

# JOINT ELECTRICITY REGULATORY COMMISSION FOR MANIPUR AND MIZORAM

**(Terms and Conditions for Tariff determination from Renewable Energy Sources)  
Regulations, 2010, Dated: 31-05-2010 with amendment Dated: 08-08-2014**

Sl. No.	Description	Summary									
1.	<b>Control Period</b>	5 – Years (w.e.f. 2012-13)									
2.	<b>Tariff Period</b>	<p>The Tariff Period for Renewable Energy power projects except in case of Small hydro projects below 5 MW, Solar PV, and Solar thermal power projects shall be thirteen (13) years.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Sr. No.</th> <th style="text-align: center;">RE Technology</th> <th style="text-align: center;">Tariff Period (in Years)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1.</td> <td style="text-align: center;">Small hydro projects below 5 MW</td> <td style="text-align: center;">35</td> </tr> <tr> <td style="text-align: center;">2.</td> <td style="text-align: center;">Solar PV and Solar Thermal Power projects</td> <td style="text-align: center;">25</td> </tr> </tbody> </table>	Sr. No.	RE Technology	Tariff Period (in Years)	1.	Small hydro projects below 5 MW	35	2.	Solar PV and Solar Thermal Power projects	25
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1.	Small hydro projects below 5 MW	35									
2.	Solar PV and Solar Thermal Power projects	25									
3.	<b>Tariff Structure</b>	<p>1. The tariff for renewable energy technologies shall be single part tariff consisting of the following fixed cost components:</p> <ul style="list-style-type: none"> <li>(a) Return on equity;</li> <li>(b) Interest on loan capital;</li> <li>(c) Depreciation;</li> <li>(d) Interest on working capital;</li> <li>(e) Operation and maintenance expenses;</li> </ul> <p>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</p>									
4.	<b>Tariff Design</b>	<p>1. The generic tariff shall be determined on levellised basis for the Tariff Period.</p> <p>2. Levellisation shall be carried out for the 'useful life' of the Renewable Energy project while Tariff shall be specified for the period equivalent to 'Tariff Period'.</p>									
5.	<b>Discount Factor for Levellised Tariff</b>	Discount factor shall be equivalent to weighted average cost of capital.									
6.	<b>Despatch Principles</b>	<p>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.</p> <p>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 as specified under Indian Electricity Grid Code (IEGC) and CERC (Unscheduled Interchange and related matters) Regulations, 2009 including amendments thereto.</p> <p>3. Wind power generation plants where the sum of generation capacity of such plants connected at the connection point to the transmission or distribution system is 10 MW and above and connection point is 33 kV and above shall be subjected to scheduling and despatch code.</p>									

		4. Solar generating plants with capacity of 5 MW and above and connected at the connection point of 33 kV level and above shall be subjected to scheduling and despatch code.		
7.	Capital Cost	<b>Sr. No.</b>	<b>R.E. Technology</b>	<b>Capital cost (in Rs. Lakh/MW)</b>
		1.	Wind Energy Projects	575
		2.	Small Hydro Power Projects	
			Below 5 MW	770
			5 MW to 25 MW	700
		3.	Biomass Power Projects	
			other than rice straw and juliflora (plantation) based project with water cooled condenser	540
			Other than rice straw and Juliflora (plantation) based project with air cooled condenser	580
			for rice straw and juliflora (plantation) based project with water cooled condenser	590
			for rice straw and juliflora (plantation) based project with air cooled condenser	630
		4.	Non-Fossil Fuel based Co-generation Projects	420
		5.	Solar PV power projects	1000
6.	Solar Thermal Power Projects	1300		
7.	Biomass Gasifier Power Projects based on Rankine Cycle	550 and 440 (after taking into account of capital subsidy net project cost)		
8.	Biogas based Power Projects	1100 and 800 (after taking into account of capital subsidy net project cost)		
8.	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.		
9.	Loan and Finance Charges	Loan Tenure – 12 Years For the purpose of computation of tariff, the normative interest rate shall be considered as average State Bank of India (SBI) Base rate prevalent during the first six months of the previous year plus 300 basis points.		
10.	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. The depreciation rate for the first 12 years of the Tariff Period shall be 5.83% per annum and the remaining depreciation shall be spread over the remaining useful life of the project from 13 <sup>th</sup> year onwards.		

11.	<b>Return on Equity</b>	<p>1. The value base for the equity shall be 30% of the capital.</p> <p>2. The normative Return on Equity shall be:</p> <p style="padding-left: 40px;">(a) 20% per annum for the first 10 years.</p> <p style="padding-left: 40px;">(b) 24% per annum 11<sup>th</sup> years onwards.</p>																																
12.	<b>Interest on Working Capital</b>	Interest on Working Capital shall be at interest rate equivalent to the average State Bank of India Base Rate prevalent during the first six months of the previous year plus 350 basis points.																																
13.	<b>Operation and Maintenance Expenses</b>	<p>Normative O&amp;M expenses allowed during first year of the Control Period (i.e. FY 2012-13) under these Regulations shall be escalated at the rate of 5.72% per annum over the Tariff Period.</p> <table border="1" data-bbox="618 541 1435 1066"> <thead> <tr> <th data-bbox="618 541 711 604">Sr. No.</th> <th data-bbox="716 541 1198 604">R.E. Technology</th> <th data-bbox="1203 541 1435 604">O&amp;M Expenses (in Rs. Lakh/MW)</th> </tr> </thead> <tbody> <tr> <td data-bbox="618 611 711 646">1.</td> <td data-bbox="716 611 1198 646">Wind Energy Projects</td> <td data-bbox="1203 611 1435 646">9.00</td> </tr> <tr> <td data-bbox="618 653 711 758" rowspan="2">2.</td> <td data-bbox="716 653 1198 688">Small Hydro Power Projects</td> <td data-bbox="1203 653 1435 688"></td> </tr> <tr> <td data-bbox="716 695 1198 730">Below 5 MW</td> <td data-bbox="1203 695 1435 730">25.00</td> </tr> <tr> <td data-bbox="716 737 1198 758"></td> <td data-bbox="716 737 1198 758">5 MW to 25 MW</td> <td data-bbox="1203 737 1435 758">18.00</td> </tr> <tr> <td data-bbox="618 764 711 800">3.</td> <td data-bbox="716 764 1198 800">Biomass Power Projects</td> <td data-bbox="1203 764 1435 800">40.00</td> </tr> <tr> <td data-bbox="618 806 711 869">4.</td> <td data-bbox="716 806 1198 869">Non-Fossil Fuel based Co-generation Projects</td> <td data-bbox="1203 806 1435 869">16.00</td> </tr> <tr> <td data-bbox="618 875 711 911">5.</td> <td data-bbox="716 875 1198 911">Solar PV Power Projects</td> <td data-bbox="1203 875 1435 911">11.00</td> </tr> <tr> <td data-bbox="618 917 711 953">6.</td> <td data-bbox="716 917 1198 953">Solar Thermal Power Projects</td> <td data-bbox="1203 917 1435 953">15.00</td> </tr> <tr> <td data-bbox="618 959 711 1022">7.</td> <td data-bbox="716 959 1198 1022">Biomass Gasifier Power Projects based on Rankine Cycle</td> <td data-bbox="1203 959 1435 1022">40.00</td> </tr> <tr> <td data-bbox="618 1029 711 1066">8.</td> <td data-bbox="716 1029 1198 1066">Biogas based Power Projects</td> <td data-bbox="1203 1029 1435 1066">40.00</td> </tr> </tbody> </table>	Sr. No.	R.E. Technology	O&M Expenses (in Rs. Lakh/MW)	1.	Wind Energy Projects	9.00	2.	Small Hydro Power Projects		Below 5 MW	25.00		5 MW to 25 MW	18.00	3.	Biomass Power Projects	40.00	4.	Non-Fossil Fuel based Co-generation Projects	16.00	5.	Solar PV Power Projects	11.00	6.	Solar Thermal Power Projects	15.00	7.	Biomass Gasifier Power Projects based on Rankine Cycle	40.00	8.	Biogas based Power Projects	40.00
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14.	<b>Rebate</b>	<p>1. For payment of bills of the generating company through letter of credit, a rebate of 2% shall be allowed.</p> <p>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.</p>																																
15.	<b>Late Payment surcharge</b>	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.																																
16.	<b>Sharing of CDM Benefits</b>	<p>1. 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;</p> <p>2. 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.</p>																																
17.	<b>Subsidy or incentive by the Central / State Government</b>	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.																																
18.	<b>Taxes and Duties</b>	The taxes and duties levied by the appropriate Government shall be allowed as pass through on actual incurred basis.																																

19.	Capacity utilisation Factor/Plant Load factor	<b>Sr. No.</b>	<b>R.E. technology</b>	<b>CUF/PLf</b>
		1.	Wind Energy Projects	
			Annual Mean Wind Power Density (W/m <sup>2</sup> )	<b>CUF</b>
			Upto 200	20%
			201-250	22%
			251-300	25%
			301-400	30%
			> 400	32%
		2.	Small Hydro Power Projects	45%
		3.	Biomass Power Projects	
During stabilization	60%			
After stabilization during 1 <sup>st</sup> Year	70%			
	2 <sup>nd</sup> Year onwards	80%		
4.	Non-Fossil Fuel based Co-generation Projects	53% (with 120 Operating days)		
5.	Solar PV Power Projects	19%		
6.	Solar Thermal Power Projects	23%		
7.	Biomass Gasifier Power Projects based on Rankine Cycle	85%		
8.	Biogas based Power Projects	90%		
20.	Auxiliary Consumption	<b>Sr. No.</b>	<b>R.E. Technology</b>	<b>Auxiliary Consumption</b>
		1.	Small Hydro Power Projects	1.0%
		2.	Non-Fossil Fuel based Co-generation Projects	8.5%
		3.	Solar Thermal Power Projects	10%
		4.	Biomass Gasifier Power Projects based on Rankine Cycle	10%
			For the project using water cooled condenser:	
			During first year of operation	11%
			From 2 <sup>nd</sup> year onwards	10%
			For the project using air cooled condenser:	
			During first year of operation: 13%;	13%
From 2 <sup>nd</sup> year onwards: 12%	12%			
5.	Biogas based Power Projects	12%		
21.	Fuels	<b>Sr. No.</b>	<b>R.E. Technology</b>	<b>Quantity</b>
		1.	<b>Biomass power projects</b>	
			Station Heat Rate	
			for project using travelling grate boilers	4200 kcal/kWh
	for project using AFBC boilers	4125 kcal/kWh		

			Calorific value	3100 kcal/kg
			Fuel Cost	2476/- per tonne with 5% escalation
		<b>2.</b>	<b>Non-Fossil Fuel based Co-generation Projects</b>	
			Station Heat Rate	3600 kCal / kWh
			Calorific value	2250 kCal/kg
			Fuel Cost	Rs. 1583/-per M.T with 5% escalation
		<b>3.</b>	<b>Biomass Gasifier Power Projects based on Rankine Cycle</b>	
			Specific Fuel Consumption	1.25 kg per kWh
		<b>4.</b>	<b>Biogas based Power Projects</b>	
			Specific Fuel Consumption	3 kg of substrate mix per kWh
			Fuel Cost	Rs. 990/MT