

KARNATAKA ELECTRICITY REGULATORY COMMISSION
Determination of Tariff for Grid Interactive Solar Power including Roof Top and
Small Solar Photovoltaic Power Plants

- (i) Order No.S/03/1 dated 10th October 2013
(ii) Amendment order S/03/1 dated 18th August 2014
(iii) Amendment order dated 16th September 2014

Sl. No.	Description	Summary																																																											
1.	Title	KERC (Determination of Tariff for Grid Interactive Solar Power including Roof Top and Small Solar Photovoltaic Power Plants) Order No.S/03/1 dated 10 th October 2013, Amendment dated 18 th August 2014 & Amendment dated 16 th September 2014																																																											
2.	Preamble	(i) Commission in its tariff order dated 13 th July 2010 determined tariff for grid connected Solar Photovoltaic, Solar thermal power plants and Rooftop Solar Photovoltaic and other small solar power plants which was valid for projects commissioned upto 31 st March 2013. (ii) The discussion paper dated 21-06-2013 for determination of tariff for grid connected solar plants was issued by the Commission for the next control period from 1 st April 2013 to 31 st March 2015. (iii) After considering the written and oral submissions of the stakeholders the Commission passed the orders for determination of tariff for solar plants.																																																											
3	Scope of Present Tariff determination	Tariff determined in this order is applicable to all grid connected Solar PV, Solar thermal power and Rooftop Photovoltaic generators entering into PPAs on or after 1-4-2013 and during the control period as specified in this order.																																																											
4	Abstract of Cost Parameters approved by the Commission	<p>The Commission decided various parameters for determination of tariff. Based on the decisions of the Commission, the following is the abstract of the parameters considered for determination of tariff:</p> <table border="1"> <thead> <tr> <th rowspan="2">Particulars</th> <th colspan="4">Approved Parameters</th> </tr> <tr> <th>Solar PV</th> <th>Solar Thermal</th> <th>Solar Rooftop PV/Small Solar Plants</th> <th>Solar Rooftop PV/Small Solar Plants (with 30% capital subsidy)</th> </tr> </thead> <tbody> <tr> <td>Capital Cost - Rs Lakhs</td> <td>830/MW</td> <td>1200/MW</td> <td>0.90/kW</td> <td>0.63/kW</td> </tr> <tr> <td>Debt: Equity Ratio</td> <td>70:30</td> <td>70:30</td> <td>70:30</td> <td>70:30</td> </tr> <tr> <td>Debt-Rs. Lakhs</td> <td>581/MW</td> <td>840/MW</td> <td>0.63/kW</td> <td>0.441/kW</td> </tr> <tr> <td>Equity- Rs. Lakhs</td> <td>249/MW</td> <td>360/MW</td> <td>0.27/kW</td> <td>0.189/kW</td> </tr> <tr> <td>Debt Repay-ment Tenure in yrs.</td> <td>10</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>Interest charges on Debt-%</td> <td>12.30</td> <td>12.30</td> <td>12.50</td> <td>12.50</td> </tr> <tr> <td>Capacity Utilisation Factor (CUF)</td> <td>19</td> <td>23</td> <td>19</td> <td>19</td> </tr> <tr> <td>ROE-%</td> <td>16</td> <td>16</td> <td>16</td> <td>16</td> </tr> <tr> <td>Discount Factor -%</td> <td>13.41</td> <td>13.41</td> <td>13.41</td> <td>13.41</td> </tr> <tr> <td>Auxiliary Consumption-%</td> <td>0.25</td> <td>8</td> <td>0.00</td> <td>0.00</td> </tr> </tbody> </table>	Particulars	Approved Parameters				Solar PV	Solar Thermal	Solar Rooftop PV/Small Solar Plants	Solar Rooftop PV/Small Solar Plants (with 30% capital subsidy)	Capital Cost - Rs Lakhs	830/MW	1200/MW	0.90/kW	0.63/kW	Debt: Equity Ratio	70:30	70:30	70:30	70:30	Debt-Rs. Lakhs	581/MW	840/MW	0.63/kW	0.441/kW	Equity- Rs. Lakhs	249/MW	360/MW	0.27/kW	0.189/kW	Debt Repay-ment Tenure in yrs.	10	10	10	10	Interest charges on Debt-%	12.30	12.30	12.50	12.50	Capacity Utilisation Factor (CUF)	19	23	19	19	ROE-%	16	16	16	16	Discount Factor -%	13.41	13.41	13.41	13.41	Auxiliary Consumption-%	0.25	8	0.00	0.00
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5	Tariff	<p>Levellised Single part Tariff for 25 years On the basis of the approved parameters, the approved tariff is given below:</p> <table border="1"> <thead> <tr> <th>Type of Solar Plant</th> <th>Approved Tariff in Rs./unit</th> </tr> </thead> <tbody> <tr> <td>Solar PV Power Plants</td> <td>8.40</td> </tr> <tr> <td>Solar Thermal Power Plants</td> <td>10.92</td> </tr> <tr> <td>Rooftop and Small Solar PV Plants</td> <td>9.56</td> </tr> <tr> <td>Rooftop and Small Solar PV Plants with 30% capital subsidy</td> <td>7.20</td> </tr> </tbody> </table> <p>The above approved tariff is applicable to solar power generators entering into power purchase agreements (PPA) on or after 01-04-2013 and upto 31-03-2018 other than those where the tariff is discovered through bidding process.</p>	Type of Solar Plant	Approved Tariff in Rs./unit	Solar PV Power Plants	8.40	Solar Thermal Power Plants	10.92	Rooftop and Small Solar PV Plants	9.56	Rooftop and Small Solar PV Plants with 30% capital subsidy	7.20																									
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6	Other Issues	<p>(a) Sharing of Clean Development of 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 the date of commercial operation of the generating station.</p> <p>(ii) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after, the proceeds shall be shared in equal proportion by the generating companies and the beneficiaries.</p> <p>(b) Grid connectivity The commission decides that, STU shall arrange necessary facilities to evacuate power from the inter-connection point including augmentation charges, if any. The developer shall be responsible for providing evacuation facility upto the interconnection point. In the case of solar roof top PV of kilowatt scale, the evacuation from 1 kW upto 5 kW installed capacity of solar rooftop PV shall be at single phase 230 volts, the evacuation from 5 kW upto 50 kW installed capacity shall be at 3 phase 415 volts level. Solar rooftop PV system of 50 kW and above shall be connected at 11 kV distribution system. The maximum installed capacity of solar rooftop PV plant at any single location shall be limited to 1 MW for the purpose of applying solar rooftop PV tariff. The grid connectivity shall be arranged by the distribution licensee as per CEA Technical Standards for Connectivity to the Grid) Regulations 2007, CEA (Technical Standards for Connectivity of the Distributed</p>																																			

		<p>Generation Resources) Regulations 2012. Distribution Licensee shall take adequate measures to install necessary protective devices to prevent the possibility of any feedback to the grid in the event of failure of grid supply to ensure safety of personnel working on the distribution system.</p> <p>(c) Metering Metering shall be in compliance with CEA (Installation and Operation of Meters) Regulations 2006 as amended from time to time. In the case of Solar rooftop PV systems connected to LT grid of a distribution company, the concept of net- metering shall be adopted and the net energy pumped into the grid shall be billed. For net surplus energy injected into the grid, the ESCOM shall pay the rooftop consumer at tariff approved by the Commission and vice versa.</p> <p>(d) Applicability of Merit Order dispatch All these grid connected solar plants shall be considered as 'Must Run' and shall not be subjected to meet Order Dispatch principles</p> <p>(e) Applicability of Wheeling & Banking Charges & Cross Subsidy Surcharge (amended vide order No. S/03/1 dated 18th August 2014)</p> <p>(i) All solar power generators in the State achieving commercial operation data (COD) between 1st April 2013 and 31st March 2018 and selling power to consumers within the state on open access or wheeling shall be exempted from payment of wheeling and banking charges and cross subsidy surcharge for a period of ten years from the date of commissioning. This is also applicable for Captive Solar power plants for self consumption within the State.</p> <p>(ii) Captive solar power plants opting for Renewable Energy Certificates shall pay the normal wheeling, banking and other charges as specified in the Commission's order dated 9th October 2013.</p> <p>(f) Control Period The commission decides to adopt a Control Period of 5 years beginning from 01-04-2013 upto 31-03-2018.</p>
<p>7</p>	<p>Issue of Standard format of PPA for Solar Rooftop Photovoltaic (SRTPV) plants</p>	<p>(i) The Commission has finalized the Standard format of PPA for SRTPV plants with an installed capacity of 1 MW.</p> <p>(ii) PPAs for SRTPV plants upto an installed capacity of 500 kW executed as per the standard format, would be considered as deemed to have been approved by the Commission and the ESCOMs are not required to obtain a separate approval thereon.</p> <p>(iii) Approval of the Commission shall be obtained in case there is any deviation from the standard approved format of PPA.</p> <p>(iv) The Commission may review any of the PPA at its discretion to verify its conformity to the Standard format and other applicable orders/Regulation.</p>