

KARNATAKA ELECTRICITY REGULATORY COMMISSION
No 16 C-1, Miller Tank Bed Area, Vasant Nagar, Bengaluru-52

Dated: 19.12.2018

Present:

Sri. M.K. Shankaralinge Gowda Chairman

Sri. H.D. Arun Kumar Member

In the matter of:

“Revision of tariff in respect of new Solar Rooftop Photovoltaic Units of 1kW to 10kW capacity installed by domestic consumers”.

S/03/1

Preamble:

1. As per the revised the National Solar Mission targets to be achieved by the year 2021-22, totally 40,000 MW of Rooftop solar projects are to be deployed in the country.
2. The Government of Karnataka under its Solar Policy 2014-21 has set a target of 2400 MW for grid connected roof top generation projects to be achieved by March, 2021.
3. The Commission, by its Orders issued from time to time, has been determining/revising the tariff for the grid connected ground mounted solar photovoltaic and rooftop solar photovoltaic plants based on the market developments and change in capital costs. Accordingly, the Commission in its Order dated 18.05.2018, has determined a levellised tariff of Rs 3.56 for all the Solar

Rooftop Photovoltaic Plants (SRTPV Plants) for the life of the projects, i.e. for 25 years.

4. The Commission had noted that as on 31.08.2018, the State has an installed Solar Power Generation capacity of 5179 MW in both Grid Connected ground mounted solar photovoltaic and rooftop solar photovoltaic plants. That, the investment in solar rooftop installations has not been encouraging as could be seen from the fact that, out of this SRTPV plants /units of only 145 MW capacity have been installed and commissioned. Further, bulk of these projects pertain to MW scale rooftop projects indicating that smaller consumers have not shown much interest in installing SRTPV units, even though the potential for installation of small capacity SRTPV units especially by domestic consumers is substantial and their installation benefits both the consumers and the distribution licensees. The Commission had also noted that the domestic consumers have actively supported the State Government's initiative on installation of solar water heaters.
5. It was considered that one of the reasons for the poor response for installation of rooftop solar photovoltaic plants by the domestic consumers may be the low Feed In Tariff (FIT) fixed by the Commission as compared to the relatively higher capital cost of smaller capacity SRTPV units. Hence, the Commission was of the considered view that there is a need to promote smaller capacity solar rooftop power plants by the domestic consumers in order to achieve the desired capacity addition of SRTPV plants in the State.
6. Accordingly, the Commission had issued a Discussion Paper in the matter of revision of tariff in respect of new Solar Rooftop Photovoltaic Units of 1kW to 10kW capacity installed by domestic consumers, on 09.09.2018, duly inviting comments / suggestions from the stakeholders, so as to be submitted to the Commission on or before 17.10.2018, on the following:
 - a. The normative parameters that could be adopted for determination of tariff for smaller capacity SRTPV plants.

- b. Any other modification/change in the operational procedures that could be adopted for encouraging SRTPV installations.
 - c. Any other issue considered relevant.
7. In response to the said Discussion Paper, various stakeholders including some of the ESCOMs submitted their written comments / suggestions. The Commission also held a public hearing in the matter on 05.12.2018 in the Court Hall of the Commission. The stakeholders present made their oral submissions before the Commission. The inputs provided by the stakeholders and the decisions of the Commission on the same are discussed in the subsequent paragraphs of this Order. Accordingly, the Commission is proceeding to determine the generic tariff for such solar power projects.
8. The list of the stakeholders who filed their comments/suggestions and those who made oral submissions in the public hearing is given in the Annexure to this Order.
9. After considering the views and submissions made by the stakeholders and in exercise of powers conferred under Section 62(1)(a) read with Sections 64 and 86(1)(e) and other enabling provisions of the Electricity Act, 2003, the Commission proceeds to determine the tariff in respect of new Solar Rooftop Photovoltaic Units of 1kW to 10kW capacity installed by domestic consumers.

ORDERS

1. For determination of tariff, the Commission in its Order dated 18.05.2018 has considered the operational and financial parameters for kilo watt scale SRTPV as follows;

Revision of tariff in respect of new Solar Rooftop Photovoltaic Units of 1kW to 10kW capacity installed by domestic consumers.

Parameters for Kilowatt scale	
Capital Cost	1 kW to 1000kW –Rs 40,000 per kW
Debt: Equity	70:30
Debt-Rs. Lakhs	0.28
Interest charges on Debt-%	10 %
Debt Repayment in Yrs.	13 Years
CUF	19%
Equity- Rs. lakhs	0.12
ROE-%	14%
Auxiliary consumption	00
O & M expenses in Rs. lakhs	0.006
O & M Escalation p.a.	5.72%
WC interest (one month's receivables)	11%
Depreciation in %	5.38%p.a for first 13 years and remaining depreciation spread equally over balance years of the plant's useful life.
Life of the plant ,term and tariff design	25 years
Capacity Limit to install SRTPV	100% of the Sanctioned load

2. The Parameters relevant for the present exercise, on which the stakeholders have submitted their comments and suggestions and the decisions of the Commission, thereon are as follows:

1) Capacity Utilisation factor:

It was suggested to consider a CUF of 16%, on the grounds of intermittent power cuts, shadows from nearby buildings and voltage fluctuations. The Commission notes that while determining generic tariff disadvantages faced by a few SRTPV plants cannot be factored. Further because of their smaller size, their maintenance would be easier and effective.

As per the data published by the MNRE and the capacity utilization factor for solar PV plants considered by the CERC and most of the SERCs in the country, the CUF is reckoned 19%.

The Commission, therefore, decides to retain a CUF of 19% even for 1 kW to 10 kW capacity SRTPV Plants.

2) Capital Cost:

In the Order dated 18.05.2018, while determining the tariff for kW scale projects, the Commission has adopted a capital cost of Rs 40,000 per kW.

Some stake holders have suggested that to encourage the domestic consumers, the capital cost may be considered at Rs 65,000(without subsidy) and 45000(with subsidy) and others have suggested that the capital cost be considered so that the tariff would be in the range from Rs. 5.73 to Rs. 7.20 per unit.

Suggestions has also been made for fixing capital cost-

- i. For less than 5kW capacity, at Rs 75,000.
- ii. For more than 5kW but less than 10kW capacity, at Rs 65,000.

The Commission notes that there is reduction in the module prices in the market after the issue of the tariff Order dated 18.05.2018. The Commission also notes that the capital cost of smaller capacity SRTPV plants installed by domestic consumers would be higher than that adopted in the said Order, as while the cost to be incurred on solar panels/modules could be lower because of lower capacity, the cost of other equipments and infrastructure would not be proportionally lower. It would also be difficult to differentiate between the capital cost of SRTPV plants of capacity upto 5kW and upto 10kW. Therefore, the Commission decides to adopt a capital cost of Rs 48,000 per kW for SRTPV plants of 1kW to 10kW capacity.

3) Operation & Maintenance Cost:

Some of the stakeholders have suggested that the proposed O&M expenses be fixed at 2% of the Capital cost. The Commission, in its Order dated 18.05.2018 had allowed O&M expenses at Rs.600/kW SRTPV plants with an annual escalation of 5.72%. The Commission notes that there are no justifiable grounds for revision of such expenses.

The Commission, therefore, decides to keep O&M expenses at Rs.600/kW SRTPV plants with an annual escalation of 5.72%.

- 4) The Commission decides to adopt other operational and financial parameters for 1kW to 10kW capacity SRTPV plants installed by domestic consumers as fixed in the Commission's Order dated 18.05.2018 as it finds no justifiable grounds to revise them.
3. With the above parameters considered, the applicable tariff works out as follows:

kW scale SRTPV projects (1 to 10kW for domestic consumers):

Parameters for Kilowatt scale	
Cost/KW- Rs. Lakhs	1 to 10 kW-Rs.48000 per kW
Debt: Equity	70:30
Debt-Rs. Lakhs	0.28
Interest charges on Debt-%	10 %
Debt Repayment in Yrs.	13 Years
CUF	19%
Equity- Rs. lakhs	0.12
ROE-%	14%
Auxiliary consumption	00
O & M expenses in Rs. lakhs	0.006
O & M Escalation p.a.	5.72%
WC interest (one month's receivables)	11%
Depreciation in %	5.38%p.a for first 13 years and remaining depreciation spread equally over balance years of the plant's useful life.

3. For the forgoing reasons, we pass the following:

ORDER

- (i) The Commission, hereby determines the generic tariff, for grid connected new Solar Rooftop Photovoltaic Units of 1kW to 10kW capacity installed by domestic consumers at Rs.4.15 [Four Rupees fifteen paise] only per unit (without capital subsidy) and at Rs.3.08 [Three Rupees Eight Paise] only per unit (with capital subsidy);
- (ii) The above tariff shall be applicable to all such new solar power projects, for which PPAs are entered into and approved by the Commission after the date of issue of this Order, that achieve commercial operation on or after 19.12.2018.
- (iii) The tenure of the PPA, shall be for life of the solar power projects i.e., twenty-five (25) years;
- (iv) All the other issues not covered under this Order, shall be governed by the respective Regulations and Orders issued by the Commission and PPAs signed by the parties; and
- v) This Order shall be in force with effect from date of this Order and till further Orders of the Commission.

This Order is signed and issued by the Karnataka Electricity Regulatory Commission on this 19th December,2018.

Sd/-

(M.K. SHANKARALINGE GOWDA)
CHAIRMAN

Sd/-

(H.D. ARUN KUMAR)
MEMBER

Annexure

LIST OF STAKEHOLDERS WHO HAVE SUBMITTED COMMENTS / SUGGESTIONS ON THE DISCUSSION PAPER DATED 19.09.2018 FOR REVISION OF TARIFF FOR SRTPV CAPACITY 1kW to 10kW INSTALLED BY DOMESTIC CONSUMERS.

Sl.No.	Name and Address
1	TATA Power Solar
2	BESCOM
3	ESPEE Solar Pvt Ltd
4	Viprof Electronics
5	Eco Soch Sunny Living
6	Sri. Vijayaraghavan.K
7	Hinren Techonolgies Pvt Ltd
8	Pra Siddhi Solar

LIST OF PERSONS WHO PARTICIPATED IN PUBLIC HEARING ON 05.12.2018:

1	Sri Thulasi Ramiah, Bangalore
2	Sri Suresh.M.Shenoy, .S.S. Agencies
3	Sri Phaniraj Chandra, Tata Power Solar Systems Ltd.
4	Sri Sunil Mysore , Hinren Technologies Pvt Ltd
5	Sri Ranganath Magadi, Ransun Energy Pvt Ltd.
6	Sri Harsha Kuntur, EcoScoh Solar Pvt Ltd..