working days from the date of receipt of SRTPV application **(Format - 4)**.
3. If installation is technically feasible, letter to be addressed to the applicant to submit the technical information of all the equipments proposed to be used for SRTPV systems **(Format - 5)**.
4. Checks before issuing the Technical feasibility of proposed interconnection:
 - i. The Transformer shall be loaded (proposed SRTPV system load) upto 80% of capacity of Distribution Transformer.
 - ii. To check whether the proposed interconnection will require upgrading the capacity of existing distribution network.
 - iii. Phase balancing has to be checked to avoid unbalancing of load in the secondary circuit of distribution line.

- c.** Approval letter for submission of technical details of proposed SRTPV system to be issued within 7 working days from the date of registration of application.

d. Approval for installation:

1. All the technical information like Make, Type, etc., of the SRTPV equipments are to be checked and the test reports and certificates are to be verified in detail.
2. If Technical information furnished comply with the condition stated in the Format - 5, approval letter for installation of SRTPV system will be issued by the competent authority (AEE/EE) within 3 working days from the date of submission of technical report (**Format - 6**).

e. General guidelines:

1. The applicant is required to install the SRTPV system through system installer who have experience in design, supply and installation of SRTPV system.
2. The agency shall assist in obtaining approval from Chief Electrical Inspectorate, Government of Karnataka to meet safety standards and to procure net meter as per CEA guidelines from CESC, MYSORE approved vendors.
3. Inverters of MNRE approved manufacturers shall be used. The list of MNRE approved inverter manufacturers is available at the CESC, MYSORE/MNRE website. Only those inverters which meet all required IS/IEC standards shall be eligible for installation.
4. **Data monitoring:** Online monitoring will be compulsory for all the systems of more than 50kWp capacity. The SRTPV plant parameters are measured and transmitted to ALDC, CESC, MYSORE using SCADA system.
5. The Applicant/System installer shall obtain approval of drawing from Chief Electrical Inspectorate (CEI) of Government of Karnataka (GoK) before commencing installation work for installations above 10kWp.
6. The SRTPV system should comply the relevant (BIS/IEC) technical standards.
7. The installation work has to be carried as per the approved drawing and as per standards.
 8. In case the installed (also read proposed) capacity of the SRTPV system is higher than the sanctioned load of the consumer, which consequently requires an up-gradation in the infrastructure (service line, meter with CT (if required), transformer upgrading (if required)), the consumer will have to upgrade at his/her/ its own cost.
 9. Work completion report along with required documents to be submitted within 180 days from the date of issue of approval letter for installation to the concerned AEE,,O&M sub-division, CESC, MYSORE along with receipts of facilitation fee as follows:

Sl. No.	Sanctioned load/contract demand	Facilitation fee
1.	Upto and inclusive of 5kWp	Rs.1000/-
2.	Above 5kWp and below 50kWp (67Hp/59kVA)	Rs.2000/-
3.	Above 50kWp (67Hp/ 59kVA) and upto 500kWp.	Rs.5000/-

10. The existing metering wiring shall be changed to solar power generation side in presence of AEE/EE, MT, CESC, MYSORE to measure solar generation.
11. The Applicant has to procure bi-directional meter from any of the approved vendors of CESC, MYSORE and the meter has to be tested by MT division, CESC, MYSORE and the same shall be fixed at interconnection point.

12.The Applicant shall provide check meters when the SRTPV system is more than 20kWp.

f. Signing of Power Purchase Agreement:

1. After completion of SRTPV installation work, the consumer has to enter into a Power Purchase agreement with CESC, MYSORE on Rs.200/- stamped paper.
2. The AEE, O&M sub-division is the signing authority for PPA upto sanctioning load of 49kWp and EE, O&M division is the signing authority for PPA of sanctioning load of above 50kWp.
3. Copy of the PP agreement shall be submitted to the Superintending Engineer Commercial, Corporate Office, CESC, MYSORE.

g. Submission of work completion report:

The Applicant/System installer of SRTPV system shall submit the following documents along with work completion report as per Format - 6A to the approving authority (O&M, AEE/EE of CESC, MYSORE):

- a. Approved drawing and approval letter for commissioning the SRTPV system by CEI of GoK.
- b. Specification sheets of all equipments and manufacturer's test reports and test certificate of modules and inverters.
- c. Test certificates of bi-directional meter from MT division, CESC, MYSORE.
 - d. Undertaking for obtaining MNRE subsidy from KREDL or selfdeclaration for not obtaining the MNRE subsidy **(Format-1C)**.
 - e. Details of facilitation fee paid.
 - f. Power Purchase Agreement on Rs. 200/- stamp paper.

h. Communication of approval for commissioning and synchronizing:

1. All the documents (a-g) in the above para are to be verified in detail by the competent authority (O&M, AEE/EE).
2. After verification of above documents, the sanctioning authority has to issue approval letter for commissioning and synchronizing the SRTPV system with CESC, MYSORE grid within 3 working days from date of receipt of all documents **(Format-7)**.

i. Commissioning and synchronizing of SRTPV system installation:

1. O&M, AEE/EE has to inspect the PV modules connections, earthing, isolating switches, functions of inverter, sealing of the energy meters, meter boxes, recording of readings, preparation of testing and commissioning reports.

- **Equipment earth:** All the non-current carrying metal parts are bonded together and connected to earth to prevent shocks to the manpower and protection of the equipment.

- **Lightening Arrester**

3. Surge Protection:

- Surge protection shall be provided on the DC side and the AC side of the solar system.
- The DC surge protection devices (SPDs) shall be installed in the DC distribution box adjacent to the solar grid inverter.

- . The AC SPDs shall be installed in the AC distribution box adjacent to the solar grid inverter.

- . The SPDs earthing terminal shall be connected to earth through the above mentioned dedicated earthing system. The SPDs shall be of Type 2 as per IEC 60364-5-53.

4. The PV module structure components shall be electrically interconnected and shall be grounded

5. Earthing shall be done in accordance with IS 3043-1986, provided that earthing

conductors shall have a minimum size of 6.0 mm¹ copper, 10 mm² aluminum or 70 mm² hot dip galvanized steel. Unprotect aluminum or copper-clad aluminum conductors shall not be used for final underground connections to earth electrodes.

6. A minimum of two separate dedicated and interconnected earth electrodes must be used for the earthing of the solar PV system support structure with a total earth resistance not exceeding 5 ohm.
7. The earth electrodes shall have a pre-cast concrete enclosure with a removal lid for inspection and maintenance. The entire earthing system shall comprise non-corrosive components.
8. The synchronization of the SRTPV system shall be carried out by the concerned Sub-divisional/Divisional Engineer along with MT staff within 3 working days from the issue of approval for synchronizing and commissioning.

9.

j. Periodical inspections:

1. The meters, both uni-directional and bi-directional, are to be tested as per Schedule by MT staff once in 6 months as per KERC norms.

1 **Earthing protection:** Both equipment earth (DC) and system earth (AC) to be checked for proper earthing.

- **System earth:** means used to ground one leg of the circuit.

For ex: in AC circuits the neutral is earthed, while in DC supply, +ve is earthed.

2. The inverter functionality of every installation is to be checked by MT staff of CESC, MYSORE once in 6 months.
3. Periodical test reports/inspection reports shall be submitted to the concerned O&M sub-divisional office.

k. Billing procedure:

1. The consumer shall receive a monthly net import/export bill indicating either net export to the grid or net import from the grid.
2. "Import"- means energy supplied by the CESC, MYSORE grid.
3. "Export"- means energy delivered to the CESC, MYSORE grid.
4. The meter reader has to capture present reading of Uni-directional meter provided at solar side.
5. Solar side meter reading is used only for MIS report (to measure the quantum of generation) and shall not be used for billing purpose.
6. The meter reader has to capture import & export energy and other billing parameters recorded by the bi-directional meter.
7. In case of net import bill, the consumer shall pay the same as per existing tariff.
8. In case, the export energy is more than the import, AEE,O&Msubdivision will arrange for the payment through NEFT energy exported as per the KERC approved tariff through NEFT.
 - Without subsidy Rs.9.56
 - With MNRE subsidy Rs.7.20
9. Minimum charges/Electricity dues/Statutory levies, if any, shall be adjusted against the energy purchase bill.
10. The amount payable by the CESC, MYSORE to the Seller for energy injected to the CESC, MYSORE grid (excluding self-consumption) during the billing period becomes due for payment, which shall be settled within 30 days from the date of meter reading and credited to the bank account through NEFT.