



CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024

Summary of Draft Central Energy Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024 for the control period 2024- 25 to 2026- 2027. Highlights of the proposed regulations are given below.

- ‘Municipal Solid waste (MSW)’ and ‘Refused derived fuel (RDF)’ have been provided special emphasis and regulation changes to promote growth in the sector. The useful life have been reduce to 20 years. Station heat rate and Gross calorific value clauses have been omitted from for MSW/ RDF projects. Regulation have categorise MSW/ RDF based power project under generic tariff but project developer can opt for project specific tariff
- The regulation that provides compensation for the ‘Treatment for Over-generation’ have set price for excess energy as 100% of tariff applicable for that year.
- The time period for loan tenure is 15 years and normative interest is 200 basis points above SBI MCLR.
- Depreciation rate of 4.67% per annum for first 15 years and rest to divided equally for rest of useful life of project.
- The normative Return on Equity for renewable project is 14% while for small hydro power project it is 14.5%. RoE to be grossed up by latest MAT for first 20 years of tariff period and by latest corporate tax rate for rest of tariff period.
- Late payment surcharges will be according to specification provided in Ministry of Power - Electricity (Late Payment Surcharges and Related Matters) Rules, 2022.
- Efficiency of RE with storage project based on solid state batteries is 80% while for storage based pumped storage is 75%.

The documents can be accessed [here](#)

CER Opinions —

- 1. Prevailing market trends to Efficient ‘Capital Cost Benchmarks’:** It is suggested that Commission should provide clarification for the term **prevailing market trends** mentioned in clause (23), (26), (46), (48), (68), (69), (71) and (73).

Given that capital cost influences various components particularly depreciation, interest cost and RoE, a **capital cost benchmarking methodology** should be evolved. This may also include ‘market trends’ covering efficient cost benchmarks in the international context. Higher weightage should be given to capital equipment procurement on competitive tendering basis. There may be inherent data bias as ‘market trends’ may be reported from limited set of deals. **The Commission may propose a methodology for gauging market trends.** This should give higher weightage to recent deals.

- 2. Prevailing market trends got Interest on Loan and Interest on Working Capital:** The SERCs may also follow up with a Capital Cost Benchmarking approach. The existing approach sets interest rate at certain basis points above the SBI MCLR. The Commission may develop a **methodology to capture ‘market trends’ for interest for term loans and working capital**

loans. Such data may be captured through RBI or other means for companies with PPAs, which have lower risk as compared to those facing market risk. This should appropriately adjust for leverage and other aspects affecting risk of the projects.

- 3. Definitions of excess energy/ Over-Generation:** Clause 11 of the proposed draft Regulation states *'In case a renewable energy project, in a given year, generates energy in excess of the capacity utilization factor or plant load factor, as the case may be specified under these Regulations, the renewable energy project may sell such excess energy to any entity, provided that the first right of refusal for such excess energy shall vest with the concerned beneficiary. In case the concerned beneficiary purchases the excess energy, the tariff for such excess energy shall be equal to the tariff applicable for that year.'*

There is need to clarify if the excess energy is on account of excess capacity of the plant (than that for which tariff is determined) or excess energy generation (due to better resource e.g. solar or wind). The later can only be known on a day ahead or few hours ahead basis. The regulation seems to refer to the former case. It is suggested that draft Regulation should include a **definition of excess generation/ Over-generation.**

If excess generation is on account of excess design capacity planned by the generator, then the generator will have benefit of economies scale for creation of that excess capacity. The additional cost of incremental capacity won't be same as designated capacity. Thus, tariff 'determination' for such excess energy should not be based on pro-rated capital, operational and other costs. **Such excess generation would not require a compensation rate at 100% of the RE tariff for the capacity considered for tariff determination.**

It may be further be clarified whether excess energy injected is to be considered on a **rolling monthly basis or on trued up on yearly basis.** Otherwise, the RE generator would have lower revenue realization.

Excess energy injected at the end of a month in a FY (say April), would then need to be paid as per the tariff approved for such excess energy. However, on an annual basis this energy may not be excess due to shortfall in generation in later months. Thus, **billing and settlement for excess energy should be done on an annual basis only.**

- 4. Tariff for excess energy:** In case of excess energy due to better resource availability but for the same capacity - Section 62 of the Electricity Act 2003 mandates 'determination' of tariff for original capacity. Since the tariff for original capacity already accounts for full cost recovery, the costs cannot be replicated. Proposal for 100 % of the determined tariff translates to over recovery of cost and thus is not in line with the prudential cost recovery.

In case of tariff for excess energy generation from biomass fuel based generators, the excess energy may be purchased at the 100% of the **approved variable charge.** In case of solar, wind, small hydro and MSW/ RDF power plants, the excess energy above the normative CUF, should be purchased at 30% of the determined tariff. Note that capital cost in case of MSW/RDF are very high, even 30% tariff for excess energy would translate into a significantly higher tariff for excess energy.

- 5. Efficient Benchmarks to Address High Capital Cost for MWS based Plants:**

While it is important to note that MSW are now included under generic tariff, the regulation should adopt efficient benchmarks for capital cost as well as operational parameters. The proposed capital cost now incorporates costs associated with waste segregation/fuel preparation. To ensure that environmental goals for ‘utilisation’ of municipal solid waste are achieved in a cost competitive manner, either competitive bidding based approach should be adopted for MSW based projects, or cost benchmarks should reflect cost efficiencies and encourage further cost reduction. Very high capital cost would translate to a very high tariff for MSW based projects.

The proposed generic tariff framework adjust any capital subsidy or other benefits available to the generating projects through support from the central or the respective state government or the local authorities.

- 6. Removal of Station Heat Rate and Gross Calorific Value:** It is noted that in “Chapter 11. Parameters for municipal solid waste based power projects and refuse derived fuel based power projects” in order to promote the Municipal Solid Waste (MSW)/Refuse Derived Fuel (RDF) based power project few incentive have been added. The Energy charge component is fuel cost is nil, the station heat rate (SHR) and Gross Calorific Value (GCV) are omitted from proposed draft regulation.

As mentioned in Explanatory Memorandum Page 75 “*In the view of the above, the Commission decides not to allow any fuel costs in the case of MSW based projects on RDF; instead, the Commission prefers to include the cost of fuel preparation (process equipment) in the overall capital cost of the project, which will address both Capacity Charge and Fuel preparation costs and other incidentals. Hence, the related norms like Station Heat Rate, Fuel cost escalation, Gross Calorific Value, etc. are not applicable to them*”

It is proposed that Commission must direct all MSW/RDF based power plant under this proposed draft regulation to monitor and record the GCV of MSW/RDF used, SHR and PLF on a monthly bases. This information would be valuable for the Commission to set standard benchmark under the regulation in future.

- 7. Definition of CUF, Minimum CUF and Capacity Share:** In proposed clause 68 (1) proviso 2 states that “*Provided that the **minimum capacity utilization factor for renewable hybrid energy projects shall be 30%** when measured at the inter-connection point, where the energy injected into the grid.*” (emphasis added). Reading along with Eligibility criteria clause 4 (f) “*Renewable hybrid energy project- The rated capacity of generation from one renewable energy source is at least 33% of the total installed capacity of the renewable hybrid energy project, which operates at the same point of interconnection: Provided that energy is injected into the grid at the same interconnection point and metering is done at such a common interconnection point accordingly*”

Clause 68 of the draft regulation states the Capacity Utilisation Factor to be “*(1) The Commission shall determine only project specific capacity utilisation factor in respect of renewable hybrid energy projects, taking into consideration the proportion of **rated capacity of each renewable energy source**, as the case may be, and applicable capacity utilisation factor for such renewable energy sources, as the case may be.*” (emphasis added)

Capacity Utilisation Factor (CUF) would thus consider the rated capacity of individual technologies. The capacity under consideration, for the purpose of tariff determination, is the rated capacity of the plant. The tariff determination would consider capital and other cost associated with such a capacity. Thus, minimum stipulated CUF of 33% cannot materialize unless it is calculated with respect to the contractual capacity.

The stipulation of minimum 33% CUF seems to have been adopted from the competitive bidding document for hybrid projects, which entail installation of excess capacity. The tariff determination process would calculate CUF on the basis of the rated capacity being considered for the tariff. Using such an approach for the defined capacity, CUF for a hybrid power plant cannot be above the CUF of the technology exhibiting highest CUF. The Tables above explicitly demonstrates the same. A hybrid project with solar and wind technology (with or without storage) would not have a CUF at 33% under the prevailing resource availability conditions in the country. Thus, the CUF stipulation of 33% of the rated capacity, as ‘adopted’ from the competitive bidding document would not be applicable in the context of tariff regulations and should be modified. One possible way is to define contractual capacity as distinct from the rated capacity. Thus regulatory approach for tariff determination would differ from that adopted for the standalone technologies.

	Cap	CUF	Energy Gen			Cap	CUF	Energy Gen
	MW	%	MWh			MW	%	MWh
Solar	33	21	60706.8		Solar	67	21	123253.2
Wind	67	30	176076		Wind	33	30	86724
Biomass	0	0	0		Biomass	0	0	0
Total	100	27.03	236782.8		Total	100	23.97	209977.2

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	MW	%	MWh			MW	%	MWh
Solar	33	21	60706.8		Solar	33	21	60706.8
Wind	33	30	86724		Wind	33	30	86724
Biomass	34	75	223380		Biomass	34	75	223380
Total	100	42.33	370810.8		Total	100	42.33	370810.8

Table: Cap and CUF Calculation for Hybrid RE Project with Different Combination for RES

Specification of minimum CUF, in its current form, for the overall hybrid project and minimum capacity share by technology indirectly places a minimum capacity limit for higher CUF technologies like biomass (See Tables above). Inclusion of storage would not enhance CUF of the combination of RES technologies embedded in a RE project as an ESS would store energy generated from the hybrid project only.

Furthermore, CUF for hybrid project needs to be defined by excluding ‘energy generation’ (discharged) by the storage capacity either by storing the energy generated by the hybrid project or that stored from other sources of generation/procurement. This should be explicitly mentioned to avoid grey areas for interpretation and potential legal disputes in future.

8. Optimal Combination of the Rated Capacity for the Hybrid RE Plants:

Numerous combinations of individual technology wise capacity can be used to create a hybrid capacity with a desirable CUF. Different combinations would entail different capital cost and



other associated costs. Two projects with same overall capacity but same CUF will thus have different tariffs. How would the Commission decide if an optimal capacity combination has been used for the hybrid RE project? One possible approach would be to introduce an ‘optimality test’ wherein a range of capacity for the individual technologies can be defined, wherein the project developer should demonstrate that it has applied the principle of cost minimization to arrive at the capacity combination.