

## Karnataka Renewable Energy Tariff Orders (Consolidated)

### HIGHLIGHTS

Tariff Period	Technology	No. of Years
	Wind	Not available
	Mini-hydel	35
	Bagasse based co-generation.	20
	Biomass-based on Rankine cycle (water-cooled condenser).	20
	Solar rooftop and small PV power plants, grid-connected megawatt-scale solar power plants.	25
Control Period	Technology	Period
	Wind	1 April 2019 to 31 March 2020.
	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).	1 April 2018 to 31 March 2021.
	MSW to Energy	19 September 2016 to 31 March 2019.

<b>Useful Life of a Plant</b>	<b>Technology</b>	<b>No. of Years</b>
	Wind, solar rooftop and small PV power plants and 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, FY 2019-20		3.08
	Solar rooftop PV projects of 1 kW to 2000 kW	Without capital subsidy	3.07
		With capital subsidy	2.32
	Domestic consumer 1 kW to 10 kW	Without capital subsidy	3.99
		With capital subsidy	2.97
	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).	45000.00
	Grid-connected megawatt-scale solar PV plants (Rs.Lakh/MW).	340.00
	1 kW to 2000 kW SRTPV non-domestic consumer (Rs./kW).	32800.00
	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 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 (1 <sup>st</sup> 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.	10.50
	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> <li>- 5.81% for ground-mounted and 5.38% for SRTPV for the first 13 years.</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 a tax on RoE as a pass-through for all other technologies.</li> <li>- 14% of RoE on equity amount of project.</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.	11.50
	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/kerel/Pages/Generic%20Tariff%20Orders.aspx">http://www.karnataka.gov.in/kerel/Pages/Generic%20Tariff%20Orders.aspx</a> <a href="http://www.karnataka.gov.in/kerel/Miscellaneous%20Orders%202018/Forms/AllItems.aspx?RootFolder=%2Fkerel%2FMiscellaneous%20Orders%202018%2FOrders%20-%202018&amp;FolderCTID=0x0120002933890377E5CF48AAB0FF7E90C1F7C6&amp;View=%7BD6DAD114-C388-4A03-A65C-C864ED3A6CF1%7D&amp;InitialTabId=Ribbon%2FDocument&amp;VisibilityContext=WSSSTabPersistence">http://www.karnataka.gov.in/kerel/Miscellaneous%20Orders%202018/Forms/AllItems.aspx?RootFolder=%2Fkerel%2FMiscellaneous%20Orders%202018&amp;FolderCTID=0x0120002933890377E5CF48AAB0FF7E90C1F7C6&amp;View=%7BD6DAD114-C388-4A03-A65C-C864ED3A6CF1%7D&amp;InitialTabId=Ribbon%2FDocument&amp;VisibilityContext=WSSSTabPersistence</a>
References	<a href="http://www.karnataka.gov.in/kerel/Documents/RF%20Tariff%20Order%202018.pdf">http://www.karnataka.gov.in/kerel/Documents/RF%20Tariff%20Order%202018.pdf</a> <a href="http://www.karnataka.gov.in/kerel/Miscellaneous%20Orders%202018/Orders%20-%202018/Determination%20of%20tariff%20and%20other%20norms%20in%20respect%20of%20new%20Solar%20Power%20Projects.pdf">http://www.karnataka.gov.in/kerel/Miscellaneous%20Orders%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/kerel/Miscellaneous%20Orders%202018/Generic-Tariff-for-Wind-Power-Project-2018.pdf">http://www.karnataka.gov.in/kerel/Miscellaneous%20Orders%202018/Generic-Tariff-for-Wind-Power-Project-2018.pdf</a> <a href="http://www.karnataka.gov.in/kerel/Downloads/COURT-ORDERS-2016/MSW_FINAL_Order-OP_20_2016-19_09_2016.pdf">http://www.karnataka.gov.in/kerel/Downloads/COURT-ORDERS-2016/MSW_FINAL_Order-OP_20_2016-19_09_2016.pdf</a> <a href="https://www.karnataka.gov.in/kerel/Documents/Dated%2019.12.2018-%20Revision%20of%20tariff%20in%20respect%20of%20solar%20Rooftop%20-%20201%20to%2010KW-Order.pdf">https://www.karnataka.gov.in/kerel/Documents/Dated%2019.12.2018-%20Revision%20of%20tariff%20in%20respect%20of%20solar%20Rooftop%20-%20201%20to%2010KW-Order.pdf</a> Solar Tariff order FY2019-20 Dated: 2019-08-19 <a href="https://www.karnataka.gov.in/kerel/Documents/Determination%20of%20tariff%20in%20respect%20of%20Solar%20Power%20Projects%20including%20Solar%20Rooftop%20Photovoltaic%20Projects%20for%20FY20.pdf">https://www.karnataka.gov.in/kerel/Documents/Determination%20of%20tariff%20in%20respect%20of%20Solar%20Power%20Projects%20including%20Solar%20Rooftop%20Photovoltaic%20Projects%20for%20FY20.pdf</a>

\*Karnataka does not have technology-wise regulations. Data from different orders have been compiled in this summary.