

KARNATAKA ELECTRICITY REGULATORY COMMISSION

Determination of tariff and other norms for Solar Rooftop and Small Photovoltaic Power Plants-Order S/03/1 Dated: 2nd May, 2016

Sl. No.	Description	Summary																																																																																															
1.	Title	Determination of tariff and other norms for Solar Rooftop and Small Photovoltaic Power Plants. Order S/03/1 Dated 2 nd May, 2016																																																																																															
2.	Preamble	<p>(i) Commission in its Tariff Order dated 10th October, 2013 determined tariff for grid connected solar photovoltaic, solar thermal power plants and rooftop solar photovoltaic and other small solar power plants.</p> <p>(ii) The Commission, in its Order dated 30th July, 2015 has revised the tariff applicable to megawatt scale Solar Photovoltaic and Solar Thermal power plants taking into account the significant reduction in capital cost especially of utility scale Solar Photovoltaic plants.</p> <p>(iii) The tariff determined in respect of rooftop solar Photovoltaic and other small solar power plants were left undisturbed as no significant reduction in their capital cost was observed.</p> <p>(iv) After considering the written and oral submissions of the stakeholders the commission passed the orders for determination of tariff of solar plants.</p>																																																																																															
3	Applicability of the Order	<p>The Commission, in supersession of its Order dated 10th October, 2013, decides that the norms and tariff determined in this Order shall be applicable to all new grid connected solar rooftop and small solar photovoltaic power plants, entering into Power Purchase Agreement (PPA) and commissioned on or after 2nd May, 2016 and upto 31st March, 2018.</p> <p>In respect of plants for which PPAs that have been entered into prior to 1st May, 2016 and are commissioned within the period of time as stipulated by the ESCOMs concerned or the Commission prior to the date of issue of this Order, the tariff as per the Commission's Order dated 10th October, 2013 shall be applicable. Such plants shall be eligible for the revised tariff as per this Order if they are not commissioned within the stipulated time period and there shall be no extension in time period for commissioning them after the effective date of this Order.</p>																																																																																															
4	Scope of Present Tariff determination	The tariff determined in this Order based on the prevalent capital cost and other parameters was applicable for the projects entering into power purchase agreement on or after 1 st April, 2013 and up to 31 st March, 2018 but excluding those projects in respect of which the tariff is discovered through competitive bidding process.																																																																																															
5	Abstract of Cost Parameters approved by the Commission	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2" style="text-align: left;">Particulars</th> <th colspan="5" style="text-align: center;">Capacity of Solar Rooftop and Small PV Plants in kW</th> </tr> <tr> <th style="text-align: center;">1 to 10</th> <th style="text-align: center;">Above 10 and up to 50</th> <th style="text-align: center;">Above 50 and up to 100</th> <th style="text-align: center;">Above 100 and up to 500</th> <th style="text-align: center;">Above 500 and up to 1000</th> </tr> </thead> <tbody> <tr> <td>Capital Cost Rs. lakh/kW-</td> <td style="text-align: center;">0.75</td> <td style="text-align: center;">0.70</td> <td style="text-align: center;">0.65</td> <td style="text-align: center;">0.60</td> <td style="text-align: center;">0.55</td> </tr> <tr> <td>Debt-Rs.lakh /kW</td> <td style="text-align: center;">0.525</td> <td style="text-align: center;">0.49</td> <td style="text-align: center;">0.455</td> <td style="text-align: center;">0.42</td> <td style="text-align: center;">0.385</td> </tr> <tr> <td>Equity- Rs. lakh /kW</td> <td style="text-align: center;">0.225</td> <td style="text-align: center;">0.21</td> <td style="text-align: center;">0.195</td> <td style="text-align: center;">0.18</td> <td style="text-align: center;">0.165</td> </tr> <tr> <td>Debt: Equity Ratio</td> <td colspan="5" style="text-align: center;">70:30</td> </tr> <tr> <td>Debt Repayment Tenure in Yrs.</td> <td colspan="5" style="text-align: center;">12</td> </tr> <tr> <td>Interest charges on Debt-%</td> <td colspan="5" style="text-align: center;">12 %</td> </tr> <tr> <td>Capacity Utilisation Factor (CUF)</td> <td colspan="5" style="text-align: center;">19 %</td> </tr> <tr> <td>ROE-%</td> <td colspan="5" style="text-align: center;">16%</td> </tr> <tr> <td>Discount Factor -%</td> <td colspan="5" style="text-align: center;">13.20%</td> </tr> <tr> <td>O & M expenses</td> <td colspan="5" style="text-align: center;">1% of the capital cost for FY 2016-17, with annual escalation of 5.72%</td> </tr> <tr> <td>Working Capital</td> <td colspan="5" style="text-align: center;">Receivables equivalent to one month's revenue</td> </tr> <tr> <td>Interest on Working Capital</td> <td colspan="5" style="text-align: center;">12.50%</td> </tr> <tr> <td>Depreciation</td> <td colspan="5" style="text-align: center;">For first 12 yrs - 5.83% For next 13 yrs - 1.54%</td> </tr> <tr> <td>Useful Life- Yrs</td> <td colspan="5" style="text-align: center;">25</td> </tr> </tbody> </table>	Particulars	Capacity of Solar Rooftop and Small PV Plants in kW					1 to 10	Above 10 and up to 50	Above 50 and up to 100	Above 100 and up to 500	Above 500 and up to 1000	Capital Cost Rs. lakh/kW-	0.75	0.70	0.65	0.60	0.55	Debt-Rs.lakh /kW	0.525	0.49	0.455	0.42	0.385	Equity- Rs. lakh /kW	0.225	0.21	0.195	0.18	0.165	Debt: Equity Ratio	70:30					Debt Repayment Tenure in Yrs.	12					Interest charges on Debt-%	12 %					Capacity Utilisation Factor (CUF)	19 %					ROE-%	16%					Discount Factor -%	13.20%					O & M expenses	1% of the capital cost for FY 2016-17, with annual escalation of 5.72%					Working Capital	Receivables equivalent to one month's revenue					Interest on Working Capital	12.50%					Depreciation	For first 12 yrs - 5.83% For next 13 yrs - 1.54%					Useful Life- Yrs	25				
Particulars	Capacity of Solar Rooftop and Small PV Plants in kW																																																																																																
	1 to 10	Above 10 and up to 50	Above 50 and up to 100	Above 100 and up to 500	Above 500 and up to 1000																																																																																												
Capital Cost Rs. lakh/kW-	0.75	0.70	0.65	0.60	0.55																																																																																												
Debt-Rs.lakh /kW	0.525	0.49	0.455	0.42	0.385																																																																																												
Equity- Rs. lakh /kW	0.225	0.21	0.195	0.18	0.165																																																																																												
Debt: Equity Ratio	70:30																																																																																																
Debt Repayment Tenure in Yrs.	12																																																																																																
Interest charges on Debt-%	12 %																																																																																																
Capacity Utilisation Factor (CUF)	19 %																																																																																																
ROE-%	16%																																																																																																
Discount Factor -%	13.20%																																																																																																
O & M expenses	1% of the capital cost for FY 2016-17, with annual escalation of 5.72%																																																																																																
Working Capital	Receivables equivalent to one month's revenue																																																																																																
Interest on Working Capital	12.50%																																																																																																
Depreciation	For first 12 yrs - 5.83% For next 13 yrs - 1.54%																																																																																																
Useful Life- Yrs	25																																																																																																

6	Tariff	Particulars	Capacity of Solar Rooftop and Small PV Plants in kW														
			1 to 10	Above 10 and up to 50	Above 50 and up to 100	Above 100 and up to 500	Above 500 and up to 1000										
		Tariff in Rs/Unit (Without Capital Subsidy)	7.08	6.61	6.14	5.67	5.20										
		Tariff in Rs/Unit (With Capital Subsidy of 15%)	6.03	5.64	5.23	4.83	4.43										
		Levelised Tariff Period Yrs	25														
7	Other Issues	<p>(a) Gross metering and Net metering: The Commission in its Order dated 10th October, 2013 had allowed power purchase by the distribution licensees from rooftop solar plants including small solar power plants by introducing the concept of net metering. This concept allows only surplus energy to be injected into the grid. The Commission had proposed to continue with net-metering concept for all consumers, other than domestic consumers. In the case of domestic consumers, the Commission had proposed to adopt gross metering concept where the entire energy generated by the solar rooftop plant is allowed to be injected into the grid without reckoning the consumption by the domestic consumer's installation.</p> <p>(b) Sanctioned Load and Installed capacity of the Solar Rooftop Photovoltaic(SRTPV)and Small Solar PV plants: The Commission , decides to allow installed capacity of SRTPV and Small Solar PV plants upto 150% of the sanctioned load as these solar plants operate at a very low capacity utilisation factor. Accordingly, the Commission proposes the following approach for implementation of the scheme of SRTPV and small Solar Plants:</p> <table border="1"> <thead> <tr> <th>Category of Consumers</th> <th>Allowable Installed Capacity</th> <th>Billing</th> </tr> </thead> <tbody> <tr> <td colspan="3">NET-METERING (other than Residential, Hospital and Educational institution categories)</td> </tr> <tr> <td>(i) HT Consumers</td> <td>Equivalent to or less than 150% of the Contract Demand/ Sanctioned Load subject to a max^m of 1000KW (HT Power supply beyond 50KW).</td> <td rowspan="2">Net metered energy is to be billed at tariff determined by the Commission. In case of installed capacity in excess of allowable capacity, the energy injected during any month, in excess of the allowable installed capacity shall be billed at Average Pooled Power Purchase cost notified by the Commission</td> </tr> <tr> <td>(ii) LT Consumers</td> <td>Equivalent to or less than 150% of the Sanctioned Load subject to a max^m of 5KW on single phase supply and for above 5KW upto 50KW on three phase supply</td> </tr> </tbody> </table>					Category of Consumers	Allowable Installed Capacity	Billing	NET-METERING (other than Residential, Hospital and Educational institution categories)			(i) HT Consumers	Equivalent to or less than 150% of the Contract Demand/ Sanctioned Load subject to a max ^m of 1000KW (HT Power supply beyond 50KW).	Net metered energy is to be billed at tariff determined by the Commission. In case of installed capacity in excess of allowable capacity, the energy injected during any month, in excess of the allowable installed capacity shall be billed at Average Pooled Power Purchase cost notified by the Commission	(ii) LT Consumers	Equivalent to or less than 150% of the Sanctioned Load subject to a max ^m of 5KW on single phase supply and for above 5KW upto 50KW on three phase supply
Category of Consumers	Allowable Installed Capacity	Billing															
NET-METERING (other than Residential, Hospital and Educational institution categories)																	
(i) HT Consumers	Equivalent to or less than 150% of the Contract Demand/ Sanctioned Load subject to a max ^m of 1000KW (HT Power supply beyond 50KW).	Net metered energy is to be billed at tariff determined by the Commission. In case of installed capacity in excess of allowable capacity, the energy injected during any month, in excess of the allowable installed capacity shall be billed at Average Pooled Power Purchase cost notified by the Commission															
(ii) LT Consumers	Equivalent to or less than 150% of the Sanctioned Load subject to a max ^m of 5KW on single phase supply and for above 5KW upto 50KW on three phase supply																

GROSS METERING (Applicable to only Domestic, Hospital and Educational institution Consumers)		
(i) HT Consumers - HT-4, HT 2 (C):	Equivalent to or less than 150% of the Contract Demand/Sanctioned Load subject to a maximum of 1000KW (HT Power supply beyond 50 kW).	Gross energy generated by the Solar Rooftop plant will be allowed to be injected into the grid payable at the tariff to be fixed by the Commission. In case of installed capacity is in excess of allowable capacity, the energy injected in any month excess of the allowable installed capacity shall be billed at Average Pooled Power Purchase cost notified by the Commission
(ii) LT Consumers - LT2(a) & LT2(b):	Equivalent to or less than 150% of the Sanctioned Load subject to a maximum of 5KW on single phase supply and for above 5KW upto 50KW on three phase supply.	
<p>(c) Sharing of Clean Development Mechanism (CDM) Benefits</p> <p>(i) 100% of gross proceeds on account of CDM benefit are to be retained by the project developer in the first year, after CoD</p> <p>(ii) In the second year, the share of distribution licensees shall be 10%, which shall be progressively increased by 10% every year till it reaches 50% and thereafter, the proceeds shall be shared in equal proportion by the generating companies and the beneficiaries.</p> <p>(d) Grid Connectivity</p> <p>The Commission decides that, the STU/Distribution Licensees shall arrange necessary facilities to evacuate power from the interconnection point. The Plant owner shall be responsible for providing evacuation facility upto the interconnection point as defined in the PPA.</p> <p>The grid connectivity shall be arranged by the distribution licensee in accordance with the prevailing CEA (Technical Standards for Connectivity to the Grid) Regulations 2007, CEA (Technical Standards for Connectivity of the Distributed Generation Resources) Regulations 2012 and any other related Regulations to be notified by CEA and KERC Grid Code as amended from time to time.</p> <p>(e) Wheeling and Banking Charges and Cross Subsidy Surcharge</p> <p>The Wheeling, Banking and Cross Subsidy surcharge shall be applicable as per Commission's Order dated 18th August, 2014.</p> <p>(f) Third party Investments</p> <p>The Commission considers that, in view of limited financing capacity of domestic consumers, third party investment in this category needs to be encouraged. The ESCOMs shall permit the domestic consumers to install SRTPV with third party investment.</p>		