CENTRAL ELECTRICITY REGULATORY COMMISSION

(Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017, Dated: 17-04-2017

Sl. no	Description	Summary
1.	**Control Period or Review Period**	3 - Years (in which first year shall be the financial year 2017-18).
2.	**Scope and extent of application**	These regulations shall apply for a generating station or a unit thereof commissioned during the Control Period and based on renewable sources of energy.
3.	**Tariff Period/Useful Life**	

Sr. No	RE technology	Useful Life
1.	Wind energy power project	25 years
2.	Bio mass power project with Rankine cycle technology	20 years
3.	Non-fossil fuel cogeneration project	20 years
4.	Small Hydro Plant	35 years
5.	Municipal Solid Waste (MSW)/ and Refuse Derived Fuel (RDF) based power project	20 years
6.	Solar PV/Solar thermal power project	25 years
7.	Biomass Gasifier based power project	20 years
8.	Biogas based power project	20 years

4.	**Project Specific Tariff**	Project specific tariff, on case to case basis, shall be determined by the Commission such as Solar PV and Solar Thermal, Wind Energy, Biomass, Biogas, Municipal Solid Waste, other Hybrid projects.
5.	**Tariff Structure**	1. The tariff for renewable energy technologies 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; 2. For RE technologies having fuel cost component, like biomass power projects and non-fossil fuel based cogeneration, single part tariff with two components, fixed cost component and fuel cost component, shall be determined.
6.	**Tariff Design**	1. The generic tariff shall be determined considering the year of commissioning of the project, on levellised basis for the Tariff Period. 2. Levellisation shall be carried out for the 'useful life' of the Renewable Energy project.
7.	**Discount Factor for Levelised Tariff**	Discount factor equivalent to Post Tax weighted average cost of capital.
8.	**Despatch Principles**	1. All renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above, and non-fossil fuel based cogeneration plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order despatch' principles.

		2. The biomass power generating station with an installed capacity of 10 MW and above and non-fossil fuel based co-generation projects shall be subjected to scheduling and despatch code.				
9.	**Capital Cost**	**Sr. No**	**Region**	**Renewable Energy Source**	**Project Size**	**Capital Cost (Rs. Lakh/MW)**
		1.	-	Wind Energy	-	determined by the commission
		2.	Himanchal Pradesh, Uttarakhand, West Bengal and North Eastern States	Small Hydro Project	Below 5 MW	1000
					5 MW to 25 MW	900
			Other States		Below 5 MW	779
					5 MW to 25 MW	707
		3.		Biomass Rankine Cycle Projects	Project [other than rice straw and juliflora (plantation) based project] with water cooled condenser	559.03
					Project [other than rice straw and Juliflora (plantation) based project] with air cooled condenser	600.44
					For rice straw and juliflora (plantation) based project with water cooled condenser	610.80
					For rice straw and juliflora (plantation) based project with air cooled condenser	652.20
		4.		Non-fossil fuel based Cogeneration Projects		492.5
		5.		Solar PV Power Project		determined by the commission
		6.		Solar Thermal Power Project		determined by the commission
		7.		Biomass Gasifier Power Projects		592.88
		8.		Biogas based Power Projects		1185.76

		9.		Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology		determined by the commission

10.	**Debt Equity Ratio**	70:30. If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan.
11.	**Loan and Finance Charges**	Loan Tenure – 13 Years For the purpose of computation of tariff, normative interest rate of two hundred (200) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) prevalent during the last available six months shall be considered.
12.	**Depreciation**	1. 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 up to maximum of 90% of the Capital Cost of the asset. 2. Depreciation rate of 5.28% per annum for first 13 years and remaining depreciation to be spread during remaining useful life of the RE projects considering the salvage value of the project as 10% of project cost shall be considered.
13.	**Return on Equity**	1. The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination). 2. (2) The normative ROE shall be 14%, to be grossed up by prevailing Minimum Alternate Tax (MAT) as on 1st April of previous year for the entire useful life of the project.
14.	**Interest on Working Capital**	Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.

15. Capacity utilization Factor/Plant Load Factor

Sl. No	**Region**	**Renewable Energy Source**	**Project Size**	**CUF/PLF**
1.		Wind Power (Density (W/m2)	Upto 220	22%
			221-275	24%
			276-330	28%
			331-440	33%
			> 440	35%
2.	Himanchal Pradesh, Uttarakhand, West Bengal and North Eastern States	Small Hydro Project		45%
	Other States			30%
3.	During Stabilisation	Biomass Power Projects based on Rankine Cycle Technology		60%
	During the remaining period of the first year (after stabilization):			70%
	From 2 Year onwards			80%
4.	Andhra Pradesh and Uttar Pradesh	Non-fossil fuel based Cogeneration Projects		45%
	Tamil Nadu and			60%

			Maharashtra			
			Other States			53%
		5.		Solar PV Power Project		19%
		6.		Solar Thermal Power Project		23%
		7.		Biomass Gasifier Power Projects		85%
		8.		Biogas based Power Projects		90%
		9.	During Stabilisation	Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology		65% (for both MSW & RDF)
			During the remaining period of the first year (after stabilization)			65%(for both MSW & RDF)
			From 2nd Year Onwards			70% (MSW) 80% (RDF)
16.	**Operation and Maintenance Expenses**	Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2017-18) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period.				
		Sl. No	**Renewable Energy Source**	**Project Size**	**O&M Expense (Rs. Lakh / MW)**	
		1.	Wind Energy		determined by the commission	
		2.	Small Hydro Project			
			Himanchal Pradesh, Uttarakhand, West Bengal and North Eastern States	Below 5 MW	36	
				5 MW to 25 MW	27	
			Other States	Below 5 MW	29	
				5 MW to 25 MW	21	
		3.	Biomass Power Projects based on Rankine Cycle Technology		40	
		4.	Non-fossil fuel based Cogeneration Projects		.21.13	
		5.	Solar PV Power Project		based on prevailing market trends	
		6.	Solar Thermal Power Project		based on prevailing market trends	
		7.	Biomass Gasifier Power Projects		52.83	
		8.	Biogas based Power Projects		52.83	
		9.	Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology		based on prevailing market trends	

17.	**Interest on Working Capital**	Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred (300) basis points above the average State Bank of India MCLR (One Year Tenor) prevalent during the last available six months for the determination of tariff.
18.	**Rebate**	1. For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed. 2. Where payments are made other than through letter of credit within a period of one month of presentation of bills by the generating company, a rebate of 1% shall be allowed.
19.	**Late Payment. Surcharge**	3. In case the payment of any bill for charges payable under these regulations is delayed beyond a period of 60 days from the date of billing, a late payment surcharge at the rate of 1.25% per month shall be levied by the generating company.
20.	**Sharing of CDM**	The proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely a) 100% of the gross proceeds on account of CDM benefit to be retained by the project developer in the first year after the date of commercial operation of the generating station; b) In the second year, the share of the beneficiaries shall be 10% which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.
21.	**Subsidy or incentive by the Central / State Government**	The Commission shall take into consideration any incentive or subsidy offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company, for the renewable energy power plants while determining the tariff under these Regulations.
22.	**Taxes and Duties**	Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government.

23. Auxiliary Consumption

Sr. No	Renewable Energy Source	Auxiliary Consumption	
1.	Small Hydro Project	1.0%	
2.	Biomass Power Projects based on Rankine Cycle Technology	During 1st Year	2nd year Onwards
	Project using water cooled condenser	11%	13%
	Project using air cooled condenser	13%	12%
3.	Non-fossil fuel based Cogeneration Projects	8.5%	
4.	Solar PV Power Project	0.25%	
5.	Solar Thermal Power Project	10%	
6.	Biomass Gasifier Power Projects	10%	
7.	Biogas based Power Projects	12%	
8.	Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology	15%	

24. Station Heat rate

Sr. No.	RE Technology	Quantity
1.	Biomass Power Projects based on Rankine Cycle Technology	

			For projects using travelling grate boilers	4200 kCal/kWh
			For projects using AFBC boilers	4125 kCal/kWh
		2.	Non-fossil fuel based Cogeneration Projects	3600 kCal / kWh
		3.	Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology	4200 kcal/kWh.
25.	**Calorific value**	**Sr. No.**	**RE Technology**	**Quantity**
		1.	Biomass Power Projects based on Rankine Cycle Technology	3100 kCal/kg
		2.	Non-fossil fuel based Cogeneration Projects (Bagasse)	2250 kCal/kg.
		3.	Municipal Solid Waste / Refuse Derived Fuel and based on Rankine cycle technology	2500 kcal/kg
26.	**Fuel Cost**	**Sr. No.**	**RE Technology**	**Quantity**
		1.	Biomass Power Projects based on Rankine Cycle Technology	
			State	**FY2017-18**
			Andhra Pradesh	2873.22
			Haryana	3270.39
			Maharashtra	3344.85
			Punjab	3420.56
			Rajasthan	2854.60
			Tamil Nadu	2826.05
			Uttar Pradesh	2922.86
			Other States	3073.05
		2.	Non-fossil fuel based Cogeneration Projects (Bagasse Price)	Same as Bimoss Power Projects bsed on Rankine Cycle
		3.	Biomass Gasifier Power Projects	Same as Bimoss Power Projects bsed on Rankine Cycle
		4.	Biogas based Power Projects	1228.72 /MT
		6.	Refuse Derived Fuel and based on Rankine cycle technology	1800/MT
27.	**Specific Fuel consumption**	**Sr. No.**	**RE Technology**	**Quantity**
		1.	Biomass Gasifier Power Projects	1.25 kg per kWh
		2.	Biogas based Power Projects	3 kg of substrate mix per kWh