

**Before**

# **UTTARAKHAND ELECTRICITY REGULATORY COMMISSION**

**Petition No. 18 of 2019 (Suo Moto)**

**In the matter of:**

Suo-moto Order on the request of UPCL for determination of Tariff considering subsidy at the rate of 80% for the Solar Projects installed/to be installed under PM-Kusum Yojana.

**CORAM**

**Shri D.P. Gairola      Member (Law)**

**Shri M.K. Jain        Member (Technical)**

**Date of Order: September 15, 2020**

This Order relates to the suo-moto proceedings initiated by the Commission in the matter of determination of generic tariff for the small solar PV plants with a subsidy at the rate of 80% based on the request made by UPCL referring to the guidelines for implementation of Pradhan Mantri Kisan Urja Suraksha evam Utthan Mahabhiyan (PM-KUSUM) Scheme issued by MNRE on solarization of grid-connected Agricultural pumps.

**1. Background**

- 1.1 The Commission in exercise of the powers vested in it under Section 61(h) and Section 86(1)(e) read with Section 181(2)(zd) of the Electricity Act, 2003, notified the UERC (Tariff and Other Terms for Supply of Electricity from Renewable Energy Sources and non-fossil fuel based Co-generating Stations) Regulations, 2018 (hereinafter referred to as "RE Regulations, 2018") on 06<sup>th</sup> September, 2018.
- 1.2 In accordance with the first proviso of Regulation 11 of the aforesaid Regulations, the Commission vide its Suo-moto Order dated 07.06.2019 had reviewed the benchmark capital cost and generic tariff for Solar PV, Solar Thermal and Grid Interactive Rooftop & Small Solar PV Plants commissioned during FY 2019-20. Subsequently, the Commission vide its Suo-moto Order dated 11.05.2020 extended the period of applicability of aforesaid

Order till 30.09.2020.

## **2. Commission's Observations and view**

- 2.1 The Commission while reviewing the benchmark capital cost and generic tariff for grid connected Rooftop and Small Solar PV plants for FY 2019-20 had categorized such plants based on the capacity, i.e. upto 10 kW, above 10 kW & upto 100 kW, above 100 kW & upto 500 kW and above 500 kW & upto 1 MW and determined the levelized tariff for each aforesaid categories considering subsidy of 0%, 20%, 30%, 40%, 70%, and 90% which was extended upto 30.09.2020 vide Commission's Order dated 11.05.2020.
- 2.2 MNRE, GoI vide its Office Memorandum dated 22.07.2019 issued guidelines for implementation of PM-KUSUM Scheme which provides for solarization of 10 Lakhs grid connected Agriculture pumps of individual pump capacity upto 7.5 HP alongwith other benefits/schemes for farmers. As per the said Scheme, total subsidy of 80% will be provided for solarization of grid connected agriculture pumps in the State of Uttarakhand. UPCL referring to the aforesaid Scheme of MNRE, GoI requested the Commission for determination of the generic tariff for the Solar Plants having 80% subsidy.
- 2.3 As discussed above, the Commission had earlier determined the generic tariff for the grid interactive rooftop and small Solar PV plants considering 0%, 20%, 30%, 40%, 70% and 90% subsidy only. Taking cognizance of the fact, that with a change of every single percentage of subsidy, tariff per unit gets effected significantly, therefore, the Commission has decided to determine the generic tariff for the grid interactive Rooftop and Small Solar PV plants with a subsidy of 80%.

Accordingly, the Commission through this Order has determined the generic tariff for solar power plants on Suo-Moto basis based on the technical norms specified in the RE Regulations, 2018 and capital cost alongwith other financial parameters specified by the Commission vide its Suo-moto Order dated 07.06.2019.

- 2.4 Based on the above discussion, the Commission has determined the gross and net levelled tariff to be applicable for FY 2020-21 as depicted in Annexure I and is as follows:

<b>Approved Generic Tariffs for Grid connected Rooftop &amp; Small Solar PV Plants for FY 2020-21 (Rs./kWh)</b>	
<b>Particulars</b>	<b>Approved Generic Tariff (Rs./kWh) with 80% subsidy</b>
<b>For Projects having capacity upto 10 kW</b>	
Gross Tariff	3.63
Less : Acc Dep Benefit	0.15
Net Tariff	3.48
<b>For Projects having capacity above 10 kW and upto 100 kW</b>	
Gross Tariff	3.27
Less : Acc Dep Benefit	0.14
Net Tariff	3.14
<b>For Projects having capacity above 100 kW &amp; upto 500 kW</b>	
Gross Tariff	3.02
Less : Acc Dep Benefit	0.13
Net Tariff	2.90
<b>For Projects having capacity above 500 kW &amp; upto 1 MW</b>	
Gross Tariff	2.97
Less : Acc Dep Benefit	0.12
Net Tariff	2.85

The above ceiling tariff shall be applicable on the projects commissioned or to be commissioned on or after 1<sup>st</sup> April, 2020 and will remain applicable till further reviewed by the Commission.

**(M.K. Jain)**  
Member (Technical)

**(D.P. Gairola)**  
Member (Law)

## TARIFF DETERMINATION FOR ROOFTOP SOLAR PV PLANTS (INSTALLED CAPACITY UPTO 10 KW WITH 80% SUBSIDY) FOR FY 2020-21

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Generation	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40
Aux Consumption	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Saleable Energy	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40

Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs.		932	932	932	932	932	932	932	932	932	932	932	932	932	289	289	289	289	289	289	289	289	289	289	289	289
Depreciation	Rs.		1537	1624	1717	1816	1919	2029	2145	2268	2398	2535	2680	2833	2995	3167	3348	3539	3742	3956	4182	4421	4674	4941	5224	5523	5839
Interest on term loan	Rs.		445	338	230	123	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on working Capital	Rs.		2597	2597	2597	2597	2597	2597	2597	2597	2597	2597	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857	2857
Return on Equity	Rs.		157	159	161	164	167	172	177	183	190	197	209	217	224	220	229	238	248	258	270	281	294	307	321	335	351
<b>Total Cost of generation</b>	Rs.		<b>5667</b>	<b>5650</b>	<b>5638</b>	<b>5631</b>	<b>5650</b>	<b>5730</b>	<b>5852</b>	<b>5981</b>	<b>6117</b>	<b>6261</b>	<b>6678</b>	<b>6839</b>	<b>7009</b>	<b>6531</b>	<b>6721</b>	<b>6922</b>	<b>7135</b>	<b>7359</b>	<b>7597</b>	<b>7848</b>	<b>8113</b>	<b>8393</b>	<b>8690</b>	<b>9003</b>	<b>9335</b>
<b>Per unit Cost of generation</b>	Rs./kWh		<b>3.41</b>	<b>3.39</b>	<b>3.39</b>	<b>3.38</b>	<b>3.39</b>	<b>3.44</b>	<b>3.52</b>	<b>3.59</b>	<b>3.68</b>	<b>3.76</b>	<b>4.01</b>	<b>4.11</b>	<b>4.21</b>	<b>3.92</b>	<b>4.04</b>	<b>4.16</b>	<b>4.29</b>	<b>4.42</b>	<b>4.56</b>	<b>4.71</b>	<b>4.87</b>	<b>5.04</b>	<b>5.22</b>	<b>5.41</b>	<b>5.61</b>

Levelised Tariff	3.63
Accelerated Depreciation	0.15
Net Tariff	3.48

## TARIFF DETERMINATION FOR ROOFTOP SOLAR PV PLANTS (INSTALLED CAPACITY ABOVE 10 KW &amp; UPTO 100 KW WITH 80% SUBSIDY) FOR FY 2020-21

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Generation	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40
Aux Consumption	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Saleable Energy	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40

Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs.		855	855	855	855	855	855	855	855	855	855	855	855	265	265	265	265	265	265	265	265	265	265	265	265	265
Depreciation	Rs.		1349	1426	1508	1594	1685	1782	1883	1991	2105	2225	2353	2487	2630	2780	2939	3107	3285	3473	3671	3881	4103	4338	4586	4849	5126
Interest on term loan	Rs.		408	309	211	113	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on working Capital	Rs.		2381	2381	2381	2381	2381	2381	2381	2381	2381	2381	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619	2619
Return on Equity	Rs.		141	142	144	147	149	154	159	164	169	175	186	193	200	195	203	211	220	229	239	249	260	272	284	297	311
Total Cost of generation	Rs.		5133	5113	5098	5088	5101	5170	5277	5390	5510	5636	6012	6154	6303	5858	6025	6202	6388	6585	6794	7014	7247	7493	7753	8029	8320
Per unit Cost of generation	Rs./kWh		3.08	3.07	3.06	3.06	3.06	3.11	3.17	3.24	3.31	3.39	3.61	3.70	3.79	3.52	3.62	3.73	3.84	3.96	4.08	4.21	4.35	4.50	4.66	4.82	5.00

Levelised Tariff	3.27
Accelerated Depreciation	0.14
Net Tariff	3.14

## TARIFF DETERMINATION FOR ROOFTOP SOLAR PV PLANTS (INSTALLED CAPACITY ABOVE 100 KW &amp; UPTO 500 KW WITH 80% SUBSIDY) FOR FY 2020-21

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Generation	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40
Aux Consumption	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Saleable Energy	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40

Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs.		803	803	803	803	803	803	803	803	803	803	803	803	803	249	249	249	249	249	249	249	249	249	249	249	249
Depreciation	Rs.		1212	1281	1354	1432	1513	1600	1692	1788	1891	1999	2113	2234	2362	2497	2640	2791	2950	3119	3297	3486	3685	3896	4119	4355	4604
Interest on term loan	Rs.		383	291	198	106	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on working Capital	Rs.		2237	2237	2237	2237	2237	2237	2237	2237	2237	2237	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460	2460
Return on Equity	Rs.		129	131	133	135	137	141	145	150	155	160	170	176	183	178	185	192	200	208	217	226	236	247	258	269	281
<b>Total Cost of generation</b>	Rs.		<b>4764</b>	<b>4742</b>	<b>4725</b>	<b>4711</b>	<b>4720</b>	<b>4780</b>	<b>4876</b>	<b>4978</b>	<b>5085</b>	<b>5199</b>	<b>5547</b>	<b>5674</b>	<b>5808</b>	<b>5384</b>	<b>5533</b>	<b>5692</b>	<b>5859</b>	<b>6036</b>	<b>6223</b>	<b>6421</b>	<b>6630</b>	<b>6852</b>	<b>7085</b>	<b>7333</b>	<b>7594</b>
<b>Per unit Cost of generation</b>	<b>Rs./kWh</b>		<b>2.86</b>	<b>2.85</b>	<b>2.84</b>	<b>2.83</b>	<b>2.84</b>	<b>2.87</b>	<b>2.93</b>	<b>2.99</b>	<b>3.06</b>	<b>3.12</b>	<b>3.33</b>	<b>3.41</b>	<b>3.49</b>	<b>3.23</b>	<b>3.32</b>	<b>3.42</b>	<b>3.52</b>	<b>3.63</b>	<b>3.74</b>	<b>3.86</b>	<b>3.98</b>	<b>4.12</b>	<b>4.26</b>	<b>4.41</b>	<b>4.56</b>

Levelised Tariff	3.02
Accelerated Depreciation	0.13
<b>Net Tariff</b>	<b>2.90</b>

## TARIFF DETERMINATION FOR ROOFTOP SOLAR PV PLANTS (INSTALLED CAPACITY ABOVE 500 KW &amp; UPTO 1 MW WITH 80% SUBSIDY) FOR FY 2020-21

Units Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Generation	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40
Aux Consumption	%		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Saleable Energy	kWh		1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40	1664.40

Cost of Generation	Unit	Year-->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
O&M Expenses	Rs.		774	774	774	774	774	774	774	774	774	774	774	774	774	239	239	239	239	239	239	239	239	239	239	239	239
Depreciation	Rs.		1230	1300	1375	1453	1537	1624	1717	1816	1919	2029	2145	2268	2398	2535	2680	2833	2995	3166	3348	3539	3742	3956	4182	4421	4674
Interest on term loan	Rs.		369	280	191	102	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on working Capital	Rs.		2155	2155	2155	2155	2155	2155	2155	2155	2155	2155	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371	2371
Return on Equity	Rs.		128	129	131	133	136	140	144	149	154	159	170	176	182	178	185	192	200	209	218	227	237	247	259	270	283
Total Cost of generation	Rs.		4656	4639	4626	4618	4630	4693	4791	4894	5003	5118	5459	5588	5724	5323	5475	5636	5806	5986	6176	6376	6589	6813	7051	7302	7567
Per unit Cost of generation	Rs./kWh		2.80	2.79	2.78	2.77	2.78	2.82	2.88	2.94	3.01	3.07	3.28	3.36	3.44	3.20	3.29	3.39	3.49	3.60	3.71	3.83	3.96	4.09	4.24	4.39	4.55

Levelised Tariff	2.97
Accelerated Depreciation	0.12
Net Tariff	2.85