

Explanatory Memorandum for CERC Draft (Terms and Conditions for Tariff determination from Renewable Energy Sources) (Fifth amendment) Regulations, 2016

The Central Electricity Regulatory Commission ("The Commission"), exercising power under Section 178(2)(s) of the Electricity Act, 2003 ("the Act") read with Section 61 of the Act, has notified the Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2012 (referred as the "Principal Regulations" hereafter), which came into effect from 6.2.2012.

2. Regulation 59 of the Principal Regulations provide for Normative Operation and Maintenance (O&M) Cost for Solar PV technology as Rs 11 lakhs/MW for the 1st year of operation subject to annual escalation at the rate of 5.72% per annum.

3. Typically, O & M expenses for Solar PV projects consists of following preventive and corrective maintenance activities/cost components:

- Cleaning & Washing of Modules
- Routine check-up of inverter and BoS equipment
- String level monitoring of panels (for large plants)
- Troubleshoot, inspect, and repair the equipment
- Manpower for all of above

4. As per the current provision, the Normative O&M expenses for year 2016-17 can be calculated as Rs 13.74 lakhs/MW.

5. However, as per Section 9.4 of the Explanatory Memorandum For Draft Terms and Conditions for Determination of Tariff from Renewable Energy Sources, November, 2011, (as produced below), the O&M cost is expected to lie between 0.5 to 1.5 % of the capital cost of Solar PV plants.

"According to Intergovernmental Panel on Climate Change (IPPC) working group report the O&M costs of PV electricity generation systems are low and are found to be in a range between 0.5 and 1.5% annually of the initial investment costs (Breyer et al., 2009; IEA, 2010c). Based on the capital cost proposed above it comes under the range of Rs 6.25 to 18.75 Lakh/MW depending upon the size of the projects."

6. Also, the capital cost for solar PV has seen a steep decline over the years due to various factors. But, the O&M cost determined by CERC has shown an increasing trend in absolute value as well as in terms of the percentage of capital cost, as depicted in following table:-

Solar PV Yearly Trends	2012-13	2013-14	2014-15	2015-16
Capital Cost (Rs. Lakh/MW)	1000	800	691	605.85
Normative O&M cost (Rs.Lakh/MW)	11.0	11.63	12.3	13.0
O&M cost as percentage of Capital Cost	1.10%	1.45%	1.78%	2.15%

7. Additionally, Tamil Nadu Electricity Regulatory Commission (TNERC) has recently notified a Consultative Paper on “Comprehensive Tariff Order on Solar Power”, wherein the State Commission has proposed O&M expenses for Solar PV on page 20 as “1.4% of Capital cost with escalation at 5.72% p.a from second year”.
8. Based on industry sources, it has been brought to Commission’s notice that O&M services are now available on contract to Solar PV developers at much reduced cost. Typical O&M contract, depending on size and location of the plant, costs between Rs. 5 - 7 lakhs/MW.
9. Considering the above factors, it is discerned that O&M cost for solar PV plants for the year 2016-17 must be rationalized and aligned with prevalent market rates, as well as the rationale originally stated in the Explanatory Memorandum to the RE Regulations.
10. Thus, The Commission proposes a proviso to clause (1) of Regulation 59 of the Principal Regulations as follows :-

"Provided that Normative O&M expenses for the last year of the Control Period (i.e. FY 2016-17) shall be Rs. 7 lakhs per MW"
