

**ODISHA ELECTRICITY REGULATORY COMMISSION
BIDYUT NIYAMAK BHAWAN
PLOT NO.-4, CHUNOKOLI, SHAILASHREE VIHAR
BHUBANESWAR - 751 021**

*** ** **

**Present: Shri G. Mohapatra, Officiating Chairperson
Shri S. K. Ray Mohapatra, Member**

Case No. 94/2023

IN THE MATTER OF: Suo-Motu Proceeding for Determination of Generic Tariff and norms in respect of Renewable Power Projects in the State of Odisha for fourth Control Period i.e. from FY 2023-24 to FY 2025-26.

IN THE MATTER OF :

OERC represented by Director (Regulatory Affairs)

..... **Petitioner.**

Vs

1. The Additional Chief Secretary, Department of Energy, Govt. of Odisha.
2. Grid Corporation of Orissa Ltd (GRIDCO)
3. Jindal Steel & Power Ltd
4. Indravati Power Private Ltd
5. Sideshwari Power Generation Pvt. Ltd
6. Power Tech Consultants.
7. ICMAI-Bhubaneswar Chapter.
8. Orissa Power Transmission Corporation Ltd. (OPTCL).
9. Chief Load Despatcher, SLDC
10. Chief Executive Officer, TPNODL.
11. Chief Executive Officer, TPWODL.
12. Chief Executive Officer, TPCODL.
13. Chief Executive Officer, TPSODL.
14. Orissa Renewable Energy Development Agency (OREDA).
15. Orissa Hydro Power Corporation Ltd. (OHPC).
16. Orissa power Generation Corporation.

..... **Respondents**

For Petitioner: Priyabrata Patnaik, Dir (RA), OERC the designated petitioner,

For Respondents: Shri Bibhu Charan Swain, the authorized representative on behalf of M/s. Jindal Steel & Power Limited, M/s. Indravati Power Pvt. Ltd., M/s. Power Tech Consultant, and for M/s. Sidheshwari Power Generation Ltd. along with Shri Biswanath Samantray, Shri Ramesh Chandra Patra, Secretary, ICMAI, Bhubaneswar Chapter, Shri Ritupurna Mansingh, DGM (Elect.),

Ms. Shaswati Mohapatra, Manager (RE) & Shri Subhankar Prusty, Dy. Manager (RE) on behalf of GRIDCO Ltd., the Representative of Department of Energy, Government of Odisha, the Representative of SLDC, the Representative of OPTCL, Shri Haresh Satpathy, Addl. G.M., M/s. OPGC Ltd., Ms. Sasmita Patjoshi, Joint Director, OREDA, Shri K.C. Nanda, G.M (Regulatory Affairs& Strategy), TPWODL, Ms. Malanch Ghose, DGM (RA) & Shri Pratap Mohanty, Sr.GM (Risk, Regulatory, Legal), TPNODL, Shri V. Wagle, Head Regulatory Affairs, TPSODL for self & on behalf of TPCODL, the Representative of OHPC Ltd.

ORDER

Date of hearing: 07.11.2023

Date of order: 04.12.2023

In exercise of the powers vested under Section 86(1)(e), 61(h) and 62(a) of the Electricity Act, 2003 (Act 36 of 2003), read with National Electricity Policy, the Tariff Policy, the Commission has initiated this Suo-Motu Proceeding for Determination of Generic tariff and norms in respect of Renewable Power Projects in the State of Odisha for fourth Control Period i.e., from FY 2023-24 to FY 2025-26.

Background.

2. Large-scale integration of generation from Renewable Energy Source has increased their share in the generation mix. The cost per unit of RE power has come down drastically from about Rs.15 per unit to less than Rs.3 per unit due to improvement in technology, reduction in cost of raw material and competition. The procurement of RE power through competitive bidding route is the order of the day which has helped in reducing the cost of solar & wind power. One of the mandates of the State Electricity Regulatory Commission is to promote generation of electricity in the State from Renewable Energy (RE) Sources which is enshrined in Section 86(1) (e) of the Electricity Act, 2003. Accordingly, the Odisha Electricity Regulatory Commission has been promoting electricity generation from Renewable Energy (RE) Sources by providing norms for determination of their generic tariff for different control periods. OERC has been fixing these operational and financial norms in advance for different control periods since the year 2005. This approach of the Commission has created an enabling environment for investment in Renewable Energy (RE) projects in the State. It gives predictability to the tariff for generation from RE sources assuring the investors to get a reasonable return on their investments.

Further, the new Tariff Policy dated 28.01.2016, issued by the Government of India (GoI), envisages that, all the future procurements of renewable energy (except from waste to energy plants) shall be made only through competitive bidding, as per the bidding guidelines issued by the GoI. Pursuant to the said Policy, the Government of India had issued the Bidding Guidelines on 3rd August, 2017, duly prescribing the standard bidding documents along with Models for Request for Selection (RfS), Power Purchase Agreement (PPA), Power Sale Agreement (PSA)

etc., to facilitate power procurement by the DISCOMs. The bidding guidelines are being amended from time to time.

Government of Odisha has taken proactive steps on this matter and has issued Odisha Renewable Energy Policy, 2022 (OREP) on 30.11.2022 extending number of to give impetus to the development of RE sources within the State of Odisha. The main objectives of the policy are to harness the Renewable Energy (RE) potential within the State of Odisha and accelerate investment in the RE sector for ensuring energy security, promoting socio-economic growth, protecting the environment, generating employment and supporting the Government of India RE target of 500 GW by 2030. The Policy would remain in force till 31/03/2030. The Policy 2022 states that the selection of projects under intra-state category shall be primarily through a competitive bidding process. The generic tariff determined by the Commission being the benchmark, as per the requirement of DISCOMs in the State to fulfil the RPO target fixed in the Renewable Policy. The Commission is required to determine the generic tariff effective from 01.04.2023 for Small Hydro Plants, Biomass Plants and all wind projects awarded under RE Policy 2022.

Therefore, a discussion paper was floated by the Odisha Electricity Regulatory Commission in exercise of the powers conferred under Sections 61(h), 62(1)(a), and 86(1)(e) of the Electricity Act, 2003 and under the provisions of National Electricity Policy and all the other enabling powers in this regard.

3. The Commission in its Order in Case No. 46 of 2018 (Suo Motu) dated 16.02.2019 had approved the levelized generic tariffs applicable to the projects commissioned during the control period FY 2018-19 to FY 2020-21. The control period for all RE technologies except SHEP was envisaged from FY 2018-19 to FY 2020-21 and for SHEP the control period was upto FY2022-23. The tariff so determined would not undergo any change for the entire tariff period of that project (except for variable component as in case of Biomass and Bagasse-based Co-generation). The generic tariff of the renewable technologies indicated in these Regulations is the upper limit and GRIDCO may negotiate with Developer for lower norms.
4. As per Section 61(a) of the Electricity Act,2003, the State Commission is guided by the Regulations issued by the CERC in the matter of Transmission and Generation tariff. Hence, for the purpose of determining the generic tariff of relevant RE sources, the guidelines of CERC RE Regulations, 2020 has been taken into consideration.
5. The Commission initiated proceeding to finalize the generic tariff order in respect of the Renewable Energy (RE) power projects in the State of Odisha for the current control period FY 2023-24 to FY 2025-26.

6. The generic tariff shall be determined by the Commission on annual basis in accordance with these Regulations for the following types of renewable energy projects:

- a. Small hydro project;
- b. Biomass power project with Rankine cycle technology;
- c. Non-fossil fuel based Co-generation project;
- d. Biomass gasifier based power project; and
- e. Biogas based power project

The generic tariff determined for a RE project (commissioned during a control period) shall remain valid for the tariff period (i.e useful life of the project).

7. Project Specific Tariff shall be determined by the Commission on case-to-case basis, for the following types of renewable energy projects:

- i) Solar PV power projects, floating solar projects and solar thermal power projects;
- ii) Wind power projects (both on-shore and off-shore);
- iii) Biomass gasifier-based power projects and Biogas-based power projects – if a project developer opts for project specific tariff;
- iv) Municipal Solid Waste-based power projects and refuse derived fuel-based power projects;
- v) Renewable hybrid energy projects;
- vi) Renewable energy with storage projects; and
- vii) Any other project based on new renewable energy sources or technologies approved by MNRE.

Financial and operational norms specified in these regulations, except for capital cost shall be the ceiling norms or upper limit while determining the project specific tariff.

8. The opinion/ suggestions/ objections received from the Respondent-GRIDCO are summarized below:

- a) Control Period: The Control Period for RE Power Projects shall be three (3) years except for Small Hydro Projects.
- b) Eligibility Criteria for Biomass Power Projects: The use of fossil fuel would not be allowed for the biomass power projects which are commissioned during the control period FY 2023-24 to FY 2025-26. However, projects which were commissioned or PPA was signed with GRIDCO on or before 31.03.2018 would be allowed to use fossil fuel up to 15 % of the total fuel consumption on annual basis as per the generic order issued by the Commission in Case No 46 of 2018.

- c) Interest on Working Capital: Interest rate should be State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one year tenor) prevalent during the last available six month plus 200 basis points or actual interest rate whichever is lower.
- d) Tariff for Wind Power Projects: The procurement of wind power should be based on generic tariff to attract investment in wind energy in the state in line with the provisions of Odisha Renewable Energy Policy, 2022 (OREP). For the initial 3 to 4 years, in absence of past data for first 3 years from the wind power projects may be considered for determination of their Tariff. In the meanwhile, the developer may be entitled for a provisional tariff with approval of Hon'ble Commission.
- e) Capacity Utilization Factor (CUF) of Wind Power Projects: Normative CUF for wind power projects should be more than 25% as indicated in India's Wind Potential Atlas released by NIWE in June 2023.
- f) Capacity Utilization Factor (CUF) of Small Hydro Projects: The Annual Design Energy Generation capacity of the SHEPs is much more than 30 % CUF. Any excess power beyond normative CUF in a Financial Year may be supplied free of Cost. Similarly, any less generation from normative CUF may be due to deficit in rain or Grid unavailability may be compensated from the excess generation (beyond the normative CUF) in the succeeding Financial Years.
- g) Biomass Power Projects: Generic tariff may be determined by the Commission for Biomass Power Projects in the State.
- h) Municipal Solid Waste based projects: There is need of a generic tariff for sourcing power from MSW plants in Odisha, in line with Odisha Renewable Energy Policy, 2022 keeping in view the fact that there are less number of operational MSW based Waste to Energy plants in the country and no such plant so far in the state.
- i) Comparison with RE tariff order 3rd control period (46/2018) and CERC RE tariff order 2023: Financial & technical parameters considered in the discussion paper are same as those considered for 'other states' category (roughly 18 states) in CERC RE order 2022-23. However, financial and technical parameters vary from state to state depending upon geological and geographical conditions. Therefore, parameters in determining generic tariff should be taken with due consideration of factors generic to the state of Odisha.
Tariff of Rs 5.76/5.84 per unit for SHEPs is quite high in the backdrop of competitive power market in India.

9. The opinion/ suggestions/ objections received from the Respondent- M/s Indravathi Power Private Ltd are summarized below:

- a) Per MW Project Cost & levelized tariff for small hydro projects below 5 MW: The Commission should increase the Per MW project cost and levelized tariff of SHEP below 5 MW in the same ratio of SHEP of 5-25 MW as the Commission has considered both on similar grounds in OERC case no 80 of 2013 and case no 46 of 2018.
- b) Project life / Useful life of Small Hydro Electric Projects: The useful life of small hydro electric projects may be reduced to 35 years as shorter project life is anticipated considering the rapid climate change, limited water availability in future. Further, Commission has considered 35 years as the useful life of projects in the previous control period.
- c) Interest rate on Term Loan: The interest rate on term loan & working capital should be increased considering the rising inflation rates, changing market conditions and increase rate of interest by FIIs and Banks recently.
- d) O&M Cost Escalation: The O&M cost escalation rate for SHEPs may be kept at 5.72 % considering the increased rate of labour, equipment upgrades, enhanced environmental compliance measures, fluctuation in price in spare parts, maintenance materials and availability of skilled labour.
- e) Capital Cost of SHEPs: The project capital cost of SHEPs has increased or is in an increasing trend as the time progresses due to increase cost of land, labour, plant machinery and cost of power evacuation infrastructure. Accordingly, the Commission may determine the capital cost of SHEP and hence determine the generic tariff for Renewable power projects so as that the tariff arrived will be viable for the project developer to install RE projects in Odisha.

10. The opinion/ suggestions/ objections received from the Respondent- M/s Sideshwari Power Generation Pvt Ltd. are summarized below:

- a) **Capital Cost of SHEPs:** The project capital cost of SHEPs has increased or is in an increasing trend as the time progresses due to increase cost of land, labour, plant machinery and cost of power evacuation infrastructure. Therefore, the capital cost of the SHEP may be considered at Rs 13.38 Cr/MW.

11. The opinion/ suggestions/ objections received from the Respondent- M/s Jindal Steel & Power Ltd. are summarized below:

- b) Waste Heat based Power Generation: The Commission The generation from exothermic heat, urban or municipal waste based generation, power generated from co-firing of biomass in coal based thermal power plant and such other sources Waste Heat based power generation should be considered as Renewable Energy Sources accordingly, the Commission may bring guidelines for determination of tariff for generation from such sources.

12. The opinion/ suggestions/ objections received from the Respondent- Odisha Power Generation Corporation (OPGC). are summarized below:

- a) Operational Norms related to PV Projects: The Commission may specify the operational norms for CUF, Annual Deration and Auxiliary Consumption etc for Solar PV projects.
- i) Capacity Utilization factor (CUF) and Annual deration: The Commission has considered 18 % CUF with an Annual Deration of 1.00 % for solar PV projects, in its Order dated 20.06.2012 in Case No 1 of 2012. Further, chapter 3 of Odisha Renewable Policy, 2016 indicates that Odisha experiences an average CUF ranging from 15% to 17% across its district. Therefore, the Commission may notify benchmark CUF and annual deration parameters specifically tailored for Solar PV projects in Odisha thus providing more localized and accurate framework for determination project specific levelized tariff in the region.
 - ii) Auxiliary Consumption: The Commission may notify benchmark Auxiliary Consumption for Solar PV projects.
- b) Rate of Interest on Normative Loan: The normative interest rate considered shall be the average of one-year SBI MCLR for the first six month of the prior year, increased by 200 basis points whereas the interest on loan component has been mentioned as 9.12 %. The Commission may acknowledge this variance for due consideration. Further, the Commission may consider average of one-year SBI MCLR rate prevalent during the last 6 months + 200 basis points for calculation of interest rate instead of average of 1-year SBI MCLR rate prevalent during the first 6 months + 200 basis.
- c) Rebate: The commission may suitably modify the para to bring more clarity on the maximum number of days a rebate of 1% may be allowed. Further, in case of computing ‘5 ‘ days the number of days may be counted consecutively without considering any holiday.

13. The opinion/ suggestions/ objections received from the Respondent- Odisha Hydro Power Corporation (OHPC) are summarized below:

- a) Tariff Fixation: Generic tariff of Floating Solar, Solar Thermal Projects, Wind, Pumpm-Storage, Bio-mass etc for the block period should be fixed by the Commission just like Small Hydro Electric Projects (SHEP). The commission may also prescribe the technical & financial parameters such as CUF, PLF, Capitalization, O&M escalation cost etc for such projects.
- b) Interest rate on Loan: The interest on loan may be considered as normative interest rate of 300 basis point above MCLR at the 1st day of preceding year (one year tenure) of SBI instead of 9.12 % proposed.
- c) Return on Equity: Return of Equity may be considered at post-tax rate of 15 % instead of proposed 14 %.

- d) Discount Factor: The discount factor may be recomputed as 9.28 % for calculation of levelized tariff instead of 8.35 % proposed.
- e) Capital Cost: Capital Cost defined in the proposed regulation may be amended to include capital cost of housing for operating staff, administrative building of generating station, environmental clearance cost and the initial spare cost as they form an integral part of generating station. Further, the Capital Cost for first year of the control period for project below 5 MW and 5 MW to 25 MW may be increased @ 4 % per year as the cost mentioned are of 2022 price level.
- f) O&M Expense: O&M expense for first year of the control period for project below 5 MW may be suitably increased as the cost mentioned are of 2022 price level.
- g) Additional Capitalization: Methodology for incurring additional capitalization during the useful life of the project and recovering it through depreciation may be included in the proposed regulation.
- h) O&M Expense Escalation Rate: The O&M Expense escalation rate may be increased from 3.84% to 5.72 %.
- i) Dispatch principles for electricity generated from Renewable Energy Sources: The regulation pertaining to despatch of electricity may be suitably amended to enable OHPC get 'MUST RUN' status for its plants instead of subjecting them to Merit order despatch' principles.
- j) Definition of Hydro Purchase Obligation (HPO): The definition may be amended to include Pump storage hydro projects along with Large & Small Hydro Projects commissioned after 08.03.2019 for accounting of HPO.
- k) Water cess: Water Cess should not be charged for renewable project as the water is not being consumed.

14. The opinion/ suggestions/ objections received from the Respondent- M/s Power Tech Consultants are summarized below:

- a) Return on Equity: Return of Equity may be suitably increased for the investor to get post tax return of 20 % to attract investment in RE projects in the state.
- b) Interest on Working Capital: The receivables equivalent to 3 months of energy charges for sale of electricity may be considered while computing interest on working capital.
- c) Control Period: The control period for all RE projects including small hydro electric projects should be minimum for 5 years.
- d) Capital Cost: There is no need to mention the capital cost of SHEP as Rs 9.00 Cr /MW as the Commission / State Government has agreed that the capital cost approved by STC vetted by empaneled consultants of state government shall be the capital cost for computation of generic tariff.

- e) Site for Wind Power Projects: Wind power projects may be allowed to establish at the site selected by the project developer and may not be restricted to the site approved by Wind Technology by Government of India/ State Nodal Agency/ Government of Odisha.
- f) Cooling Technology in Biomass based power project: Biomass based power project on Rankine cycle technology using any type of cooling technology i.e water/ air cooled may be allowed.
- g) Hybrid Renewable Energy Projects: In the determination of Hybrid RE project ,the condition of minimum 25 % of rated of each generator of the other RE may be deleted.
- h) Monitoring Mechanism for the use of fossil fuel: The monthly fuel usage statement and monthly fuel procurement statement to the beneficiaries in case of Biomass & non-fossil fuel-based co-generation power projects may be certified by an Accredited Energy Auditor instead of Chartered Accountant.
- i) Calculation of Capacity Utilization Factor (CUF) and Plant Load Factor (PLF): For calculation of CUF and PLF the number of hours considered may be 8760 instead of 8766.
- j) Dispatch principles for electricity generated from Renewable Energy Sources: All RE projects connected at 11 /33 kV or below may not b subjected to scheduling and dispatch.
- k) Storage Efficiency: The minimum efficiency of 75 % for pump storage-based technology may be relaxed for the current control period as the technology is new and yet to be implemented at ground level. Similarly minimum efficiency of 80 % for solid state battery may also be relaxed for the control period.
- l) Generic Tariff for Mini Hydro Projects (up to 100 kW) and Micro Hydro Projects (between 100 -2000 kW): Government of Odisha, Department of Energy has issued revised policy guidelines for execution of mini/ micro/ small Hydro electric projects by private developer. Accordingly, the Commission may also determine the generic tariff for Mini and Micro Hydro plant.

15. The opinion/ suggestions/ objections received from the Respondent- ICMAI- Bhubaneswar Chapter are summarized below:

- a) Monitoring Mechanism for the use of fossil fuel: The Commission may also allow registered Cost Accounts in the field of cost determination to certify the monthly fuel usage statement and monthly fuel procurement statement to the beneficiaries in case of Biomass & non-fossil fuel-based co-generation power projects.

Commission's view/ Observations

16. General principles for determination of Generic Tariff

The Commission has considered the valuable suggestions of the stakeholders on the discussion paper while deciding the generic tariff of renewable sources. While doing so, the Commission has also relied upon relevant CERC Regulations and Orders. The observations and decisions of the Commission on various issues raised are as follows:

- a) Capital Cost: The Capital cost of the projects is considered to be reasonable considering some of the recently executed SHEP. Further, CERC vide its Order dated 08.09.2023, has extended the applicability of RE Tariff Regulations, 2020 till 31.03.2024 without any increase in Capital cost. The Commission has also not considered any escalation on the Capital Cost of SHEP.
- b) O&M Expense: As suggested by some of the stakeholders, O&M expense has been increased by 3.84 %.
- c) Generic Tariff for Solar PV, Floating Solar & Solar Thermal: Some stakeholders have suggested to determine the generic tariff of such projects. In this connection, the Commission is of the opinion that the generic tariff has lost its relevance as the price discovered through transparent competitive bidding process is expected to be lower. Further, Orisha Renewable Energy Policy, 2022 and New Tariff Policy 2016 outline that development of such projects is to be done through transparent competitive bidding process. Hence, the Commission do not feel any necessity of generic tariff for such projects.
- d) Interest Rate on Term Loan: The interest rate on term loan is quite reasonable keeping in view the prevailing rate of interest on term loan for such projects.
- e) Useful Life of project: The useful life of civil infrastructure of the SHEP is expected to be about 100 years, hence the useful life of plant (40 Years) is quite reasonable.
- f) Return on Equity (RoE): The RoE of 14 % provided for generation projects is in line with OERC Generation Tariff Regulations, 2020.
- g) Capacity Utilization Factor (CUF): The CUF of 30 % considered for SHEP is in line with the norms of CERC which is quite reasonable.

17. Control Period:

The Control Period shall be of three (3) financial years for all RE power projects. First year of the Control Period shall commence from the beginning of FY 2023-24 and shall continue up to the end of financial year 2025-26 except for SHEP. In case of SHEP, the first year of the Control Period shall commence from the beginning of FY 2023-24 and shall continue up to the end of financial year 2027-28.

The tariff determined for the RE projects, commissioned during above Control Period, shall remain unchanged for the RE projects for the entire duration of the Tariff Period.

18. Useful Life and Tariff Period for various RE Technology project

Tariff determined based on the principles enumerated shall be applicable for Renewable Energy power projects commissioned during the control period and shall remain unchanged. Tariff period for renewable energy projects will be same as their Useful Life and tariff period shall be considered from the date of commercial operation of such power projects. The competitive bidding for procurement of RE shall also be made for this duration of tariff period. The Useful life and Tariff period for various RE technology project is given in the following table:

Table - 1

SL. No.	RE Technology	Useful Life (Years)	Tariff period (Years)
1	Wind	25	25
2	SHEP Below 5 MW 5 to 25 MW	40	40
3	Biomass power project with Rankine cycle technology	25	25
4	Non-fossil fuel-based Co-generation Project	25	25
5	Solar PV / Solar Thermal / Floating Solar Project	25	25
6	Municipal Solid Waste based power Project	25	25
7	Renewable hybrid energy project	Minimum of the Useful Life of different RE Technologies combined for Renewable Hybrid Energy Project for Composite Tariff	
8	Renewable energy with storage project	Same as Useful Life of project assuming that there is no storage	

19. Project Specific Tariff

A transparent competitive bidding process shall be the preferred route for selection of the RE project during the control period. However, the project being developed under bidding route /MOU route, the generic tariff so proposed in this Order shall be the ceiling rate/upper limit. The GRIDCO/ DISCOM may negotiate with the project developer through bilateral agreement for lower tariff. However, the project specific tariff, on case-to-case basis, shall be determined by the Commission for the following types of projects in case above entity(ies) approach the Commission as agreed in the PPA:

- i. Solar PV power projects, floating solar projects and solar thermal power projects;
- ii. Wind power projects (both on-shore and off-shore);
- iii. Biomass gasifier-based power projects and biogas-based power projects – if a

- Project developer opts for project specific tariff;
- iv. Municipal Solid Waste (MSW)-based power projects and refuse derived fuel-based power projects;
 - v. Renewable hybrid energy projects;
 - vi. Renewable energy with storage projects; and
 - vii. Any other project based on new renewable energy sources or technologies approved by MNRE.

Provided that the Financial and Operational norms specified in this Order, except for capital cost, shall be the ceiling norms/upper limit while determining the project specific tariff. However, the parties are free to execute PPA for any relaxed norms.

20. Petition and Proceedings for Determination of Tariff

A petition for determination of project specific tariff shall be accompanied by such fee as may be determined under the relevant Notification following OERC (Conduct of Business) Regulations, 2004 and shall be accompanied by:

- Information regarding financial parameters and technology specific parameters as the case may be;
- Detailed project report outlining technical and operational details, site specific aspects, premise for capital cost and financing plan, etc.
- A Statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.
- A statement containing details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.
- Any other information that the Commission requires the Petitioner to submit.
- The proceedings for determination of tariff shall be in accordance with the OERC (Conduct of Business) Regulations, 2004.
- Consent from beneficiary for procurement of power from renewable energy project at tariff approved by the Commission, in the form of Power Purchase Agreement (PPA) or Memorandum of Understanding (MoU); and
- Following justification is to be submitted in case of the petition is for determination of project specific tariff of renewable energy projects, where tariff

for such Renewable Energy Projects is generally determined through competitive bidding process in accordance with provisions of Section 63 of the Act:

- i. Rationale for opting project specific tariff instead of competitive bidding; and
- ii. Competitiveness of the proposed tariff vis-à-vis tariff discovered through competitive bidding/ tariff prevalent in the market.

21. Eligibility criteria for RE projects

a) Wind:

The wind power projects set up at the site approved for Wind Technology by Government of India / State Nodal agency / Government of Odisha.

b) Small Hydro Electric Project (SHEP):

The SHEP identified / approved by the Engineer in Chief, (Electricity) –cum Principal Chief Electrical Inspector, Government of Odisha or State Nodal agency with installed capacity of 25 MW and below, which are commissioned during the control period.

c) Biomass Power projects

The biomass power projects based on Rankine cycle technology using water / air cooled condenser and using biomass as source of fuel.

Provided that the use of fossil fuel in such projects is restricted to 15% (for projects commissioned on or before 31.03.2018) of total fuel consumption on annual basis as proposed by Ministry of New and Renewable Energy (MNRE), Government of India.

d) Non-fossil fuel-based Co-generation projects

A project shall qualify 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:

- **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 in form of useful heat for applications in other industrial activities simultaneously.

Provided that, for the co-generation facility to qualify under topping cycle mode, the sum of useful power output and one half of the useful thermal outputs is greater than 45% of the facility's energy consumption, during season. (as per CERC's RE Regulations, 2020)

e) Solar PV and Solar Thermal projects

The solar power technologies (solar PV, Floating Solar & Solar Thermal) approved by MNRE.

f) Municipal Solid based Projects

The project shall qualify to be termed as a Municipal Solid Waste (MSW) based power project, if it is using new plant and machinery based on Rankine cycle technology and using Municipal Solid Waste (MSW) as source of fuel.

g) Hybrid Renewable Energy Projects

The hybrid RE Project, is the project where rated capacity of generation from one Renewable Energy source is at least 25% of the rated capacity of generation from other Renewable Energy Source(s) and both operate at the common point of interconnection. Provided that energy is injected into the grid at the common interconnection point and metering is done accordingly.

h) Renewable Energy with storage project

The renewable energy project including hybrid RE project that uses, partly or fully, renewable energy generated from such project to store energy in the storage facility which is connected at the common point of interconnection of the renewable energy project.

22. Monitoring Mechanism for the use of fossil fuel (in case of Biomass & non-fossil fuel-based co-generation power projects)

The Project developer shall furnish a monthly fuel usage statement and monthly fuel procurement statement, duly certified by a (registered) Chartered Accountant/ Cost Accountant, to the beneficiary (with a copy to agency appointed by the Commission for the purpose of monitoring the fossil and non-fossil fuel consumption) for each month, along with the monthly energy bill. The statement shall cover details such as –

- Quantity of fuel (in tonnes) for each fuel type (biomass/ Non-fossil fuel used in co-generation plants and fossil fuels) consumed and procured during the month for power generation purposes,
- Cumulative quantity (in tonnes) of each fuel type consumed and procured till the end of that month during the year,
- Actual (gross and net) energy generation (in kWh) during the month,
- Cumulative actual (gross and net) energy generation (in kWh) till the end of that month during the year,

- Opening fuel stock quantity (in tonnes),
- Receipt of fuel quantity (in tonnes) at the power plant site and
- Closing fuel stock quantity (in tonnes) for each fuel type (biomass/ Non-fossil fuel used in co-generation plants and fossil fuels) available at the power plant site.

Non-compliance of the condition of fossil fuel usage by the project developer, during any financial year, shall deprive such biomass/non-fossil fuel based co-generation projects from preferential tariff determined from the date of default.

23. Compliance Monitoring

- OREDA/GRIDCO shall be responsible for monitoring compliance of Biomass/non-fossil fuel-based co-generation projects with the norm specified.
- OREDA/ GRIDCO shall maintain such data including technical and commercial details of Biomass/Non-fossil fuel-based co-generation projects in the State and shall make the data available in the public domain by publishing the same on its website with quarterly updation.

24. Tariff Structure

The tariff for renewable energy sources shall consist of the following components:

- (a) Return on equity;
- (b) Interest on loan;
- (c) Depreciation;
- (d) Interest on working capital; and
- (e) Operation and Maintenance expenses;

Provided that single part tariff with two components i.e. fixed cost component and fuel cost component shall be applicable for renewable energy projects having fuel cost component, like biomass power projects with rankine cycle technology, biogas-based power projects, non-fossil fuel-based co-generation projects and refuse derived fuel based power projects.

25. Tariff Design

The principles for tariff design is as follows:

- (a) The generic tariff shall be determined, on levelized basis, for the tariff period of the project considering the year of commissioning in the Control Period.

Provided that for renewable energy projects having two part tariff with two components, fixed cost component shall be determined on levelized basis considering the year of commissioning of the project while fuel cost component shall be determined for a particular year in the Tariff Order to be issued by the Commission.

- (b) For the purpose of computation of levelized tariff, discount factor equivalent to post-tax weighted average cost of capital shall be considered.
- (c) Accordingly, the discount factor considered for this exercise is equal to the post tax weighted average cost of capital on the basis of normative debt: equity ratio (i.e. 70:30).
- (d) Interest Rate considered for the loan component (i.e.,70% of capital cost) is 9.12%. For equity component (i.e. 30% of capital cost), the rate of Return on Equity (ROE) is considered at post-tax rate of 14%. Further, Corporate tax rate has been considered as 34.94%. Accordingly, the discount factor derived by this method for all RE technologies is 8.35% $[(9.12\% \times 0.70) \times (1 - 34.94\%) + (14.0\% \times 0.30)]$.
- (e) Levelized Tariff is proposed to be calculated by carrying out levelization for “useful life” of each technology considering the discount factor.
- (f) The above principles shall also apply for project specific tariff.

26. Financial Parameters

The financial parameters specified hereunder shall be applicable to all RE technologies/sources covered in this Order.

a) Capital Cost

The norms for the Capital Cost as specified in the subsequent sections shall be inclusive of Land cost, pre development expenses, all capital work including plant and machinery, civil work, erection and commissioning, financing & interest during construction, and cost of infrastructure for evacuation of power up to inter-connection point.

Provided that for determination of project specific tariff, the generating company shall submit the break-up of capital cost items along with its petition.

b) Debt-Equity ratio

- For determination of generic tariff, the debt-equity ratio shall be 70: 30.
- For project specific tariff, the following provisions shall apply:

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/ converted in Indian rupees on the date of each investment.

Provided further that debt equity ratio shall be derived after deducting the amount of grant or capital subsidy received for the project.

c) **Loan and Finance charges**

i) **Loan Tenure:** For the purpose of determination of generic tariff and project specific tariff, loan tenure is considered as 15 years.

ii) **Interest Rate**

The loan amount calculated on above principle shall be considered as gross normative loan for calculation of interest on loan. The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to March 31st of previous year from the gross normative loan.

The normative interest rate considered for the purpose of computation of tariff in this order is the average Marginal Cost of Funds based Lending Rate (MCLR) (One year tenor) of State Bank of India (SBI) prevalent during the last six months of the previous year plus 200 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.

d) **Depreciation**

- The value base (Capital Base/ Rate 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 90% of the Capital Cost of the asset.

Provided that, no depreciation shall be allowed to the extent of grant or capital subsidy received for the project.

- Depreciation rate of 4.67% per annum shall be considered for the first 15 years and remaining depreciation shall be evenly spread during remaining Useful Life of the project.
- Depreciation shall be computed from the first year of commercial operation. Provided that, in case of commercial operation of the project for part of the year, depreciation shall be computed on pro rata basis.

e) **Return on Equity**

The equity shall be 30% of the capital cost or actual equity as specified under Debt-Equity Ratio provisions.

The normative Return on Equity shall be 14%. The normative Return on Equity shall be grossed up by the latest available notified Minimum Alternate Tax (MAT) rate for the first 20 years of the Tariff Period and for the remaining Tariff Period it shall be grossed up by the latest available notified Corporate Tax rate.

f) **Interest on Working Capital**

The Working Capital requirement in respect of wind power projects, small hydro project, Solar PV, Solar thermal, floating solar projects and renewable energy with storage project shall be computed as under:

- Operation & Maintenance expenses (O&M) for one month;
- Receivables equivalent to 45 days of tariff for sale of electricity calculated based on the normative Capacity Utilisation Factor (CUF)/ Plant Load Factor (PLF), as the case may be;
- Maintenance spare @ 15% of O&M expenses

The Working Capital requirement in respect of biomass based power projects (Rankine cycle technology) and non-fossil fuel-based co-generation projects shall be computed as under:

- Fuel costs for four months equivalent to normative Plant Load Factor (PLF);
- O&M expense for one month;
- Receivables equivalent to 45 days of tariff for sale of electricity calculated based on the PLF;
- Maintenance spare @ 15% of operation and maintenance expenses

In case of RE hybrid projects, the Working Capital requirement shall be sum of the Working Capital requirement determined as per norms applicable for renewable energy sources, in proportion to their rated capacity in the project.

Interest on Working Capital shall be at interest rate equivalent to the normative interest rate of three hundred and fifty (350) basis points above the average Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenure) of State Bank of India prevalent during the last available six months.

g) **Operation & maintenance Expenses**

‘Operation and Maintenance or O&M expenses’ shall comprise of Repair & Maintenance (R&M), establishment expenses (including employee expenses) and Administrative & General (A&G) expenses.

Operation and Maintenance expenses shall be determined for the Tariff Period based on normative O&M expenses specified in this tariff order for the first Year of Control Period.

Normative O&M expenses allowed during first year of the Control Period (i.e. FY 2023-24) shall be escalated at the rate of 3.84% per annum for subsequent year of the control Period.

27. Calculation of Capacity Utilization Factor (CUF) and Plant Load Factor (PLF):

For calculation of Capacity Utilization Factor (CUF) and Plant Load Factor (PLF), as the case may be, the number of hours in a year shall be considered as 8766.

28. Statutory Charges

The renewable energy project developer shall recover from the beneficiaries, the statutory charges imposed by the State and Central Government such as water cess, electricity duty on normative auxiliary consumption.

29. Subsidy or incentive by the Central or the State Government

While determining the tariff, the Commission shall take into consideration any incentive, grant or subsidy from the Central or State Government, including accelerated depreciation benefit, availed by the project.

Provided that the following principles shall be considered for ascertaining income tax benefit on account of accelerated depreciation, if availed, for the purpose of tariff determination:

- a) Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate and corporate income tax rate as per relevant provisions of Income Tax Act, 1961 as amended from time to time; and
- b) Capitalization of renewable energy projects during second half of the fiscal year.
- c) Per unit benefit shall be derived on levelized basis considering discount factor equivalent to weighted average cost of capital.
- d) Any grant, subsidy or incentives availed by renewable energy project, which is not considered at time of determination of tariff, shall be deducted by the beneficiary in subsequent bills after receipt of such grant, subsidy or incentive in suitable installments.
- e) In case the Central or State Government or their agencies provide any generation-based incentive, which is specifically over and above the tariff, such incentive shall neither be

taken into account while determining the tariff nor be deducted by the beneficiary in subsequent bills raised by the particular Renewable energy project.

30. Dispatch principles for electricity generated from Renewable Energy Sources

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 shall not be subject to ‘merit order dispatch’ principles. However, the renewable energy power projects shall be subject to scheduling and dispatch as specified under the Orissa Grid Code (OGC) / Indian Electricity Grid Code (IEGC), as the case may be and amendments thereto from time to time.

31. Inter-connection point: Regulation 2.1 (l) of OERC (Procurement of Energy from Renewable Sources and its Compliance) Regulations, 2021 provides the definition and ‘interpretation of Inter-connection Point’. Further, Regulation 11 of the said Regulations provides mechanism of connectivity of RE based power plant with the GRID. The interconnection and the mechanism of connectivity of RE based power plant with the GRID would accordingly be guided by the provisions under the OERC (Procurement of Energy from Renewable Sources and its Compliance) Regulations, 2021 and amendment thereof from time to time.

Specific Parameters for various types of RE projects

32. Wind Power Projects:

Odisha has limited assessed wind potential (both offshore & onshore wind projects). Odisha Renewable Energy Policy, 2022 aims at creating an enabling environment for prospective wind power plant developer to harness the available quantum of wind power in the best possible manner with suggestion to the Commission for determination of a generic tariff for all wind project developed in the state. However, the capital cost of wind project in Odisha will be site specific and will depend on hub height which is expected to be different from other states. For the time being the Commission is not considering to provide generic tariff for wind power projects developed in the state.

However, project specific tariff shall be determined by the commission on the case-to-case basis. The financial and operational norms as specified under in this order, except for capital cost, shall be considered for determining the project specific tariff.

(a) Capital cost

- i) The capital cost for wind energy projects shall include Wind turbine generator & associated auxiliaries, land cost, site development charges and other civil works, transportation charges, evacuation cost of power evacuation system up to inter-connection point, financing charges and Interest during Construction (IDC).

ii) The project specific capital cost for wind energy projects shall be determined based on the prevailing market trends.

(b) Capacity Utilization Factor

The normative Capacity Utilization Factor (CUF) for the wind power project in the State of Odisha shall be 22%. The normative CUF has been estimated considering annual Mean Wind Power Density as 220 Watt per sq.m (W/m²) in the State of Odisha.

(c) Operation and Maintenance Expenses shall be determined for project specific cases based on the prevailing market trends.

The Commission, decides that procurement of power from all central sector wind-based power projects shall be through competitive bidding process only during the control period 2023-24 to 2025-26.

33. Small Hydro projects (SHEP)

The following financial and operational norms shall be considered for determination of generic tariff.

a) Capital Cost

The capital cost considered for small hydro projects during the control period (FY 2023-24 to 2027-28) shall be Rs. 780 Lakh/MW for all projects below 5 MW and Rs. 900 Lakh/MW for projects between 5 MW to 25 MW. The capital cost for small hydro projects as specified for first year of the Control Period shall remain valid for the Control Period unless reviewed by the Commission.

b) Capacity Utilisation Factor (CUF)

The normative Capacity Utilization Factor of 30% for the generic tariff determination in case of SHEP is considered as per CERC RE Regulations 2020. The normative CUF as mentioned above is net of free power to the home State, if any, and any additional quantum of the power, if committed by the developer, over and above the normative CUF shall be factored into the tariff.

c) Auxiliary Consumption

Auxiliary Consumption for the small hydro projects shall be 1.0%.

d) Operation and Maintenance Expenses

i. O&M expenses for the first year of the Control Period (FY 2023-24 to 2027-28) shall be Rs. 37.68 Lakh per MW for projects below 5 MW and Rs. 27.29 lakh for projects between 5 MW to 25 MW.

- ii. O&M expenses for subsequent year shall be escalated at the rate of 3.84% per annum.

e) Levelled tariff for SHEP

The levelled tariff over the useful life is determined based on the financial and operating parameters as discussed above and will be applicable for a period of 40 years.

Table - 2

Particular	Levelled Tariff (Rs./kWh)	Tariff Period (Years)
SHEP below 5 MW capacity	5.93	40
SHEP of 5 to 25 MW capacity	5.82	40

The Technical and Financial parameters considered for determination of levelled tariff are given at **Appendix-1**.

34. Biomass power projects

The procurement of power from all Biomass power projects based on Rankine cycle Technology shall be made through transparent competitive bidding process only during the control period 2023-24 to 2025-26. The project specific tariff shall be determined by the commission on the case-to-case basis taking into account the financial and operational norms and technology specific parameters as specified in following paragraphs.

(a) Capital Cost

The capital cost for Biomass projects based on Rankine Cycle Technology shall be Rs.559.00 Lakhs/MW with water cooled condenser and Rs.600.00 Lakhs/MW with air cooled Condenser for FY 2023-24. The capital cost as specified for first year shall remain valid for the Control Period unless reviewed by the Commission.

(b) Plant Load Factor

The Plant Load Factor for determining generic tariff shall be considered as 80%.

(c) Auxiliary Consumption

The auxiliary power consumption shall be 10% for water cooled condenser and 12% for air cooled condenser.

(d) Operation and Maintenance Expenses

- i) O&M expenses for the first year of the Control Period shall be Rs.48.20 Lakh per MW.
- ii) O&M expenses allowed subsequent year shall be escalated at the rate of 3.84% per annum.

(e) Station Heat Rate (SHR)

The Station Heat Rate (SHR) for biomass power projects shall be 4125 kcal/kWh for AFBC boilers and 4200 kcal/kWh for travelling grate boilers.

(f) Gross Calorific Value (GCV)

The Gross Calorific Value of biomass in a particular state depends upon the type and quality of the biomass available in that State. Before arriving at the normative calorific value of biomass for Odisha, the availability and characteristics of biomass in the State has been taken into consideration. Accordingly, the normative GCV is computed as 3100 kcal/kg.

(g) Fuel Price

During first year of the Control Period, the price of biomass fuel shall be Rs.4118/ MT (average) which would be escalated @ 5% every year during the control period.

(h) Fuel Mix

- i) The biomass based power plant shall be designed and located in such a way that different types of non-fossil fuels available in the vicinity of power project (such as crop residues, agro-industrial residues, forest residues, etc., and other biomass fuels as may be approved by MNRE) can be used in the plant.
- ii) The biomass power generating company shall devise fuel management plan to ensure adequate availability of fuel to meet the project requirements.

(i) Use of Fossil Fuel

The use of fossil fuel would not be allowed for the biomass based power projects commissioned during this control period 2023-24 to 2025-26. However, projects, which were commissioned or PPA was signed with GRIDCO on or before

31.03.2018, would be allowed to use fossil fuel upto 15% of the total fuel consumption on annual basis as per the generic order issued by the Commission in Case No.46 of 2018.

35. Non-fossil fuel-based Co-generation Projects:

In Odisha at present neither any bagasse-based cogeneration project is operation in Odisha nor any such project is envisaged during this control period. The procurement of power from all bagasse-based cogeneration projects shall be made through competitive bidding process only during the control period 2023-24 to 2025-26. Hence, Commission is not specifying any generic tariff for the non-fossil fuel-based Co-generation Projects. However, project specific tariff shall be determined by the Commission on the case-to-case basis. The financial and operational norms as specified in this Order shall be considered for determination of project specific tariff.

(i) Capital Cost

The normative capital cost for the non-fossil fuel-based co-generation projects shall be Rs.492 Lakh/MW for first year of the control period (2023-24 to 2025-26).

(ii) Plant Load Factor

The Plant Load Factor for non-fossil fuel-based co-generation projects shall be 53%.

(iii) Auxiliary Consumption

The auxiliary power consumption shall be 8.5% of the gross energy generation.

(iv) Operation and Maintenance Expenses

(a) O&M expenses for the first year of the Control Period shall be Rs.25.46 Lakh per MW.

(b) O&M expenses for subsequent year shall be escalated at the rate of 3.84% per annum.

(v) Station Heat Rate

The Station Heat Rate for non-fossil fuel-based co-generation projects shall be 3600 kcal/kWh for power generation component alone.

(vi) Gross Calorific Value (GCV)

For bagasse-based co-generation plants, the Gross Calorific Value (GCV) for bagasse shall be 2250 kcal/kg.

(vii) Fuel Price

The price of baggase fuel shall be Rs.2632/MT during first year of the Control Period and the same would be escalated @ 5.00% every year during the control period.

(viii) Use of Fossil Fuel

The use of fossil fuel would not be allowed, however, the price of biomass as determined in this order shall be applicable for use of biomass as fuel.

36. Solar PV, Solar Thermal and Floating Solar Power Projects

The determination of generic tariff is losing its relevance for all solar power projects because the price discovered through competitive bidding process is expected to be much lower than generic tariff. In order to develop RE projects within state, the Govt. of Odisha, in its recently notified 'Odisha Renewable Energy policy 2022', has announced several incentives such as tax exemptions, concessions, development of Land banks and Solar parks with requisite infrastructure for RE projects which should be considered in bidding. The New Tariff Policy dated 28.01.2016 issued by Government of India (GoI), envisages that all future procurement of renewable energy (except from waste to energy plants) shall be made only through competitive bidding as per bidding guidelines issued by GoI. Further, OREP,2022 also outlines that the development of such projects is to be done through transparent competitive bidding process unless a project is awarded on nomination basis to any CPSU/SPSU or their JV. The Commission, therefore, decides not to determine generic tariff for Solar PV, Solar Thermal and Floating Solar projects for the control period 2023-24 to 2025-26 and stipulates that all the procurement of solar power are to be made through transparent competitive bidding process only.

37. Municipal Solid Waste (MSW) based projects:

The financial and operational norms as specified in this Order shall be considered for determination of tariff of Municipal Solid Waste (MSW) based projects.

(a) Capital Cost

The Commission shall determine only project specific capital cost considering the prevailing market trends. There would be no indexation of the capital cost during the control period.

(b) Plant Load Factor

The Plant Load Factor for determining project specific tariff shall be

- i) During stabilization: PLF - 65%

- ii) During the remaining period of the 1st year (after stabilization): PLF-65%
- iii) From 2nd year onwards: PLF - 75%

The stabilisation period shall not be more than 6 months from the date of commissioning of the projects.

(c) Auxiliary Consumption

The auxiliary power consumption shall be 15% of the gross energy generation.

(d) Operation and Maintenance Expenses

The Commission shall determine only project specific O&M expenses considering the prevailing market trends.

(e) Station Heat Rate (SHR)

The Station Heat Rate for Municipal Solid waste-based projects shall be 4200 kcal/kWh.

(f) Gross Calorific Value

The gross calorific value of MSW shall be determined by the Commission on case to case basis while determining the project specific tariff.

(g) Fuel Price

No fuel price is envisaged for Municipal Solid based projects. However, the Commission may consider allowing transportation cost of such fuel while determining the project specific tariff.

(h) Use of Fossil Fuel

The use of fossil fuel would not be allowed, however, the price as determined in this order shall be applicable for use of biomass as fuel.

38. Renewable Energy with storage project:

The financial and operational norms as specified in this Order shall be considered for determination of project specific tariff for RE with storage project.

- a) **Capital Cost:** The Commission shall determine only project specific capital cost for renewable energy with storage project considering the prevailing market trends
- b) **Storage Efficiency:** The Commission shall approve the storage efficiency only for project Specific tariff.

Provided that the minimum efficiency for solid state battery storage technology shall be 80%.

Provided further that the minimum efficiency for pumped storage based technology shall be 75%.

Efficiency of storage component of renewable energy with storage project shall be measured as ratio of output energy received from storage and input energy supplied to the storage component of such project, on annual basis.

- c) **Operation and Maintenance expenses:** The Commission shall determine only project specific O&M expenses considering the prevailing market trends.
- d) **Tariff determination for Energy Storage:** The tariff for renewable energy with storage project shall be a composite tariff or differential tariff based on Time of Day and shall be determined based on energy supplied from the Project including the energy supplied from the storage facility.

Provided that such tariff may be determined for supply of power on Round The Clock (RTC) basis or for time periods as agreed by Project Developer and Beneficiary.

39. Hybrid Renewable Energy (RE) Projects:

The financial and operational norms as specified in this Order shall be considered for determination of project specific tariff for Hybrid RE projects.

- a) **Capital Cost:** The Commission shall determine project specific capital cost considering the prevailing market trends.
- b) **Capacity Utilisation Factor (CUF):** The Commission shall determine only project specific Capacity Utilization Factor (CUF) in respect of hybrid RE projects in proportion to rated/installed capacity of generation from the renewable energy sources and applicable CUF for such renewable energy sources.

Provided that the minimum CUF for hybrid RE project shall be 30% when calculated at the inter-connection point, where the energy is injected into the grid.

- c) **Operation and Maintenance expenses:** The Commission shall determine only project specific O&M expenses considering the prevailing market trends.
- d) **Tariff:** The tariff for a hybrid RE project shall be composite levelised tariff for the project as a whole by factoring in the tariff components upto the minimum of the useful life of the RE technologies combined for such RE hybrid Project:

Provided that, in case any of the RE source/technologies in hybrid RE project is left with useful life, the levelised tariff for remaining useful life of such RE Sources/Technology shall be determined separately, by factoring the tariff components.

40. Based on the above observations, the summary of the proposed Generic tariff for various RE technologies/sources for the control period from 2023-24 to 2027-28 is as follows:

- a. The levelized generic tariff for various renewable sources of energy having “Single part tariff” shall be as given in Table below:

Table - 3

Particular	Levelling Total Tariff (for the current control period (Rs./kWh)	Tariff Period (Years)
Wind Energy	To be procured only through competitive bidding process	
SHEP of 5 to 25 MW capacity	5.82	40
SHEP below 5 MW capacity	5.93	40
Solar PV, Solar Thermal & Floating Solar power Project	To be procured only through competitive bidding process	

- b. The tariff for various renewable sources of energy having “Single part tariff with two components” shall be determined as given in the Table below:

Table – 4

Particular	Levelling fixed component of Tariff (Rs./kWh)	Variable(Fuel) Component of tariff	Effective tariff
Biomass	To be procured only through competitive bidding process		
Non-fossil fuel-based co-generation	To be procured only through competitive bidding process		
MSW	To be procured only through competitive bidding process		

- c. The impact of additional power purchase cost arising due to RPO shall be factored in to the ARR of GRIDCO each year.
- d. The Commission shall take into consideration any incentive or subsidy offered by the Government of India/State Govt. including accelerated depreciation benefit, if availed, by

the developer for the RE based power plants and such benefits shall be passed on to the consumers of the State.

- e. **Rebate:** If bills of the RE based Power Projects is paid through Letter of Credit (LC), NEFT or RTGS within five working days (except holidays under N.I. Act) of presentation of bill(s), a rebate of 1.5% shall be allowed. If payment is made on any day after five working days of presentation of bills by the generating company, a rebate of 1% shall be allowed.
- f. **Late Payment Surcharge:** In case the payment of any bill for charges payable under these Guidelines is delayed beyond a period of 45 days from the date of issue of bill(s), a late payment surcharge at the rate of 1.50% per month shall be levied by the generating company.
- g. **Taxes and duties:** Any tax and duty levied by the Government shall be reimbursed by the beneficiary to the developer as year end charges.

41. Accordingly, the Case is disposed of.

Sd/-
(S. K. Ray Mohapatra)
Member

Sd/-
(G. Mohapatra)
Officiating Chairperson

Appendix-1**Small Hydro Project (SHEP)
Technical and Financial parameters**

<i>No</i>	<i>Technical Parameters</i>	<i>Unit</i>	<i>Projects <5MW</i>	<i>Projects of >5 MW upto 25 MW</i>
1	Installed Power Generation Capacity of the Power Project	MW	1	1
2	Capacity Utilization Factor	%	30.00	30.00
3	Total no. of Hours	Hrs	8766	8766
4	Annual gross energy Generation	Lakh kWhs	26.30	26.30
5	Auxiliary consumption	%	1.00	1.00
6	Net energy generation	Lakhs	26.04	26.04
7	Useful Life	years	40	40
<i>No</i>	<i>Financial Parameters</i>			
1	Project Cost SHEP plant	Rs. Lacs/MW	780	900.00
2	Non depreciable cost	% of Capital Cost	10	10
3	Depreciable Amount	lacs	702	810.00
4	Debt Fraction	%	70	70
5	Debt	lacs	546	630.00
6	Equity	lacs	234	270.00
7	TOTAL	lacs	780	900.00
8	Interest Rate on Term Loan	%	9.12	9.12
9	Repayment Period	years	15	15
10	No of Installments for payment of loan	years	15	15
11	Moratorium Period	years	0	0
12	Depreciation (Straight Line Method) (for first 15 years)	%	4.67	4.67
13	Depreciation (Straight Line Method) (from 16 th years onwards)	%	0.80	0.80
14	Discount Rate	%	8.35	8.35
15	O&M Cost	lakhs/MW	37.68	27.29
16	O&M Cost Escalation	%	3.84	3.84
17A	Return on Equity (14% considering MAT rate 17.47%) (upto 20 years)	%	16.96	16.96
17B	Return on Equity (Income Tax rate 34.94%) (after 20 years)		21.52	21.52
18	Interest on working capital	%	10.62	10.62
19	O&M Charges	Month	1	1
20	Maintenance spare	%	15	15
21	Receivable for debtors	Month	1.5	1.5