



Bangalore Electricity Supply Company Limited

(wholly owned Government of Karnataka undertaking)

Ref No.: BESCOM/BC-51/2023-24/1317

Dated:05.08.2023

Guidelines for Grid connectivity of Solar Rooftop Photo Voltaic (SRTPV) systems installed as per the KERC (Implementation of Solar Rooftop Photovoltaic Power plants) Regulations, 2016:

1. The SRTPV Application is invited from all the consumers of BESCOM through **On-line mode only and no off-line Applications are allowed.**
2. Applications can be submitted from **1kWp to upto 2000kWp.**
3. The fee details:

Sl No	Capacity of the proposed SRTPV system	Registration Fee	Facilitation Fee	Total Amount
1	From 1kWp Upto and inclusive of 5kWp	Rs.500/-	Rs.1000/-	Rs.1,500/- plus applicable GST Charges
2	Above 5kWp Upto and inclusive of 50kWp	Rs.2000/-	Rs.3000/-	Rs.5,000/- plus applicable GST Charges
3	Above 50kWp and Upto 1000kWp	Rs.5000/-	Rs.10000/-	Rs.15,000/- plus applicable GST
4	Above 1000kWp and Upto 2000kWp	Rs.5000/-	Rs.25000/-	Rs.30,000/- plus applicable GST Charges

Note : Payment of Additional Rs.10/- plus GST charges towards E-sign fee of the PPA applicable for 1kW to 10kW Domestic consumers

4. The Sub-divisional officer (SDO) shall be **Nodal point of contact** for Solar RTPV program.
5. Type of Metering:

Slno.	Type of Metering	Eligible Consumers
1	Gross Metering & Net Metering	Applicable for Domestic consumers, Hospital and Educational institutions consumers. (HT-4, HT-2(C), LT2(a) & LT2(b)) Note: Commission vide order dated 19.09.2016 has allowed one time irrevocable option of either gross or net metering for consumers at the time of signing of PPA
2		Applicable to Industrial, Commercial and all categories of consumers other than Domestic consumer's. Note: Consumers who has availed open access and intending to install Solar Rooftop shall Opt for either gross metering or captive for self-consumption as per KERC order dated 18.07.2022.

6. The Power Purchase Agreement(PPA) Execution and Approval letter issuing Authority for SRTPV installations:

Sl. No.	Capacity wise SRTPV PPA execution	PPA signing Authority (BESCOM Officer)	PPA Approving Authority	Approval letter issuing Authority
1	From 1kWp to 500kWp	Assistant Executive Engineer(Ele) C, O & M Sub-Division	Assistant Executive Engineer(Ele) C, O & M Sub-Division	
2	Above 500kWp upto 1000kWp	Executive Engineer(Ele) C, O & M Division	General Manager, DSM section, Corporate office, BESCOM	Executive Engineer(Ele) C, O & M Sub-Division
3	Above 1000kWp upto 2000kWp	Executive Engineer(Ele) C, O & M Division	KERC	Executive Engineer(Ele) C, O & M Sub-Division

7. The SRTPV plant Commissioning & Synchronizing Authority:

Sl. No.	Capacities	BESCOM Officer's
1	1kW to 17.5kWp	Assistant Executive Engineer(Ele) C, O & M Sub-Division
2	Above 17.5kW to upto 500kWp	Assistant Executive Engineer(Ele) C, O & M Sub-Division in Co-ordination with Meter Testing (MT) staff
3	Above 500kWp to upto 2000kWp	Executive Engineer(Ele) C, O & M Division in Co-ordination with Meter Testing (MT) staff

8. For 1kW to 10kWp SRTPV plants (Residential consumers) : The consumer shall execute PPA through e-Sign at the time of submission of Application, however the details of Distribution transformer and feeder shall be updated in the SRTPV online portal by the BESCOM field officers at time of commissioning.
9. The PPAs of SRTPV plants with an installed capacity upto and inclusive of 1000kW executed as per the approved standard PPA format shall be considered as deemed to have been approved by the Commission. The PPAs for a capacity above 1000 kW shall be submitted to the Commission for approval.
10. Approval of the Commission shall be obtained in case there is any deviation from the standard approved format of PPA.
11. The Commission reserves the right to review any of the PPAs, at its discretion, to verify its conformity to the standard format and other applicable Orders/ Regulations.

12. The draft PPA shall be submitted to DSM Section, Corporate Office for capacity above 500kWp upto 2000kWp. KERC approval is mandatory for PPA capacity above 1000kWp upto 2000kWp, along with following documents:
- a) Demand Draft of Rs.5000/- in favour of The Secretary, KERC (For capacities 1000kWp to 2000kWp)
 - b) Online Application and Technical Feasibility Report.
 - c) The Detailed Project report.
 - d) Self-Declaration from the applicant for investment under CAPEX scheme
 - e) Specifications of the roof type along with photographs certified by concerned EE.
 - f) Land ownership or lease agreement documents whichever is applicable.
 - g) Latest Electricity bill copy.

Note: In case of lease agreement, the PPA shall be executed for the duration of lease period or maximum for 25 years, whichever is earlier.

13. The **Applicant** can **select** any **PV modules / Grid tied inverter** and **system installer** to install the SRTPV System. The equipment's used shall comply with the relevant International (IEEE/IEC) and Indian standards (BIS) and safety standards issued by IEEE/ BIS/ MNRE/ CEA/ KERC/ BESCO issued from time to time.
14. The Applicant shall use only **tested Bi-directional Meters** from **BESCO empanelled firms available at Vendor outlets**.
15. The **check meter** shall be provided for SRTPV systems capacity of **more than 17.5 kW**.
16. CT's, PT's and Metering Cubicle shall be procured from BESCO approved Vendors only.
17. For Gross Metering and Net Metering, meters shall be procured from BESCO approved/ empanelled Vendors only.
18. For HT installations, as per BESCO order no. BESCO/GM (M & C)/DGM (M)/BC-24/F-1013/12-13 dated 12.02.2013, if the existing metering system is 3 phase 3 wire, it shall be converted to 3 phase 4 wire.
19. The SRTPV applicant shall be fully responsible for planning, design, construction, reliability, protection and safe operation of all the equipment's subject to the regulations for construction, operation, maintenance, connectivity and other statutory provisions as per KERC Standardized PPA clause 1.6 (a).

20. The Technical, Safety, Grid Connectivity standards are to be followed as per KERC Standardized PPA as below:
1. **clause 1, Technical and Interconnection requirement,**
 2. **clause 2 (Safety) &**
 3. **Clause 7 (Metering)**
21. OM personnel reserve the right to inspect the entire plant routinely at any time as per the Conditions of Supply to the Distribution Licensees clause 18:00, access to Consumer Premises.
22. **Interconnection voltages** as per KERC Regulation-2016, sl. No. 6 (1)(a) shall be as below:

Sl No.	System Capacity	Voltage level
1	From 1kWp Upto & inclusive 5kWp	230 Volts
2	Above 5 kWp & upto 150 kWp	400 Volts
3	Above 150 kWp & above upto 2000 kWp	11 kV

23. Each SRTPV plant of **less than 150kW** capacity shall be connected only to the existing distribution transformer through which the eligible consumers are being supplied electricity. IN such cases, the total capacity of the existing and proposed SRTPV plants on that distribution transformer shall not exceed 80% of the rated capacity (The Clause 6(1)(e) of SRTPV Regulation 2016 is being substituted by KERC vide its order dated 01.06.2023)
- Example:** If the rated capacity of the distribution transformer is 100 kVA, the total allowable capacity of the SRTPV plants to be connected shall be 68kWs (80 KVA)
24. Every SRTPV plant of more than 150kW shall be connected only to the existing 11kV Distribution System. In such cases, the total capacity of the existing and proposed SRTPV plants on that feeder shall not exceed 80% of the rated current carrying capacity of that line. (Clause 6(1) (f) of SRTPV Regulation 2016 is being substituted by KERC vide its order dated 01.06.2023).
25. The Distribution Licensee while evaluating the technical feasibility of any proposed SRTPV plant shall ensure that the above said parameters are adhered to and any system improvement works beyond interconnection point shall be taken up by the Distribution Licensee for the purpose of connecting the SRTPV plant with the grid. (clause 6(1) (g) of SRTPV Regulation 2016 is being substituted by KERC vide its order dated 01.06.2023).

26. The Sub-divisional officer (SDO) shall verify for Technical feasibility of the installation and if the application is technically feasible, shall issue the intimation letter for execution the Power Purchase Agreement (either for full or partial SRTPV capacity).

Example:

- Existing DTC capacity of 100kVA
- Already connected/ under progress (SRTPVs) is 60 KWs
- Newly proposed is 50 KWs capacity
- Then total Solar capacity on the DTC is 110kW (> 80% of the DTC capacity
- Hence, the application is technically feasible for partial capacity of 8 kW only (for total 80% ie 68 Kws/ 80 KVA) as against newly proposed capacity of 50kWs.

27. If the application is not technically feasible, the SDO shall **cancel the Application** and **intimate** the same to the Applicant.
28. The SDO/DO shall execute the PPA and issue the Approval letter for start of SRTPV work to the applicant.
- Note: For above 1000kWp SRTPV plants, draft PPAs are to be approved by KERC through Corporate Office.**
29. The Application shall be cancelled by the SDO/DO, if the consumer does not come forward for execution of the PPA within 03 days from the date of intimation letter (All other consumers excluding 1kW to 10kW domestic consumers).
30. The **consumer** portion of work has to be completed and **work completion report** has to be submitted within **150 days** from the date of approval letter for having entered into PPA.
31. The SDO/DO shall inspect the SRTPV plant within 5 working days from the date of receipt of work completion report for commissioning of the project and commission the project after ensuring satisfactory completion of the work.
32. The **SRTPV plant** shall be **commissioned** within **180 Days** from the **date of approval or deemed approval of PPA**, after ensuring that the SRTPV applicant has attended all the observation made by SDO/DO/MT staff, if any.

33. The SRTPV Consumer shall pay the Electricity tax and other statutory levies, pertaining to SRTPV generation, as levied from time to time as per KERC PPA clause 6 (c).
34. As per Government of Karnataka Notification No. EN 135 EBS 2018 dated: 27.08.2018,
- i. Generating units having capacity to produce electricity **above 1 MW from Solar Rooftop sources** of energy shall be **inspected by the Electrical Inspector** before commissioning.
 - ii. Solar Rooftop generation units installed as per the KERC (Implementation of Solar Rooftop Photovoltaic Power plants) Regulations, 2016 shall be inspected periodically as per Regulations 30 of Central Electricity Authority (Measures Relating to Safety and Electric Supply) Regulations, 2010.
35. In case of consumer intending to install SRTPV plant with multiple RR nos. in single premises with or without SRTPV unit, any change in sanctioned load/contract demand, change in tariff category of consumer already having SRTPV unit in his/her premises, the KERC order dated: 15.09.2017 and tariff order dated:01.06.2023 (clause xiv, c, page 17) shall be referred.

KERC order 15.09.2017

<https://bescom.karnataka.gov.in/storage/pdf-files/DSM-Solar/Tariff%20applicable%20for%20multiple%20combined%20SRTPV%2015%2009%202017%20.pdf>

36. In case of installation of SRTPV plants on the Government buildings by the ESCOMs under funding from the Government, the KERC order dated 11.11.2016 and tariff order dated: 01.06.2023 (clause xiv, b, page 25) shall be referred.

KERC order 11.11.2016:

<https://bescom.karnataka.gov.in/storage/pdf-files/DSM-Solar/KERC%20order%20for%20govt%20buildings%20dated%2011%2011%202016.pdf>

37. The Non-Residential consumer such as Educational institutes, Hospitals, IT parks, Industries, to implement the SRTPV plant on their rooftops of the building and also on the roof of the carport duly limiting the capacity of the SRTPV plant to the sanctioned load of the consumer (As per KERC order dated 01.06.2023)

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**General Manager (Ele)
DSM, BESCO**