

ODISHA ELECTRICITY REGULATORY COMMISSION

Sou-motu proceeding for finalization of Generic tariff of Renewable Energy Sources including Co-generation for the Second Control Period from 2013-14 to 2017-18

Sl. No.	Description	Summary
1.	Title	OERC (Sou-motu proceeding for finalization of Generic tariff of Renewable Energy Sources including Cogeneration for the second control period from 2013-14 to 2017-18)
GENERAL PRINCIPLES		
2.	Control Period and Review Period	<ul style="list-style-type: none"> ➤ 3 financial years for all the RE technology projects except for Small Hydro Electric Projects (SHP) for which the control period shall be of five years. ➤ First year of the Control Period shall commence from the beginning of FY 2013-14 ➤ The tariff determined for the RE projects, commissioned during the Control Period, shall continue to be applicable for the RE projects for the entire duration of the Tariff Period. ➤ In case of Solar PV and Solar thermal projects the benchmark cost may be reviewed by the Commission annually.
3.	Project Specific Tariff	<p>The project specific tariff, on case to case basis, within the ceiling tariff shall be determined for the following types of projects in case there is any filing before the Commission:</p> <ul style="list-style-type: none"> (i) Small Hydro Projects (ii) Municipal Solid Waste to Energy Projects (iii) Solar PV and Solar Thermal Power projects. (iv) Hybrid Solar Thermal Power plants (v) Any other new renewable energy technologies approved by MNRE in future.
4.	Petition and Proceedings for Determination of Tariff	As per Regulations
5.	Tariff Structure	<ul style="list-style-type: none"> ➤ The tariff for renewable energy technologies, viz. Wind, Solar, SHP having no fuel component, shall be single-part tariff with one component consisting of the following fixed components: <ul style="list-style-type: none"> (i) Return on equity, (ii) Interest on loan capital, (iii) Depreciation, (iv) Interest on working capital, (v) Operation and maintenance expenses. ➤ Provided that for renewable energy technologies viz. Biomass power projects and non-Fossil fuel based Co-generation projects having fuel cost component, there shall be single-part tariff with two components, i.e. fixed cost component and fuel cost component. ➤ Taxes shall be reimbursed at actual as per audit report.
6.	Tariff Design	<ul style="list-style-type: none"> ➤ The generic tariff shall be determined on levellised basis, except for Biomass and non-Fossil fuel based Co-generation technologies, for the useful life of the plant, as specified in the order. ➤ Provided that for renewable energy technologies like Biomass and non-Fossil fuel based Co-generation having single-part tariff with two components, levellised tariff is calculated by carrying out levellisation over useful life of each technology considering the discount factor only for the fixed component of the tariff. ➤ 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'.

7.	Subsidy/ Incentive by the Government of India/State Govt.	The Commission shall take into consideration any incentive or subsidy offered by the Government of India/State Govt. including accelerated depreciation benefit if to be availed by the developer for the renewable energy power plants while determining tariff.
8.	Dispatch Principles for Electricity Generated from Renewable Energy Sources	<ul style="list-style-type: none"> • All renewable energy power plants except Biomass power plants and non-Fossil fuel based Co-generation plants with installed capacity of 10 MW and above, shall be treated as 'MUST RUN' power plants and not subject to 'merit order dispatch' principles. • RE power projects shall be subject to scheduling and dispatch code as specified under the Odisha Grid Code (OGC) / Indian Electricity Grid Code (IEGC) with amendments.
9.	Interconnection Point	<p>'Inter-connection Point' shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be. The interconnection point for different voltage level shall be as follows:</p> <ul style="list-style-type: none"> (i) For Rooftop based solar installations upto 100 kW projects, the point of interconnection should be at 400 volts of DISCOM network. (ii) For all renewable generations of more than 100 kW and less than 5 MW projects the point of interconnection should be at 11 kV of 33/11 kV substation of DISCOM network. (iii) For all renewable generations of 5 MW and up to 25 MW projects, the point of interconnection should be at 33 kV of either 33/11kV substation of DISCOM or 132/33 kV substation of OPTCL whichever is nearer. (iv) For all renewable generations of more than 25 MW projects the point of interconnection should be at 132 kV of 132/33 or 220/132 kV substation of OPTCL network whichever is nearer. <ul style="list-style-type: none"> ➤ The project developer may construct the dedicated line upto the nearest point of DISCOM or OPTCL network as the case may be and such line would be treated as deemed transmission line or deemed distribution line. ➤ The capital cost on account of such construction and losses are to be equally shared by the project developer and the OPTCL or DISCOM as the case may be. ➤ Metering to be at both ends of generation and Licensee side.
10.	Eligibility Criteria for RE Projects	<ul style="list-style-type: none"> a) Wind: The wind power projects set up at the site approved by Centre for Wind Technology , Government of India / Orissa Renewable Energy Development Agency(OREDA) and have not opted for the pricing mechanism under the REC mechanism are eligible for getting the generic tariff under these norms. b) SHP: The SHP projects identified / approved by the Engineer in Chief, Electricity – cum Principal Chief Electrical Inspector, Government of Orissa with installed capacity of 25 MW or below which are commissioned during the control period and have not opted for the tariff under the REC mechanism are eligible for getting the generic tariff under these norms. c) Biomass Power projects The Biomass power projects based on Rankine cycle technology application using water cooled condenser using Biomass fuel sources are eligible for getting the generic tariff under these norms. Provided that the use of Fossil fuel in such projects is restricted to 15% of total fuel consumption on annual basis as proposed by Ministry of New and Renewable Energy (MNRE), Government of India and the projects should not have opted for the pricing mechanism under the REC mechanism d) Non-fossil fuel based Cogeneration projects A project shall qualify to be termed as a Co-generation project, if it is in accordance with the definition specified by the Ministry of Power, Government of India and also meets the qualifying requirement outlined below:

		<ul style="list-style-type: none"> Topping cycle mode of Co-generation – Any facility that uses non-Fossil fuel input for the power generation and also utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously. For the Co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half the useful thermal outputs is greater than 45% of the facility's energy consumption, during season. Provided such projects should not have opted for the pricing mechanism under the REC mechanism. e) Solar PV and Solar Thermal projects The Solar power technologies (PV & Thermal) approved by MNRE and connected to 33 kV or above voltage level shall be eligible for getting the generic tariff under these norms. 																												
11.	Water Royalty Charges (in case of SHP)	Water royalty charges shall not be internalised in tariff. However, the actual amount of water royalty charges as levied by the Govt. of Orissa shall be allowed as pass through component.																												
12.	RE Technology-wise Project Life/ Tariff Period	<p>Details of RE Technology-wise Useful life/ Tariff period considered for levelled. Tariff calculation is given in the following table:</p> <table border="1"> <thead> <tr> <th>S.No.</th> <th>Technology</th> <th>Useful Life (Years)</th> <th>Tariff period (Years) (From COD)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Wind</td> <td>25</td> <td>13</td> </tr> <tr> <td>2</td> <td>SHP a. Below 5MW b.From 5 to 25 MW</td> <td>35 35</td> <td>35 25</td> </tr> <tr> <td>3</td> <td>Biomass</td> <td>20</td> <td>13</td> </tr> <tr> <td>4</td> <td>Non-fossil fuel based Co-generation</td> <td>20</td> <td>13</td> </tr> <tr> <td>5</td> <td>Solar PV</td> <td>25</td> <td>25 (split for 12 and 13 yrs)</td> </tr> <tr> <td>6</td> <td>Solar Thermal</td> <td>25</td> <td>25 (split for 12 and 13 yrs)</td> </tr> </tbody> </table>	S.No.	Technology	Useful Life (Years)	Tariff period (Years) (From COD)	1	Wind	25	13	2	SHP a. Below 5MW b.From 5 to 25 MW	35 35	35 25	3	Biomass	20	13	4	Non-fossil fuel based Co-generation	20	13	5	Solar PV	25	25 (split for 12 and 13 yrs)	6	Solar Thermal	25	25 (split for 12 and 13 yrs)
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13.	Monitoring Mechanism for the use of Fossil fuel	As per Regulations																												
14.	Compliance Monitoring	OREDA/GEDCOL to be responsible for monitoring compliance of Biomass/non-fossil fuel based co-generation projects with the norm specified.																												
15.	Financial Parameters																													
i.	Capital Cost	<ul style="list-style-type: none"> Norms for the Capital Cost as specified in the technology specific sections to be inclusive of all capital work including plant and machinery, civil work, erection and commissioning, financing and interest during construction, and evacuation infrastructure up to inter-connection point. For project specific tariff determination, the generating company to submit the break-up of capital cost items along with its petition. 																												
ii.	Capital Cost Indexation Mechanism	To follow the Capital cost indexation mechanism for respective technology as provided in the CERC (Terms and conditions for tariff determination from Renewable Energy Sources) Regulations, 2012 dated 06.02.2012.																												
iii	Debt-Equity Ratio	<p>For determination of generic tariff, debt-equity ratio shall be 70: 30. For project specific tariff, the following provisions shall apply:</p> <ul style="list-style-type: none"> If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan. Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff; Provided further that the equity invested in foreign currency shall be denominated/ designated in Indian rupees on the date of each investment 																												

iv	Loan and Finance Charges	<ul style="list-style-type: none"> • For the purpose of determination of tariff, loan tenure of 12 years is considered. • Loans arrived at in the manner indicated above to be considered as gross normative loan for calculation of interest on loan. • Normative interest rate considered for the purpose of computation of tariff is based on the Base Rate (Advance rate) specified by State Bank of India (SBI) during the first six months of the previous year plus 300 basis points. • Notwithstanding any moratorium period 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.
v	Depreciation	<ul style="list-style-type: none"> • The salvage value of the asset shall be considered as 10% and depreciation allowed up to maximum of 90% of the Capital Cost of the asset • Annual Depreciation shall be based on 'Differential Depreciation Approach' using 'Straight Line Method' over two distinct periods comprising loan tenure and period beyond loan tenure over useful life. • Depreciation rate for the first 12 years of the Tariff Period to be 5.83% per annum and the remaining spread over the remaining useful life of the project from 13th year onwards. • Depreciation to be chargeable from the first year of commercial operation. • Provided that in case of commercial operation of the asset for part of the year, depreciation shall be charged on pro rata basis
vi	Return on Equity	<ul style="list-style-type: none"> • The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination) • The normative Return on Equity shall be 16%
vii	Interest on Working Capital	<p>Working Capital in respect of Wind energy projects, small Hydro power, Solar PV and Solar thermal power projects shall be computed as under:</p> <ul style="list-style-type: none"> • Operation & Maintenance expenses for one month; • Receivables equivalent to 2 (Two) months of energy charges for sale of electricity calculated on the normative Capacity Utilisation Factor (CUF); • Maintenance spare @ 15% of operation and maintenance expenses <p>The Working Capital requirement in respect of biomass power projects and non-fossil fuel based co-generation projects shall be computed as under:</p> <ul style="list-style-type: none"> • Fuel costs for four months equivalent to normative Plant Load Factor <ul style="list-style-type: none"> • Operation & Maintenance expense for one month; • Receivables equivalent to 2 (Two) months of fixed and variable charges for sale of electricity calculated on the target PLF; • Maintenance spare @ 15% of operation and maintenance expenses <p>Interest on Working Capital is determined on the basis of Base Rate specified by State Bank of India prevalent during the first six months of the previous year plus 350 basis points.</p>
16.	Operation & Maintenance Expenses	<p>O&M expenses shall comprise of repair and maintenance (R&M), establishment including employee expenses and administrative and general expenses.</p> <p>Operation and maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified under this tariff order for the first Year of Control Period (FY 2013-14) with escalation at the rate of 5.72% per annum over the Tariff Period.</p>
17.	Sharing of CDM Benefits	<p>The proceeds of carbon credit from approved CDM projects shall be shared between generating company and concerned beneficiaries in the following manner:</p> <ol style="list-style-type: none"> (i) 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; (ii) 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 between the generating company and the beneficiaries.

18.	Benefit under Income Tax Act	<ul style="list-style-type: none"> ➤ For the purpose of tariff determination of RE sources, assessment of benefit towards accelerated depreciation as per relevant provisions under Income Tax Act and Corporate Income Tax rate has been calculated on the normative capital cost approved in the order for each RE technology. ➤ Accelerated depreciation has been calculated for each RE technology based on the existing corporate tax rate, surcharge and education cess. ➤ The benefit of accelerated depreciation shall be taken into consideration for Project Developers opting for the scheme and such benefits shall be internalized in the applicable generic tariff i.e. the effective tariff in such cases shall be equal to the difference between the applicable generic tariff and the benefit accruing on account of accelerated depreciation. <p>For determination of net depreciation benefit refer Regulations</p>				
RE Technology – wise Specific Parameter						
19.	Technology Specific Parameters for Wind Power Projects	<p>Capital cost: Rs.575 Lakhs/MW, during the first year of the control period (2013-14) Capacity Utilization Factor ; 19 %. O&M expenses : Rs.9 Lakh per MW .during (FY 2013-14) with escalation at 5.72% per annum. Net Levellized Tariff: 4.76 Rs./kWh</p> <p>For more details refer Appendix 1 of Regulations</p>				
20.	Technology Specific Parameters for Small Hydro projects (SHP)	<p>Capital cost: During Control Period, below 5 MW – Rs. 600Lakhs/MW 5 MW to 25 MW- Rs. 550/Lakhs /MW Capacity Utilization Factor ; 35 %. O&M expenses : during the first year of the control period below 5 MW – Rs. 20Lakhs/MW 5 MW to 25 MW- Rs. 14/Lakhs /MW with escalation at 5.72% per annum. Auxiliary Consumption: 1.0%. Net Levellized Tariff: below 5 MW – Rs. 3.46/kWh 5 MW to 25 MW- Rs. 3.14/kWh</p> <p>For more details refer Appendix 2 of Regulations</p>				
21.	Technology Specific Parameters for Biomass Projects based on Rankine Cycle Technology and using water cooled condenser	<p>Capital cost: Rs.445 Lakhs/MW. - during the control period Plant Load Factor-for determining generic tariff i) During stabilization 60% ii) During the remaining period of the 1st year (after stabilization) 70% iii) From 2nd year onwards 80% Auxiliary Consumption: 10.0 %. O&M expenses Rs.24 Lakh per MW.during (FY 2013-14) with escalation at 5.72% per annum. Station Heat Rate: 3800 kCal/kWh. Gross Calorific Value: 3300 kCal/kg Fuel Price: Rs.2316/ MT(Biomass) & to be revised after the control period Use of Fossil Fuel: 15% of total fuel consumption on annual basis Net Levellized Tariff: Rs. 4.75 /kWh, The variable component to be reviewed after the control period</p> <p>For more details refer Appendix 3 of Regulations</p>				
22.	Technology Specific Parameters for Non-fossil fuel based Co-generation Projects	<p>Capital cost: Rs.420 Lakh/MW. - during the control period Plant Load Factor-for determining generic tariff</p> <table border="1" data-bbox="509 1703 1235 1801" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Operating Days</td> <td style="width: 40%;">Plant Load factor</td> </tr> <tr> <td>150 days (crushing) + 60 days (off season) = 210 operating days</td> <td style="text-align: center;">53%</td> </tr> </table> <p>Auxiliary Consumption: 8.5 %.</p>	Operating Days	Plant Load factor	150 days (crushing) + 60 days (off season) = 210 operating days	53%
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		<p>O&M expenses Rs.16 Lakh per MW...during (FY 2013-14) with escalation at 5.72% per annum. Station Heat Rate: 3600 kCal/kWh. Gross Calorific Value: 2250 kCal/kg Fuel Price: Rs.1583/MT (Baggase) & to be revised after the control period Use of Fossil Fuel: 15% of total fuel consumption on annual basis Net Levellized Tariff: Rs. 4.77 /kWh, The variable component to be reviewed after the control period</p> <p style="text-align: center;">For more details refer Appendix 4 of Regulations</p>
23.	Technology Specific Parameters for Solar PV Power Projects	<p>Capital cost: Rs.900 Lakh/MW , during the first year of control period (2013-14) Capacity Utilization Factor ; 19 %. O&M expenses : Rs10 Lakh per MW.during (FY 2013-14) with escalation at 5.72% per annum. Net Levellized Tariff: First 12 yrs- Rs. 9.15 /kWh Next 13 yrs - Rs. 6.81 /kWh</p> <p>For more details refer Appendix 5 of Regulations</p>
24.	Technology Specific Parameters for Solar Thermal Power Projects	<p>Capital cost: Rs.1300 Lakh/MW , during the first year of control period (2013-14) Capacity Utilization Factor ; 23%. Auxiliary Consumption: 10.0 %. O&M expenses : Rs.15 Lakh per MW .during (FY 2013-14) with escalation at 5.72% per annum. Net Levellized Tariff: First 12 yrs- 7.84Rs./kWh Next 13 yrs - 5.47 Rs./kWh</p> <p>For more details refer Appendix 5 of Regulations</p>
25.	Subsidy or Incentive by Central / State Govt.	Commission to take into account any incentive or subsidy by Central or State Govt. including accelerated depreciation benefit if availed by Developer and such benefits shall be passed on to the consumers of the State.
26.	Rebate	<p>(i) 2% for payment through LC or cash within two working days (ii) Payment by a mode other than LC but within one month of presentation of bill, rebate of 1%.</p>
27.	Late Payment Surcharge	For payment delayed beyond 60 days, surcharge @ 1.25% per month