

Jammu & Kashmir State Electricity Regulatory Commission

Draft Notification Inviting Objections/Comments/suggestions On Suo Motu Petition

**No.: 24 of 2010
Dated: 20/08/2010**

For determination of Generic Tariff for procurement of power from Wind Energy Generators in the State of Jammu and Kashmir.

In exercise of the powers conferred by section 71 (1) (a) of the Jammu and Kashmir Electricity Act 2010(Act No. XIII of 2010)and all other powers enabling it in this behalf, the Jammu and Kashmir State Electricity Regulatory Commission specifies parameters for determination of generic tariff for procurement of power by Distribution Licensees from Wind Energy Generators in the State of Jammu and Kashmir.

Back Ground:

The demand for electricity is increasing, but the supply does not match with demand, as a result of which the gap between demand and supply is ever widening. Presently, the supply of energy is mostly from the fossil fuels, which are not environmentally benign but rather hazardous. In order to reduce the use of fossil fuels and save the environment, the central government have announced many incentives for generation of energy from renewable sources. It is, therefore, imperative to develop environment friendly renewable energy sources. Wind energy is one of the cleanest of the renewable energy sources and a promising one.

The Electricity Act 2003, and its following policies provide for a road map for increasing the share of renewables, including wind, in the total generation capacity in the country. In particular, the Electricity Act provides for a frame work for grid connected

power from renewable resources through a combination of renewable purchase obligation (RPO) standards and feed-in –tariffs.

Though the interest of independent Power producers in investing in the state on wind energy projects has remained lukewarm in the past, some of them have now started evincing interest. The Commission was not able to determine tariff for wind energy as reliable data on wind energy projects in the state is not available and the state policy on development of wind energy projects is yet to be issued. Therefore, the Commission has opted for determination of generic tariff on the basis of various parameters specified by the Central Electricity Regulatory Commission in their Notification dated 16th September, 2009 and their Order dated 3rd December, 2009 (Suo Motu Petition No. 284/2009) on determination of generic levellised generation tariff under regulation 8 of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Renewable Energy Sources) Regulations, 2009.

It will be possible for the Commission to determine the final tariffs for individual projects only on submission of tariff petitions by the generators for fixation of project specific tariff based on actual capital cost, with break up, in respect of completed units in such formats along with such information as the Commission may specify.

Till fixation of projects specific final tariffs, generator of wind energy may either accept the generic tariff as provisional tariff or make an application for determination of provisional tariff in advance of the anticipated date of completion of project based on the capital expenditure actually incurred upto the date of making the application or a date prior to making the application, duly audited and certified by the statutory auditors.

The provisional tariff as determined by the Commission may be charged from the Commercial Operation Date (CoD) of the respective unit of the generating station. However, the Generator shall be required to makes a fresh application for determination of final tariff based on actual capital expenditure incurred upto the date of commercial operation of the generating station, with duly audited and certified copies of accounts by the statutory auditors within 18 months from the Commercial operation Date (CoD).

PARAMETERS FOR DETERMINATION OF TARIFF

Useful Life:- The useful life of Wind energy project will be 25 years from the date of commercial operation of the generation facility.

Control Period:- The control period for determination of tariff on wind energy project will be two years with effect from 1st April, 2010. However, the tariff determined for projects commissioned during the control period shall continue to be applicable for the entire duration of the tariff period.

Tariff Period:- The tariff period for wind energy projects shall be 13 years from the date of commercial operation of the projects and the tariff determined shall be applicable for the duration of the tariff period.

Tariff Structure:- The tariff for wind energy projects shall be single part tariff consisting of the following fixed cost components:-

- a) Return on Equity.
- b) Interest on loan capital.
- c) Depreciation.
- d) Interest on working capital.
- e) Operation and maintenance expenses.

Tariff Design:- The Tariff design for wind energy projects shall be as under:-

- i) The generic tariff shall be determined on levelled basis for the tariff period.
- ii) For the purpose of levelled tariff computation, the discount factor equivalent to weighted average cost of capital shall be considered.
- iii) Levellisation shall be carried out for the useful life of the wind energy, while tariff shall be specified for the period equivalent to tariff period

Levelled Tariff:- Levelled tariff is calculated by carrying out levellisation for 'useful life' of the technology considering the discount factor for time value of money.

Discount Factor:- The discount factor considered for this purpose is equal to the weighted average cost of the capital on the basis of normative debt: equity ratio (70:30).

Considering the normative debt equity ratio and weighted average of the rates for interest and equity component, the discount factor is calculated:

Interest rate considered for the loan component (i.e 70%) of capital cost is 14.29%. For equity component (i.e 30%), the rate of return on equity (ROE) for the first ten (10) years is 19% and for 11th year to 25th year, the rate is 24%. Based on these rates, the weighted average rate of rate on equity has been calculated, which is 22%.

The discount factor so derived by this method for wind energy technology is 16.60%.

Capital cost:- The Central Electricity Regulatory Commission, in their Regulations, have specified the capital cost of Rs. 5.15 crore/MW for 2009-10 for wind energy projects, with a provision for indexation for future under regulation 25 of their RE regulations to cater for changes in the wholesale price index for steel and electrical machinery. This Commission has also adopted this cost for wind energy projects for the next two years. The capital cost shall include wind turbine generator including its auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost upto inter-connection point, financing charges and IDC.

Debt Equity Ratio:- Clause 5.3(b) of the Tariff Policy notified by the Government of India stipulates a debt-equity ratio of 70:30 for financing power projects. Accordingly the Commission has adopted the debt-equity ratio of 70:30 for Generating Company/Licensees. If the equity employed is more than 30%, the amount of equity for the purpose for determining the tariff will be limited to 30% only and the rest to be treated as normative loans advanced. In case the equity employed is less than 30%, the actual equity employed is to be considered.

Return on Equity: - The rate of return on equity shall be pre-tax 19% per annum for the first ten years and pre-tax 24% per annum from the 11th year to 25th year.

Interest on loan:- The loan tenure of 10 years has been considered for determination of tariff. The computation of the rate of interest on loan is as under:-

- a) The loans arrived at shall be considered as gross normative loan. The normative loan outstanding as on April 1st of every year shall be worked out by deducting the cumulative repayment upto March 31st of the previous year from the gross normative loan.
- b) For the purpose of computation of tariff, the normative interest rate shall be considered as average long term prime lending rate (LTPLR) of State Bank of India (SBI) prevalent during the previous year plus 150 basis points.
- c) Notwithstanding any moratorium availed by the generating company, the repayment of loan shall be considered from the first year of commercial operation of the project and shall be equal to the annual depreciation allowed.

In terms of the above, the computation of interest on loan for determination of tariff in respect of wind energy projects treating the value base of loan as 70% of the capital cost and the weighted average of State Bank of India prime lending rate for the financial year 2008-09 plus 150 basis points shall be 14.29%.

Depreciation:- The value base for the purpose of depreciation shall be the capital cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed upto a maximum of 90% of the capital cost of the asset.

Depreciation per annum shall be based on 'Differential Depreciation Approach' over loan tenure, and period beyond loan tenure over useful life computed on 'Straight Line Method'. The depreciation rate for the first 10 years of the Tariff period shall be 7% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 11th year onwards.

Deprecation shall be chargeable from the first year of commercial operation, of the asset for part of the year, depreciation shall be charged on pro rata basis

Interest on Working Capital:- The working capital requirement in respect of wind energy projects shall be computed in accordance with the following:-

- a) Operation and Maintenance expenses for one month.
- b) Receivables equivalent to two months of energy charges for sale of electricity calculated on the normative CUF.
- c) Maintenance @ 15% of operation and maintenance expenses.

Operation & Maintenance Costs: - Operation and Maintenance (O&M) costs consist of statutory charges, spares, employee cost, administrative and general expenses, repairs and maintenance, and insurance expenses. The maintenance of wind farm is carried out through a centralized maintenance system which results in a lower amount of employees expenses as well as administrative and general expenses. The Commission has adopted the normative O&M cost for the first year of the control period (i.e 2009-10) at Rs. 6.50 lakh per MW and shall be escalated at the rate of 5.72% per annum over the tariff period for determination of levellised tariff.

Capacity Utilization Factor (CUF):- CUF for wind energy is as given below which has been considered for determination of tariff:-

Annual Mean Wind Power Density(W/m²)	CUF
Wind Zone-1 (200-250)	20%
Wind Zone-2 (250-300)	23%
Wind Zone-3 (300-400)	27%
Wind Zone-4 (Above 400)	30%

Levellised Tariff:- Taking into consideration the foregoing discussions and various parameters considered by the Commission, the levellised tariff is determined as given below:-

	Levellised total tariff	Benefit of Accelerated Depreciation, if availed	Net levellised Tariff upon adjusting for Accelerated Depreciation benefit, (if availed)
	(Rs/KWh)	(Rs/KWh)	(Rs/KWh)
Wind Zone -1 (CUF 20%)	5.63	(0.37)	5.26

Wind Zone -2 (CUF 23%)	4.90	(0.32)	4.58
Wind Zone - (CUF 27%)	4.17	(0.28)	3.89
Wind Zone -4 (CUF 30%)	3.75	(0.25)	3.50

Transmission and Wheeling Charges: - The wheeling of electricity generated from the Wind Power Generators, to the desired location(s) within the State, shall be allowed on payment of transmission and wheeling charges and transmission losses applicable to normal Open Access Consumer.

Banking:-The Wind Power Generators are eligible for one month banking for the electricity generated during the month. However, they are eligible to utilize the same during the month in proportion to the energy generated during peak and normal hours period.

Sharing of CDM: - The Commission has proposed sharing of CDM benefits as per the recommendation made by the Working Group for Renewable Energy Generation constituted by the Forum of Regulators. The CDM benefits should be shared on a gross basis, starting from 100% to developers in the first year after commissioning, and thereafter reducing by 10% every year till the sharing becomes equal (50:50) between the developers and the consumers, in the sixth year. Thereafter, the sharing of CDM benefits should remain equal till the time that benefit accrues.”

Pricing of Reactive Power:- Due to its inherent characteristics, Wind Energy Generators are prone to draw reactive power from the grid, if adequate power factor correction is not applied. During the high wind season, wind energy generation is considerable, and in such situation, grid stability will be adversely affected, if the wind energy generators are allowed to draw reactive power from the grid. Wind power generator shall have to pay to the utility for the reactive energy @ to be fixed by the Commission.

Third Party Sales and Cross Subsidy Surcharge:- Third Party Sales under Open access transactions carried out using generation from renewable sources shall be exempted from levy of cross- subsidy surcharge under section 36 (2) of the Jammu and

Kashmir Electricity Act, 2010. However, no banking facility shall be provided for supply from renewable sources under open access for third party sales. The wheeling of electricity generated from the wind power generators to the desired location(s) shall be allowed on payment of transmission and wheeling charges and transmission losses applicable to normal open access consumers.

Scheduling: - Under normal conditions, renewable generator should have the status of 'Must run' and therefore, not subjected to merit order schedule. Energy shall be purchased from wind energy sources on first charge basis.

Sd/-
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