

## Karnataka Renewable Energy Tariff Orders, 2018

### HIGHLIGHTS

Tariff Period	Technology	No. of Years
	Wind	Not available
	Mini-hydel	--
	Bagasse based co-generation.	--
	Biomass based on Rankine cycle (water cooled condenser).	--
	Solar rooftop and small PV power plants, grid-connected megawatt scale solar power plants.	25
	MSW to Energy	--
Control Period	Technology	Period
	Wind	1st April 2018 to 31st March 2019
	Solar rooftop and small PV power plants, grid-connected megawatt scale solar power plants.	
	Mini-hydel, bagasse based co-generation, biomass based on Rankine cycle (water cooled condenser).	1st April 2018 to 31st March 2021
	MSW to Energy	19th September 2016 to 31st March 2019

Useful Life of a Plant	Technology	No. of Years
	Wind, solar rooftop and small PV power plants, grid-connected megawatt scale solar power plants.	25
	Mini-hydel	35
	Bagasse based co-generation, biomass based on Rankine cycle (water cooled condenser), MSW to Energy.	20

Technology-wise Gross Tariff	Technology	Gross Tariff (in Rs./kWh)	
	Wind	3.45	
	Mini-hydel	3.95	
	Bagasse based co-generation.	Fixed cost	1.77
		Variable cost (FY 2018-19)	1.82
		Variable cost (FY 2019-20)	1.92
		Variable cost (FY 2020-21)	2.03
	Biomass based on Rankine cycle (water cooled condenser).	Fixed cost	2.19
		Variable cost (FY 2018-19)	3.36
		Variable cost (FY 2019-20)	3.55
		Variable cost (FY 2020-21)	3.76
	Biomass based on Rankine cycle (air cooled condenser).	Fixed cost	2.07
		Variable cost (FY 2018-19)	3.28
		Variable cost (FY 2019-20)	3.47
		Variable cost (FY 2020-21)	3.66
	Megawatt scale solar PV projects below 5 MW capacity.		3.05
	Solar rooftop PV projects of 1 MW and below.	Without capital subsidy	3.56
		With capital subsidy	2.67
	MSW to Energy		7.08

<b>Capital Cost</b>	<b>Technology</b>	<b>Capital Cost</b>
	Wind (Rs. lakh/MW)	575.00
	Mini-hydel (Rs. lakh/MW)	633.00
	Bagasse based co-generation (Rs. lakh/MW).	470.00
	Biomass based on Rankine cycle (water cooled condenser) (Rs. lakh/MW).	576.00
	Biomass based on Rankine cycle (air cooled condenser) (Rs. lakh/MW).	586.00
	Solar rooftop and small PV power plants (Rs./kW).	40000.00
	Grid-connected megawatt-scale solar PV plants (Rs. lakh/MW).	350.00
	MSW to Energy (Rs. lakh/MW).	1700.00
<b>Operation and Maintenance (O&amp;M) Expenses</b>	<b>Technology</b>	<b>O&amp;M Cost for the FY 2018-19</b>
	Wind (Rs. lakh/MW)	10.00
	Mini-hydel (Rs. lakh/MW)	14.66
	Bagasse based co-generation (Rs. lakh/MW).	14.10
	Biomass based on Rankine cycle (water cooled condenser) (Rs. lakh/MW).	28.80
	Biomass based on Rankine cycle (air cooled condenser) (Rs. lakh/MW).	23.44
	Solar rooftop and small PV power plants (Rs. Lakh/kW).	0.006
	Grid-connected megawatt-scale solar PV plants (Rs. lakh/MW)	4.50
	MSW to Energy (% of capital cost)	6%
	An annual escalation at the rate of 5.72% shall be considered.	

<b>Capacity Utilization Factor (CUF)</b>	<b>Technology</b>	<b>CUF (%)</b>
	Wind	29
	Mini-hydel	30
	Bagasse based co-generation.	60
	Biomass based on Rankine cycle (water cooled condenser).	75
	Biomass based on Rankine cycle (air cooled condenser).	75
	Solar rooftop and small PV power plants.	19
	Grid-connected megawatt scale solar PV plants.	19
	MSW to Energy	65 (1st year) 75 (balance useful life)
<b>Auxiliary Consumption</b>	<b>Technology</b>	<b>Aux. Con. (%)</b>
	Wind	0.50
	Mini-hydel	1.00
	Bagasse based co-generation.	8.50
	Biomass based on Rankine cycle (water cooled condenser).	10.00
	Biomass based on Rankine cycle (air cooled condenser).	10.00
	Solar rooftop and small PV power plants.	0.00
	Grid-connected megawatt scale solar PV plants.	0.25
	MSW to Energy	12.00

<b>Interest Rate on Loans</b>	<b>Technology</b>	<b>Rate of Interest (%)</b>
	Wind, solar rooftop and small PV power plants, grid-connected megawatt scale solar PV plants.	10.00
	Mini-hydel, bagasse based co-generation, biomass based on Rankine cycle (water cooled condenser), biomass based on Rankine cycle (air cooled condenser).	10.50
	MSW to Energy	12.00
<b>Depreciation</b>	<ul style="list-style-type: none"> <li>• 5.38% for the first 12 years and 2.50% for the balance 8 years for MSW to energy plants.</li> <li>• 5.38% for the first 13 years and remaining depreciation spread over the residual useful life of the project for all other technologies.</li> </ul>	
<b>Return on Equity</b>	<ul style="list-style-type: none"> <li>• 16% per annum for MSW to energy projects.</li> <li>• 14% with tax on RoE as a pass-through for all other technologies.</li> </ul>	
<b>Interest on Working Capital</b>	<b>Technology</b>	<b>Rate of Interest (%)</b>
	Wind, solar rooftop and small PV power plants, grid-connected megawatt scale solar PV plants.	11.00
	Mini-hydel, bagasse based co-generation, biomass based on Rankine cycle (water cooled condenser), biomass based on Rankine cycle (air cooled condenser).	11.50
	MSW to Energy	12.50
<b>Specific Fuel Consumption</b>	<b>Technology</b>	<b>Value (kg/kWh)</b>
	Bagasse based co-generation plant.	1.60
	Biomass based on Rankine cycle (water cooled condenser).	1.21
	Biomass based on Rankine cycle (air cooled condenser).	1.18

Fuel Cost	Technology	Cost (Rs./MT) FY 2018-19
	Bagasse based co-generation plant	1,039.00
	Biomass based on Rankine cycle (water cooled condenser).	2,500.00
	Biomass based on Rankine cycle (air cooled condenser).	2,500.00

## OTHER PROVISIONS

Tariff structure and design	Generic, single part, levelised tariff.
Merit Order Despatch principle	Mini-hydel, wind.
Subsidy or/and incentives by government	Not available
Rebate	Not available
Late payment surcharge	Not available
Links	<a href="http://www.karnataka.gov.in/keerc/Pages/Generic%20Tariff%20Orders.aspx">http://www.karnataka.gov.in/keerc/Pages/Generic%20Tariff%20Orders.aspx</a>
References	<a href="http://www.karnataka.gov.in/keerc/Documents/BF%20Tariff%20Order%202018.pdf">http://www.karnataka.gov.in/keerc/Documents/BF%20Tariff%20Order%202018.pdf</a> <a href="http://www.karnataka.gov.in/keerc/Miscellaneous%20Orders%20%202018/Orders%20-%202018/Determination%20of%20tariff%20and%20other%20norms%20in%20respect%20of%20new%20Solar%20Power%20Projects.pdf">http://www.karnataka.gov.in/keerc/Miscellaneous%20Orders%20%202018/Orders%20-%202018/Determination%20of%20tariff%20and%20other%20norms%20in%20respect%20of%20new%20Solar%20Power%20Projects.pdf</a> <a href="http://www.karnataka.gov.in/keerc/Miscellaneous%20Orders%20%202018/Orders%20-%202018/Generic-Tariff-for-Wind-Power-Project-2018.pdf">http://www.karnataka.gov.in/keerc/Miscellaneous%20Orders%20%202018/Orders%20-%202018/Generic-Tariff-for-Wind-Power-Project-2018.pdf</a> <a href="http://www.karnataka.gov.in/keercold/Downloads/COURT-ORDERS-2016/MSW_FINAL_Order-OP_20_2016-19_09_2016.pdf">http://www.karnataka.gov.in/keercold/Downloads/COURT-ORDERS-2016/MSW_FINAL_Order-OP_20_2016-19_09_2016.pdf</a>