

Review of the Benchmark Capital Cost for Solar PV, Solar Thermal and Grid Interactive Rooftop & Small Solar PV Plants to be applicable for FY 2021-22 and onwards till reviewed/revised by the UERC

Uttarakhand Electricity Regulatory Commission (UERC) reviewed the “Benchmark Capital Cost for Solar PV, Solar Thermal and Grid Interactive Rooftop & Small Solar PV Plants to be applicable for FY 2021-22 and onwards till reviewed/revised by the UERC” on 30th July, 2021.

Some of the key points are given below:

- The normative capital cost for Solar PV, Solar Thermal and Grid Interactive Rooftop & Small Solar PV Plants is inclusive of all capital works including plant and machinery, civil works, erection and commissioning, financing and interest during construction etc., and evacuation infrastructure upto the interconnection point.
- The proposed generic tariffs for Solar PV, Solar Thermal and Grid connected Rooftop & Small Solar PV Plants shall be applicable on the projects commissioned on or after 01.04.2021 and shall continue to be applicable till further reviewed by the Commission. Also, the tariffs determined shall be the ceiling tariffs and procurement of power shall be done through competitive bidding route by distribution licensee.
- The Commission kept the benchmark Capital Cost as Rs. 1200 Lakh/MW for Solar Thermal Projects to be commissioned on or after 01.04.2021.

Benchmark Capital Cost of Solar PV Project Approved for FY 2019-20 and proposed for FY 2021-22:

S. No.	Particulars	Approved Capital Cost for FY 2019-20 (₹Lakh/MW)	% of Total Cost	Proposed Capital Cost for FY 2021-22 (₹Lakh/MW)	% of Total Cost
1	PV Modules	224.85	63.11%	193.631	60.14%
2	Land Cost	50.00	14.03%	50.00	15.53%
3	Civil and General Works	14.22	3.99%	13.93	4.33%
4	Mounting Structures	14.93	4.19%	14.62	4.54%
5	Power Conditioning Unit	14.93	4.19%	14.62	4.54%
6	Evacuation cost upto interconnection point (Cables and Transformers)	18.77	5.27%	18.38	5.71%
7	Preliminary & Pre-operative expenses including IDC & contingency etc.	18.57	5.21%	16.78	5.21%
Total Capital Cost		356.27	100.00%	321.96	100.00%

Benchmark Capital Cost of Grid Interactive Rooftop & Small Solar PV Plants Approved for FY 2019-20 vis-a-vis proposed for FY 2021-22:

S. No.	Particulars	FY 2019-20				FY 2021-22			
		Approved Capital Cost (Rs./kWh)				Proposed Capital Cost (Rs./kWh)			
		Upto 10 kW	Above 10 kW to 100 kW	Above 100 kW to 500 kW	Above 500 kW & upto 1 MW	Upto 10 kW	Above 10 kW to 100 kW	Above 100 kW to 500 kW	Above 500 kW & upto 1 MW
1	PV Module inc. degradation	27,092	24,834	23,333	22,485	23,330	21,386	20,093	19,363
2	Land Cost, Civil and General Works	6,024	5,522	5,189	5,000	6,024	5,522	5,189	5,000
3	Mounting Structures	2,428	2,226	2,092	2,015	2,378	2,180	2,048	1,974
4	Power Conditioning Units	2,428	2,226	2,092	2,015	2,378	2,180	2,048	1,974
5	Evacuation cost upto inter connection point (Cables and Transformers)	3,053	2,798	2,629	2,534	2,990	2,741	2,575	2,482
6	Preliminary & Pre-operative expenses including IDC & contingency etc.	2,256	2,068	1,943	1,873	2,041	1,871	1,757	1,694
	Total Capital Cost	43,282	39,676	37,278	35,922	39,142	35,880	33,712	32,486

The draft document can be accessed [here](#)

CER Opinion

- 1. High Capital Cost for Improved Operational Parameters:** The draft document identified upgradation of technology as one of the reasons for the revised capital cost. If so, the same should be reflected in efficient operational parameters to be considered for determination of tariff as well. The commission should thus consider uprating the efficiency and other parameters (example: CUF, degradation factor etc.) for different Solar PV applications.
- 2. Comparison of Capital Cost across PV:** The technologically different PV modules have different prices. It is observed that the price of PV modules is reduced over the years compared to the price associated with other parameters that determines capital cost (Refer Fig. 1). The benchmark capital cost as given in the proposed document is Rs. 321.96 Lakh/MW which includes 60.14% share of PV modules cost. It is suggested to specify the type of PV modules considered for determining the benchmark capital cost.

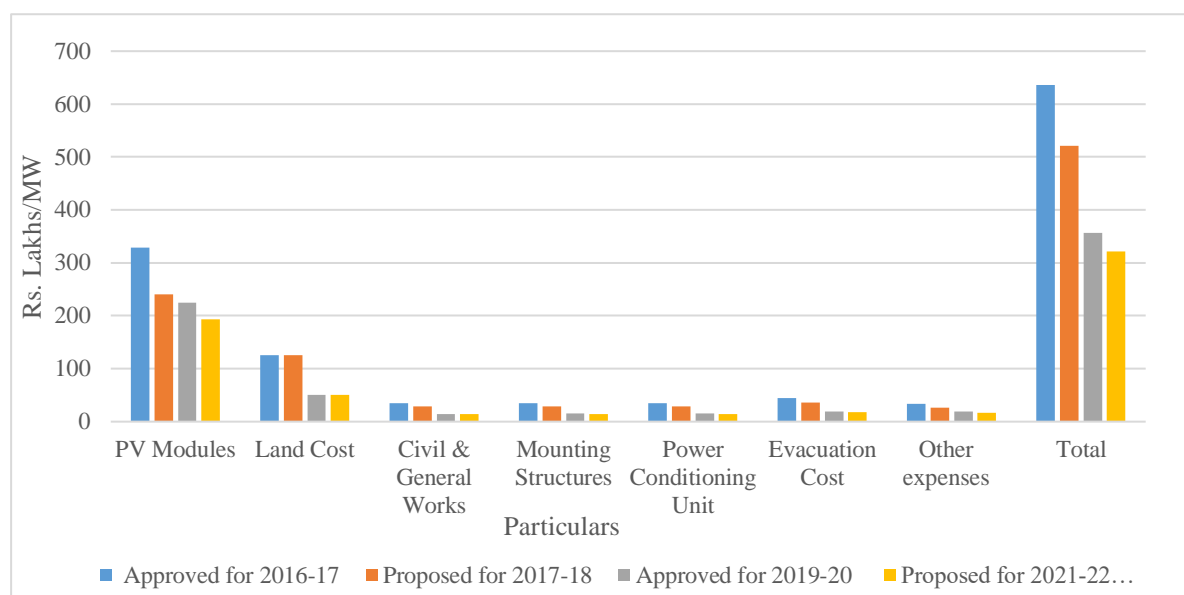


Figure 1: Comparison of Capital Cost Particulars for Solar

- 3. Levellised Tariff with Accelerated Depreciation Benefit:** In the proposed document, for determination of generic tariffs for solar PV plants, solar thermal plants and grid connected rooftop system, the commission has considered Accelerated Depreciation Benefit (ADB). Since, the gross levellised tariff is higher (without considering the ADB) than that estimated after considering the ADB, it is also important to specify the modalities for verifying whether a project developer would be availing the benefit of ADB or otherwise. It is important to mention that the audited financial statement and the income tax returns (which make use of ADB) would be filed after the end of the ongoing financial year. Therefore, a clarity is needed that how a project developer would provide evidence/proof/undertaking at the time of raising the invoice for the energy injected regarding its intention to use the ADB.

4. **Typo (Annexure A, No. 9):** The proposed benchmark capital cost is Rs. 303.16 Lakhs/MW, whereas the same mentioned in Table 3 is Rs. 321.96 Lakhs/MW. It is required to verify and correct the data in the document.
5. **Detailing for Determination of Capital Cost:** Capital cost includes cost of various components (e.g. PV modules, substructure, convertor, etc), cost of civil works, transportation, taxes, interest during construction (IDC), local levies etc. Considering the changes in the cost associated with various cost components, a segregated account of the same would enable better benchmarking with industry standards and for comparison across states. It is suggested to provide necessary detailing and basis for determining various cost components.
6. **Competitive Bid-based Project's Tariff:** Levelised tariff for competitively bid projects show significant decline in the electricity procurement from Solar PV technology. A similar decline is generally not reflected in the benchmark capital cost. A comparative assessment of decline in bid based tariff and that of the benchmark capital cost should enable vetting of the benchmarked capital cost and other cost components.