

DISCUSSION PAPER

ON THE DETERMINATION OF GENERIC CEILING TARIFF FOR WIND POWER PROJECTS FOR THE PURPOSE OF BIDDING FOR THE PERIOD FY2026-27 TO FY2028-29

Preamble

1. As per the Order dated 05-06-2018, the Commission has mandated procurement of power from wind projects by all ESCOMs and distribution licensees only through competitive e-reverse bidding process with Generic Tariff determined by the Commission from time to time as the benchmark ceiling tariff. Similarly, the Regulation 2 of the KERC (Procurement of Energy from Renewable Sources) (9th Amendment) Regulations 2022, states that "2. The Commission for sale of electricity to the distribution licensees of the State, in case of wind projects (irrespective of MW-capacity), MW scale solar projects, Co-generation power projects and hybridisation of existing projects by addition of wind/solar, shall adopt the tariff which has been arrived at through a transparent process of bidding in accordance with the guidelines issued by the Central Government under section 63 of the Act, subject to distribution licensees justifying the requirement of such procurement, subject to ceiling tariff determined by the Commission."
2. Further to this, by Order dated 23-07-2023, the Generic ceiling tariff for the period FY2023-24 to FY2025-06 was determined as Rs.3.34/unit, and was made applicable from the period 1-4-2023 to 31-3-2026. The generic tariff was also made applicable for payment towards any banked energy purchased by the Distribution Licensees and in such other cases, as specified in the relevant orders of the Commission.
3. As the validity of the above ceiling tariff is only upto 31-3-2026, there is a need to determine the tariff for a further period of three years from 1-4-2026. Hence, the Commission has to determine the generic ceiling tariff for the said period.
4. Accordingly, the Commission proposes to determine the generic tariff for wind power projects which shall be the ceiling tariff for calling bids and hereby, invites comments/views/suggestions from Stakeholders and interested persons on the above proposal, with a request to submit the objections/ comments/ suggestions to the Commission on or before **09-04-2026** to **The Secretary, Karnataka Electricity Regulatory Commission, No. 16 C-1, Millers Tank Bed Area, Vasantha Nagar, Bengaluru- 560 052**

5. The parameters proposed to be considered for determination of tariff are discussed in the following paragraphs:

In this context, it may be noted that CERC and many of SERCs are no longer determining the generic tariff for the wind projects, but continued on the policy of project specific tariff determination and competitive bidding route. Hence there is limited possibility of State level comparison of parameters for tariff determination. Further, the available tariffs determined by many of SERCs are outdated and therefore a meaningful comparison is not possible.

In the above context, details available in elsewhere may be referred to for understanding. Recent International studies show that there is a definite trend in reduction on cost of wind turbines due to many factors and the capacity utilisation has also increased over the years. As per the 2025 report of International Renewable Energy Agency (Renewable Power Generation costs, 2024), there is a decline in per kW cost of installed capacity of on shore wind projects by 55% between 2010 and 2024 on the average and there is a 12% decline between 2023 and 2024 itself. The decline is visible in O&M costs also due to the increased competition in O&M services and more efficient project development processes. Additionally, advances in materials science, such as lighter, more durable composite materials, could reduce manufacturing and transportation costs, contributing to lower total installed costs. Economies of scale have played particularly an important role by enabling cost reductions through larger turbines, bigger project sizes and consolidated service agreements. These larger installations also contribute to lowering O&M fixed costs. Regarding country specific details, the report shows that in India, notably low weighted average installed cost, falling below all regional benchmarks. The Weighted average LCOE of onshore wind in India between 2010–2024 has fallen by about 52%. In most of the countries with reasonably robust time series data presented, capacity factors have demonstrated an upward trend over the 2010–2024 period 26 to 39%

Similarly, as per the report of NREL, cost of wind energy review 2024 edition reports there is a possibility of reduction in Levelised Cost of Energy (LCOE) due to net capex reduction of 32% through efficient manufacturing of turbines, economies of scale for land based wind projects and 31% O&M expenditure reduction through advanced O&M strategies.

As noted above, in the absence of State level comparison, the Commission has obtained data from KREDL on the projects commissioned in last 3 years (ie., upto 31-01-2026) regarding capital cost, CUF and O&M cost. KREDL has furnished details as per the DPR of 52 projects commissioned in Karnataka connected to intra state transmission, totalling to about 492MW. The range of important parameters of the projects are given below:

Hub Height (Mts)	Project Capacity (MW)	WEG Rating (KW)	Cost / MW	CUF	O&M (Rs.lakh/MW)
<80	0.60 - 3.0	600 - 1250	5.28 - 9.00	24.2 - 29.0	9.51
80 to 130	2.2 - 27.0	2000 - 2700	5.40 - 8.63	26.0 - 40.2	5 - 15
>130	2.1 - 25.0	1250 - 4000	5.99 - 8.33	26.0 - 39.7	9.51 - 15

As shown above, the projects have maximum hub height of 140mts, with each Wind Energy Generator (WEG) ranging from 600kW to 4000kW. The cost per MW also ranges from Rs.5.28 crore/MW to Rs.9.00 crore/MW. The CUF is as high as 39.7%. The average and median parameters are given below:

Hub Height (mts)	Hub Height (mts)		Cost/MW (Rs. Crore)		CUF (%)	
	Average	Median	Average	Median	Average	Median
<80	70.23	75.30	6.91	6.33	26.96	26.92
80 to 130	124.17	127.00	6.90	6.43	31.20	30.82
>130	139.39	140.00	6.74	6.21	33.68	34.00
All	119.92	135.50	6.82	6.21	31.56	31.00

The discussion paper is proposing parameters based on details from KREDL data as well as the trends mentioned above. The proposal is as follows:

- a) **Debt- Equity Ratio:** The Debt-Equity Ratio shall be 70:30, keeping in view the Tariff Policy, 2016.
- b) **Capital cost:** As per the cost trends reported internationally, there is reduction in capital cost over the years. As per the data furnished by the KREDL, the capital cost varies from Rs.5.28 Crores / MW to Rs.8.63 Crores, (excluding two projects having Rs. 9.00 Crores / MW). The average cost /MW for ranges from Rs.6.74 crore to Rs.6.91 crore and the median values range between Rs.6.21

- crore to Rs.6.43 crore/MW. The Commission proposes to adopt the capital cost of Rs. 6.50 Crores /MW, including the evacuation cost.
- c) **Capacity Utilization Factor (CUF):** As per the data furnished by the KREDL, the CUF varies from 24.2% to 40.2%. The Commission notes that the capacity of the WEG and the hub height are increased for the projects commissioning lately. Accordingly, the average CUF is increasing over the years. Based on the data received from KREDL, the average CUF is above 33% in most of the projects. Thus, the Commission proposes to adopt CUF of 33%.
- d) **Auxiliary consumption:** The Commission proposes an auxiliary consumption of 0.5% of the gross generation at normative CUF.
- e) **O&M expenses:** .The KREDL has not submitted O&M cost / MW for only 9 projects out of 52 projects. The O&M costs range from as low as Rs.5 lakh/MW to Rs.15 lakh/MW. The higher cost of Rs.15 lakh was given for two projects only and most of the given projects, O&M expenses are shown as Rs.9.51 lakh/MW. The Commission while determining the generic tariff in the FY 23 to 26 had proposed Rs.10.00 Lakhs / MW. Thus, based on the above, the reasonable O&M expenses for the base FY27 are proposed as Rs.10 lakh with escalation of 5% per Annum.
- f) **Depreciation:** The Commission proposes to provide 4.67% of the capital cost as the depreciation per annum on straight-line method for the first fifteen years, to ensure debt servicing. For the purpose of depreciation, excluding land cost, the value of depreciable assets is proposed to be considered as 85% of the Capital Cost (CC). Thus, 90% of depreciable assets after considering 10% salvage value works out to 76.50% of Capital cost). Since 70% of Capital cost is recovered in the first 15 years, the remaining 6.50% of depreciation is proposed to be recovered during the remaining period of the power plant life.
- g) **Debt tenure and Interest on Debt:** The Commission proposes to consider a Debt tenure of 15-years. The Commission notes that, with effect from 15-07-2025, Indian Renewable Energy Development Agency (IREDA) has revised the interest rates, which varies from 8.65% to 9.65% for Wind projects based on grades, for private sector borrowers. For PSUs it varies from 8.45% to 9.70%. Similarly, PFC has revised the monthly rate of interest from 10-02-2026, which

varies from 9.20% to 9.70% for RE projects based on grades, for private sector borrowers. For PSUs it varies from 8.95% to 9.70%.

As per the recent data available for January, 2026, the MCLR of SBI for 1 to 3 year tenor is ranging between 8.3 to 8.5%. The External Benchmarking Lending Rates (EBLR) is 7.9% excluding Credit Risk premium and Business Strategy premium. Considering 200 bps above EBLR, the maximum interest rate would be 9.90%. The above facts indicate that the domestic loan for RE projects may range about 8.65% to 9.90%. depending upon the credit ratings. In view of the above, the Commission proposes 9.50% as the interest rate on term loans.

- h) **Interest on working capital** : The Commission proposes to consider two months' receivables as the working capital. The Commission proposes interest on working capital as 11.00% considering 150 basis points above the proposed term loan interest.
- i) **Return on Equity**: The ROE is proposed at 14% in line with Tariff Policy, 2016.
- j) **Income tax**: The Commission proposes to allow Income Tax, surcharge & cess as a pass-through without factoring the same in the tariff computations. The amount of Income Tax, surcharge & cess that has to be claimed shall be worked out on the amount of ROE approved by the Commission. The Income Tax at the rates [including surcharge & cess] prevailing in the relevant years shall be claimed separately from the ESCOMs, duly furnishing the necessary proof of tax payment.

The gist of the proposed parameters is indicated below:

Parameter	Existing as per Order dated 23-3-2023	Proposed in this draft
Debt: Equity	70:30	70:30
RoE	14%	14%
Income Tax	Pass through	Pass through
Interest on term loan	10.50%	9.50%
Depreciation	4.67% for the first 15 years, and the balance spread over the life of the project	4.67% for the first 15 years, and the balance spread over the life of the project
Interest on WC	12%	11%
Capital cost (Rs.Cr./MW)	6.50	6.50

O&M costs as percentage of CC for base ear	10 lakhs/MW in base year	10 lakhs/MW in base year
O & M annual escalation	5.00%	5.00%
PLF	33%	33%
Auxiliary consumption	0.5%	0.5%

6. Based on the above parameters the levelised tariff works out to **Rs. 3.24 / Unit (as against the current tariff of Rs.3.34/unit)**. The above tariff shall be the ceiling tariff for calling bids during the period FY27 to FY29 and shall also be the basis for payment towards any banked energy purchased by the Distribution Licensees in terms of the WBA, if any, and in such other cases, as may be specified in the relevant orders of the Commission.

Approved by the Commission


 V Secretary, KERC 23/2

Particulars	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Cost/MW-Rs. Lakhs	650.00																								
Debt Equity	70.30.00																								
Debt-Rs. Lakhs	439.83	409.50	394.17	364.00	333.67	303.33	273.00	242.67	212.33	182.00	151.67	121.33	91.00	60.67	30.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity-Rs. Lakhs	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00
Interest charges on Debt-%	0.0950																								
Interest charges on Debt-Rs.	15.00	27.30	36.02	33.14	30.26	27.30	24.49	21.61	18.73	15.85	12.97	10.09	7.20	4.32	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PLF in %	0.000																								
Equity-Rs. lakhs	195.00																								
ROE-%	0.14																								
Auxiliary	0.005																								
O & M as % of capital cost	10.00																								
O & M expenses in Rs. lakhs	19.50																								
% Interest on Working capital	0.0500																								
Depreciation % p.a	11.0000																								
4.67%																									
Tariff Calculations (All amounts in Rs Lakhs)																									
Outstanding Debt	455.00	424.67	394.33	364.00	333.67	303.33	273.00	242.67	212.33	182.00	151.67	121.33	91.00	60.67	30.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Equity	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00	195.00
Interest charges on Debt	41.78	38.90	36.02	33.14	30.26	27.30	24.49	21.61	18.73	15.85	12.97	10.09	7.20	4.32	1.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O & M Cost	10.00	10.50	11.03	11.58	12.16	12.76	13.40	14.07	14.77	15.51	16.29	17.10	17.96	18.86	19.80	20.79	21.83	22.92	24.07	25.27	26.53	27.86	29.25	30.70	32.23
Depreciation	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33	30.33
Interest on WC	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
Total cost	111.46	109.03	106.83	104.26	101.91	99.60	97.31	95.06	92.84	90.66	88.51	86.41	84.34	82.32	80.35	78.43	76.56	74.74	72.96	71.23	69.54	67.89	66.28	64.71	63.18
Gross generation @ 33%PLF in lakh units	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91	28.91
Auxiliary Consumption @ 0.5%	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Net available energy-lakh units	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76	28.76
Cost/unit (net of auxiliary)	3.88	3.79	3.71	3.62	3.54	3.46	3.38	3.30	3.23	3.15	3.08	3.00	2.93	2.86	2.79	2.73	2.66	2.59	2.52	2.45	2.38	2.31	2.25	2.19	2.13
Discount Factor@ WAACC of 10.85%	1.000	0.902	0.814	0.734	0.662	0.597	0.539	0.486	0.439	0.396	0.357	0.322	0.291	0.262	0.236	0.213	0.192	0.174	0.157	0.141	0.127	0.115	0.104	0.094	0.084
Discounted tariff-Rs/unit	3.88	3.42	3.02	2.66	2.35	2.07	1.82	1.61	1.42	1.25	1.10	0.97	0.85	0.75	0.66	0.40	0.36	0.33	0.31	0.29	0.26	0.24	0.22	0.21	0.19
Revised tariff-Rs/unit	1.000	0.902	0.814	0.734	0.662	0.597	0.539	0.486	0.439	0.396	0.357	0.322	0.291	0.262	0.236	0.213	0.192	0.174	0.157	0.141	0.127	0.115	0.104	0.094	0.084
WC	2.04	2.00	1.95	1.91	1.87	1.83	1.78	1.74	1.70	1.66	1.62	1.58	1.55	1.51	1.47	0.98	1.00	1.02	1.04	1.06	1.08	1.11	1.13	1.16	1.19
IWC	18.58	18.17	17.77	17.38	16.99	16.60	16.22	15.84	15.47	15.11	14.75	14.40	14.06	13.72	13.39	8.88	9.06	9.24	9.44	9.64	9.86	10.08	10.32	10.57	10.83
WC	18.58	16.39	14.46	12.76	11.25	9.92	8.74	7.70	6.79	5.96	5.27	4.64	4.08	3.60	3.17	1.89	1.74	1.60	1.48	1.38	1.29	1.16	1.07	0.99	0.91