

Notification Dated _____

No.: _____. In exercise of powers conferred under Section 181(2) (zd) read with Section 61 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Madhya Pradesh Electricity Regulatory Commission hereby makes the following Regulations, namely:

MADHYA PRADESH ELECTRICITY REGULATORY COMMISSION (TERMS AND CONDITIONS FOR TARIFF DETERMINATION OF ENERGY FROM RENEWABLE ENERGY SOURCES) REGULATIONS, 2024

1. Short Title and Commencement:

- 1) These Regulations may be called the “**Madhya Pradesh Electricity Regulatory Commission (Terms and Conditions for Tariff determination of energy from Renewable Energy Sources) Regulations, 2024.**”
- 2) These Regulations shall extend to the whole of the State of Madhya Pradesh.
- 3) These Regulations shall come into force from the date of its official notification in Gazette and unless reviewed earlier or extended by the Commission, shall remain in force up to 31st March 2027.

2. Definitions:

- (1). In these Regulations, unless the context otherwise requires,
 - a) ‘**Act**’ means the Electricity Act, 2003 (36 of 2003);
 - b) ‘**Auxiliary Energy Consumption**’ or ‘**AUX**’ in relation to a period in case of a generating station means the quantum of energy consumed by auxiliary equipment of the generating station, and transformer losses within the generating station, expressed as a percentage of the sum of gross energy generated at the generator terminals of all the units of the generating station;
 - c) ‘**Bagasse**’ means waste produced as a by-product of processing operations in sugar industry;
 - d) ‘**Bagasse based Co-generation**’ means the process in which more than one form of energy (such as steam and electricity) are produced in a sequential manner by use of bagasse as fuel;
 - e) ‘**Biomass**’ means wastes produced during agricultural and forestry operations (for example straws and stalks) or produced as a by-product of processing operations of agricultural produce (e.g., husks, shells, de-oiled cakes, etc); wood produced in dedicated energy plantations or recovered from wild bushes/weeds and the wood waste produced in some industrial operations;
 - f) ‘**Biomass gasification**’ means the process of incomplete combustion of biomass resulting in the production of combustible gases consisting of a mixture of carbon monoxide (CO), hydrogen (H₂) and traces of methane(CH₄);

- g) **‘Biogas’** means a gas created when organic matter like crop residues, sewage, Cow Dung, and manure breaks down in an oxygen-free environment (ferments);
- h) **‘Commission’** means the Madhya Pradesh Electricity Regulatory Commission referred to in sub-section (1) of Section 82 of the Act;
- i) **‘Conduct of Business Regulations’** means the Madhya Pradesh Electricity Regulatory Commission (Conduct of Business) (Revision-1) Regulations, 2016 as amended from time to time;
- j) **‘Control Period or Review Period’** means the period during which the norms for determination of tariff specified in these Regulations shall remain valid;
- k) **‘Floating solar project’** means a solar PV power project where the arrays of photovoltaic panels on the structure of the project float on top of a body of water, such as an artificial basin or lake, with the help of a floater, anchoring, and mooring system
- l) **‘Gross Calorific Value’ or ‘GCV’** in relation to a fuel used in generating station means the heat produced in kCal by complete combustion of one kilogram of solid fuel or one liter of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be
- m) **‘Gross Station Heat Rate’ or ‘Gross SHR’** means the heat energy input in kCal required to generate one kWh of electrical energy at the generator terminals of a generating station
- n) **‘Installed capacity’ or ‘IC’** means the summation of the nameplate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals). In the case of Solar PV power projects and Floating solar projects, installed capacity shall be the sum of nameplate capacities (Nominal AC power) of the inverters of the project;
- o) **‘Inter-connection Point’** shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be:
 - i. in relation to wind power projects, solar PV power projects, renewable hybrid energy projects and renewable energy with storage projects, line isolator on outgoing feeder on HV side of the pooling sub-station;
 - ii. in relation to small hydro power, biomass power and bagasse-based cogeneration power projects and solar thermal power projects, the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;
- p) **MNRE** means Ministry of New and Renewable Energy, Government of India
- q) **‘Municipal solid waste’ or ‘MSW’** means and includes commercial and residential wastes generated in a municipal or notified area in either solid or semi-solid form and excludes industrial hazardous wastes but includes treated bio-medical wastes
- r) **‘Operation and Maintenance Expenses’ or ‘O&M expenses’** means the expenditure

incurred on operation and maintenance of the project, or part thereof, and includes the expenditure on manpower, repairs, spares, consumables, insurance, and overheads;

- s) **'Project'** means a generating station or the evacuation system upto inter-connection point, as the case may be, and in case of a small hydro generating station includes all components of generating facility such as dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;
- t) **'Renewable energy project'** means a generating station that produces electricity from renewable energy sources; ;
- u) **'Renewable Energy Sources'** means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste and other such sources as recognized or approved by the MNRE;
- v) **'Renewable energy with storage project'** means a combination of renewable energy projects with storage or a combination of renewable hybrid energy projects with storage at the same inter-connection point;
- w) **'Solar Wind Hybrid energy project'** means a renewable energy project that produces electricity from a combination of Solar & Wind energy sources, having a single point of injection or maximum two points of injection into the grid, provided that the rated power capacity of one resource (wind or solar) shall be at least 33% of the total contracted capacity.
- x) **'Small Hydro'** means Hydro Power projects with a station capacity up to and including 25 MW or as defined by Government of India from time to time at single location.
- y) **'Solar PV power project'** means a project that uses sunlight for direct conversion into electricity through photovoltaic technology and is based on technologies such as crystalline silicon, thin film, or any other technology as approved by MNRE;
- z) **'Solar thermal power project'** means a project that uses sunlight for direct conversion into electricity through concentrated solar power technology and is based on line focus or point focus principle;
- aa) **'State Nodal Agency'** means the agency in a State as may be designated by the Ministry of New and Renewable Energy to promote efficient use of renewable energy in that State;
- bb) **'Storage'** means an energy storage system utilizing methods and technologies like solid state batteries, flow batteries, pumped storage, compressed air, fuel cells, hydrogen storage or any other technology to store various forms of energy and to deliver the stored energy in the form of electricity;
- cc) **'Station Heat Rate' or 'SHR'** means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a thermal generating station;

dd) **Tariff period**’ for renewable energy projects will be the same as their Useful Life, and the tariff period shall be considered from the date of commercial operation of such power projects

ee) **‘Useful Life’** in relation to a unit of a generating station including a dedicated evacuation system shall mean the following duration, from the Date of Commercial Operation (COD) of such generation facility, namely: -

(a) Wind power project	25 years
(b) Biomass power project with Rankine cycle technology	25 years
(c) Bagasse based cogeneration project	25 years
(d) Small Hydro Power Plant	40 years
(e) Solar PV/Solar thermal power project	25 years
(f) Biogas based power project	25 years
(g) Municipal Solid Waste Power Project	20 years
(h) Biomass gasifier based Power Project	25 years
(i) Solar Wind Hybrid Energy Project	25 Years
(j) Renewable Energy with Storage Project	Same as per useful life of project assuming that there is no storage

ff) **‘Year’** means a financial year.

(2). Words and expressions used but not used in these Regulations shall have the same meaning as assigned to them in the Act.

3. **Scope and extent of application:**

These Regulations shall apply in all cases where tariff, for a generating station or a unit thereof based on renewable sources of energy, is to be determined by the Commission under Section 62 read with Section 86 of the Act.

Provided that these Regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

4. **Eligibility Criteria:**

4.1 Tariff for the following categories of renewable generating plants shall be determined under Section 62 of the Electricity Act, 2003

- a) **Wind power project** - using new wind turbine generators with **capacity less than 10 MW**.
- b) **Small hydro project** – located at the sites approved by State Nodal Agency/ State Government using new plant and machinery, and installed power plant capacity to be **lower than or equal to 25 MW** at single location.

- c) **Biomass power project based on Rankine cycle technology** – Biomass power projects using new plant and machinery based on Rankine cycle technology and using biomass fuel sources.
- d) **Bagasse based co-generation project** - The project shall qualify to be termed as a bagasse-based co-generation project, if it meets the qualifying requirement of a cogeneration project;
- e) **Solar PV and Solar Thermal Power Projects** - Based on Technologies approved by MNRE with **capacity less than 5 MW**.
- f) **Biogas based Power Project** – The project shall qualify to be termed as a biogas-based power project, if it is using new plant and machinery and having grid connected system that uses 100% Biogas fired engine, coupled with Biogas technology for co-digesting Cow Dung, vegetable waste and other bio waste as may be approved by MNRE.
- g) **Biomass gasifier based power project** – The project uses a new plant and machinery and has a grid connected system that uses a 100% producer gas engine, coupled with gasifier technologies approved by MNRE
- h) **Municipal Solid Waste Power Projects**- Based on incineration of Municipal Solid Waste as approved by MNRE.
- i) **Solar Wind Hybrid Projects** - Solar Wind Hybrid Projects with capacity 10 MW and above connected to intra-state transmission system. The solar and wind component of the hybrid project may be having a single point of injection or maximum two points of injection into the grid, with or without Energy Storage, subject to the condition that the rated capacity of one resource (wind or solar) shall be at least 33% of the total contracted capacity.
- j) **Renewable energy with storage project** – The renewable energy project including a renewable hybrid energy project that uses, partly or fully renewable energy generated from such project to store energy in a storage facility, which is connected at the same point of interconnection as the renewable energy project.

Provided that the projects for which tariff is to be determined by the Commission under section 62 of the Electricity Act 2003 shall also be subject to bidding after the date of issue of notification in respect of such projects by the Central Government in terms of the Tariff Policy, 2016.

4.2 Tariff for the following categories of projects for which Central Government has already issued guidelines for Tariff Based Competitive Bidding shall be adopted by the Commission under Section 63 of the Electricity Act, 2003:

- a) **Wind Power Projects** using new wind turbine generators with capacity equal to or more than 10 MW.
- b) **Solar PV Projects** – Based on technologies approved by MNRE with capacity equal to or more than 5 MW.

- c) **Solar Wind Hybrid Power Projects:** - The Solar and Wind component of the Solar Wind Hybrid Power Project may be having a single point of injection or maximum two points of injection into the grid with bid capacity of 10 MW and above with or without Energy Storage, subject to the condition that the rated capacity of one resource (wind or solar) shall be at least 33% of the total contracted capacity.

4.3 The Commission shall determine Tariff for RE Projects below threshold limit of eligibility for participating in Competitive Bidding **on case to case basis as per the Project Specific Tariff determination** process provided in **Regulation 7 of these Regulations.**

Chapter 1: General Principles

5. Control Period or Review Period:

The Control Period or Review Period under these Regulations shall be up to 31st March 2027 from the date of gazette notification of these Regulations.

Provided also that the tariff determined as per these Regulations for the RE projects commissioned during the Control Period, shall continue to be applicable for the entire duration of the 'useful life' as specified in these Regulations;

Provided also that in case Regulations for the next Control Period are not notified until commencement of next Control Period, the tariff norms as per these Regulations shall continue to remain applicable until notification of the revised Regulations.

6. Generic Tariff

The generic tariff shall be determined by the Commission at the beginning of the control period in accordance with these Regulations for the following types of renewable energy projects:

- a. Small Hydro Power projects
- b. Biomass Power Projects with Rankine Cycle Technology ‘
- c. Bagasse based Cogeneration Project
- d. Biogas based power project
- e. MSW based Power Projects

Provided that the generic tariff determined by the Commission shall be applicable for such RE Project of the same type commissioned during the control period of these Regulations and shall remain valid for the tariff period.

7. Project Specific tariff

- a) Project specific tariff, on case-to-case basis, shall be determined by the Commission for the following types of renewable energy projects having capacity below threshold limit of eligibility for participation in tariff based competitive bidding: -
 - i. Solar PV power projects,
 - ii. Solar thermal power projects;
 - iii. Wind power projects
 - iv. Biomass Gasifier based Projects;
 - v. Solar Wind hybrid projects;
 - vi. Renewable energy with storage projects;
 - vii. Projects based on technologies and renewable energy sources as may be approved by

the MNRE in future.

- b) Financial and operational norms specified in **Chapter 2** of these regulations, except for capital cost, shall be the ceiling norms while determining the project specific tariff.

8. Petition and proceedings for determination of Tariff:

- (1) The Commission shall determine the generic tariff on the basis of Suo-Motu petition preferably at the beginning of the control period for renewable energy technologies for which norms have been specified under the Regulations.
- (2) A petition for determination of Project Specific Tariff shall be accompanied by such fee as specified in MPERC (Fees, Fine and Charges) (Revision-1) Regulations , 2010 as amended from time to time and shall be accompanied by:
 - a) Information in forms 1.1, 1.2, 2.1, 2.2 as the case may be, as appended to these regulations ;
 - b) Detailed project report outlining technical and operational details, site specific aspects, basis for capital cost, detailed break-up of capital cost and financing plan;
 - c) A statement of all applicable terms and conditions and anticipated expenditure for the period for which tariff is to be determined;
 - d) A statement containing details of the calculation of any grant, subsidy, or incentive received, due or assumed to be due, from the Central Government or State Government or both. This statement shall also include the proposed tariff calculated without such subsidy or incentive;
 - e) Consent from the beneficiary for procurement of power from renewable energy project at a tariff approved by the Commission, in the form of an initialled Power Purchase Agreement or Memorandum of Understanding; and
 - f) any other information directed by the Commission.
- (3) The proceedings for determination of tariff shall be in accordance with the MPERC (Conduct of Business) (Revision-I) Regulations, 2016 as amended from time to time.

9. Tariff Structure:

- (1) The tariff for renewable energy technologies shall be a Single Part Tariff consisting of the following fixed cost components:
 - (a) Capital Cost;
 - (b) Return on equity;
 - (c) Interest on loan capital;
 - (d) Depreciation;
 - (e) Interest on working capital;

- (f) Operation and maintenance expenses;
- (2) Provided that, for renewable energy technologies having fuel cost component, like biomass/bagasse/biogas/ etc., Single Part levelized tariff with two component viz fixed cost component and fuel / variable cost component shall be determined.

Tariff Design:

- a) The generic tariff shall be determined on a levelled basis for the Tariff Period of the project, provided that, for RE Projects having a single-part tariff with two components, the tariff shall be determined on a levelled basis for the Tariff Period, considering the fixed cost and variable cost components .
- b) For the purpose of levelized tariff computation, a discount factor equivalent to the post-tax weighted average cost of capital shall be considered.
- c) The above principles shall also apply for project specific tariffs.

10. Treatment for Over generation

In case a renewable energy project, in a given year, generates energy in excess of the capacity utilization factor or plant load factor, as the case may be specified under these Regulations, the renewable energy project may sell such excess energy to any entity, provided that the first right of refusal for such excess energy shall vest with the concerned Distribution licensee. In case the concerned Distribution licensee purchases the excess energy, the tariff for such excess energy shall be equal to the 75% of the tariff determined by the Commission for the particular technology.

11. Despatch principles for electricity generated from Renewable Energy Sources:

- (1) The biomass power generating station and bagasse-based co-generation power projects shall be subjected to scheduling and despatch principles as per provisions under MPERC Cogeneration and Generation of Electricity from Renewable Sources of Energy (Revision II) Regulations 2021 and the subsequent amendment thereof in line with Madhya Pradesh Electricity Grid Code 2024 and the subsequent amendment thereof.
- (2) Wind power generation plants where the sum of generation capacity of such plants connected at the connection point to the transmission or distribution system is 10 MW and above and connection point is 33 KV and above shall be subjected to scheduling and despatch code as specified under MPERC (Forecasting, Scheduling, Deviation settlement Mechanism and related matters of wind and Solar generating stations) Regulations, 2018. {G-44 of 2018} and amendments thereof.
- (3) Solar generating plants with capacity of 5 MW and above and connected at the connection point of 33 KV level and above shall be subjected to scheduling and despatch code as specified under MPERC (Forecasting, Scheduling, Deviation settlement Mechanism and related matters of wind and Solar generating stations) Regulations, 2018. {G-44 of 2018} and amendments thereof.
- (4) The applicability of Merit Order Despatch for RE Power Projects shall be governed as per the provisions under MPERC Cogeneration and Generation of Electricity from

Renewable Sources of Energy (Revision II) Regulations 2021 and the subsequent amendment thereof.

Chapter 2: Financial Principles

12. Capital Cost:

The norms for the Capital cost as specified in the subsequent technology specific chapters shall 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;

Provided that for project specific tariff determination, the generating company shall submit the break-up of capital cost items along with its petition in the manner specified under Regulation 8.

Capital cost of RE projects as specified for first year of the control period shall remain valid for entire duration of the Control period unless reviewed by the Commission

13. Debt Equity Ratio:

- (1). For Suo-Motu determination of generic tariff, the debt equity ratio shall be considered as 70:30.
- (2). 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 designated in Indian rupees on the date of each investment.

14. Loan and Finance Charges:

(1) Loan Tenure

For the purpose of determination of tariff, loan tenure of 15years shall be considered.

(2) Interest Rate

- (a) The quantum of loan arrived at as specified above shall be considered as the gross normative loan for computation of the interest on loan;
- (b) The normative loan outstanding as on 1st April of every year shall be worked out by deducting the cumulative repayment up to 31st March of the previous year from the gross normative loan;
- (c) For the purpose of computation of tariff, the average SBI marginal Cost of Funds-based Lending Rate ('MCLR') one year tenure prevalent during last six month plus 200 basis points, shall be considered as the normative interest rate;

Notwithstanding any moratorium period availed, 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.

15. Depreciation:

- (1). The value base for the purpose of depreciation shall be the Capital Cost of the asset admitted by the Commission. The Salvage value of the asset shall be considered as 10% and depreciation shall be allowed up to maximum of 90% of the Capital Cost of the asset.

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

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

16. Return on Equity:

- (1) The value base for the equity shall be 30% of the capital cost or actual equity (in case of project specific tariff determination) as determined under Regulation 13.
- (2) The normative Return on Equity for renewable energy projects other than small hydro projects shall be 14%, and that for the small hydro projects shall be 14.5%. 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 by the latest available notified Corporate Tax rate for the remaining Tariff Period.

17. Interest on Working Capital:

- i. The Working Capital requirement in respect of wind energy projects, Small Hydro Power, Solar PV, Solar thermal, Wind – Solar Hybrid power projects, MSW based Power Project and renewable energy with storage projects shall be computed in accordance with the following:
 - a) Operation & Maintenance expenses for one month;
 - b) Receivables equivalent to 45 days of tariff for sale of electricity calculated on normative capacity utilization factor (CUF) or Plant load factor (PLF) as the case may be; and
 - c) Maintenance spares equivalent to 15% of operation and maintenance expenses
- ii. The Working Capital requirement with respect of of biomass power projects with Rankine cycle technology, biogas power projects, biomass gasifier based power projects and Bagasse co-generation projects shall be computed in

accordance with the following: :

- a) Fuel costs for four months equivalent to normative PLF;
 - b) Operation & Maintenance expense for one month;
 - c) Receivables equivalent to 45 days of tariff for sale of electricity calculated on normative capacity utilization factor (CUF) or Plant load factor (PLF) as the case may be and;
 - d) Maintenance spares @ 15% of operation and maintenance expenses
- iii. In the case of Solar Wind Hybrid projects, the Working Capital requirement shall be the sum of the Working Capital requirement determined as per norms applicable for renewable energy sources in proportion to their rated capacity in the project
 - iv. Interest on Working Capital shall be at an interest rate equivalent to the normative interest rate of three hundred and twenty-five (325) basis points above the average State Bank of India Marginal Cost of Funds based Lending Rate (MCLR) (one-year tenor) prevalent during the last available six months.

18. Operation and Maintenance Expenses:

- (1) 'Operation and Maintenance or O&M expenses' shall comprise of repairs and maintenance (R&M), establishment including employee expenses and administrative & general expenses.
- (2) Operation and maintenance expenses shall be determined based on normative O&M expenses as specified by the Commission subsequently in these Regulations for the first Year of Control Period.
- (3) Normative O&M expenses allowed during the first year of the Control Period, i.e. financial year 2024-25, under these regulations, shall be escalated at the rate of 5.89% per annum for the Tariff Period.

19. Rebate

- i. For payment of bills of the Project Entity through revolving and valid Letter of Credit, a rebate of 1.5% shall be allowed.
- ii. Where payments are made other than through Letter of Credit within seven days of presentation of bills by the Project Entity, a rebate of 1% shall be allowed

20. Late Payment Surcharge

In case the payment of any bill for charges payable under these regulations is delayed beyond a period of 45 days from the date of presentation of bills, a late payment surcharge as specified in the Ministry of Power - Electricity (Late Payment Surcharge and Related Matters) Rules, 2022 as amended from time to time shall be levied by the generating company.

21. Sharing of CDM Benefits:

- (1) The proceeds of carbon credit from approved CDM project shall be shared between generating company and concerned beneficiaries in the following manner, namely-
 - a) 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;
 - b) In the second year, the share of the beneficiaries shall be 10%, which shall be progressively increased by 10% every year till it reaches 50%, where after the proceeds shall be shared in equal proportion, by the generating company and the beneficiaries.

22. Subsidy or incentive by the Central / State Government:

The Commission shall take into consideration any capital subsidy/grant/ incentive offered by the Central or State Government, including accelerated depreciation benefit if availed by the generating company for the Renewable Energy Power Plant, while determining Tariff under these Regulations.

Provided further that in case the Central or State Government through a notification specifically provides for any generation based incentive over and above tariff, the same shall not be factored in while determining the tariff.

23. Treatment for Cess, Duties and Water Charges / Statutory charges

Tariff determined under these regulations shall be exclusive of cess and duties on generation, sale of electricity as may be levied by the State Government.

Provided that the cess and duties as may be levied by the State Government shall be allowed as pass through on actual incurred basis.

In case of Hydro projects, the water charges as levied by the State Government shall not be factored in the tariff. The generator has to pay it separately, same shall be allowed as pass through on actual incurred basis.

Chapter 3: Technology specific parameters for Small Hydro Project

24. Capital Cost:

- (1) The normative capital cost for small hydro projects during the first year of the Control Period, i.e. the financial year 2024-25, shall be as follows:

Project Size	Capital Cost (Rs. in Lakh/ MW)
Below 5 MW	820
5 MW to 25 MW	801

- (2) The capital cost for small hydro projects as specified for the first year of the Control Period shall remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

25. Capacity Utilisation Factor:

The CUF for Small Hydro project shall be 30%.

26. Auxiliary Consumption:

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

27. Operation and Maintenance Expenses:

- (i) Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25 shall be equal to 3% of the Project Cost
- (ii) Normative O&M Expenses allowed at the commencement of the Control Period, i.e. financial year 2024-25 under these regulations, shall be escalated at the rate of 5.89% per annum for the balance useful life of the project for the purpose of determination of tariff.

Chapter 4: Technology specific parameters for Biomass Power Projects based on Rankine Cycle Technology

28. Capital Cost:

The normative capital cost of for biomass-based power projects having water cooled condenser shall be Rs. 5.95Cr/MW and for biomass-based power projects having air cooled condenser Rs 6.07 Cr/MW for tariff determination for the control period in this order.

29. Plant Load Factor:

For the purpose of determination of tariff, the Plant Load Factor shall be considered as 80%

30. Auxiliary Consumption:

The normative auxiliary consumption shall be as follows: -

- a. For projects using water-cooled condenser: 10%
- b. For projects using air-cooled condenser: 12%

31. Station Heat Rate:

- (i) For projects using travelling grate boilers: 4200 k Cal/kWh
- (ii) For projects using AFBC boilers: 4125 k Cal/kWh

32. Operation and Maintenance Expenses:

Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25, shall be fixed at 6% of the Project Cost. during first year of operation with an annual escalation at the rate of 5.89% for the tariff period.

33. Fuel Mix:

The biomass power plant shall be designed in such a way that it uses different types of non-fossil fuels (except Bagasse) available within the vicinity of biomass power project such as crop residues, agro-industrial residues, forest residues etc. and other biomass fuels as may be approved by MNRE.

34. Use of Fossil Fuel:

The use of fossil fuels (coal) shall not be allowed.

35. Gross Calorific Value:

The Gross Calorific Value of the biomass fuel used (except Bagasse) for the purpose of determination of tariff shall be at 3100 kCal/kg.

36. Specific Fuel Consumption

Specific fuel consumption of 1.35 kg/kWh shall be considered for tariff determination purpose in this control period

37. Fuel Cost:

Biomass fuel price during first year of operation shall be Rs 3705 / MT for FY 2024-25 and same shall be escalated at the rate of 3.45% per annum from 2nd year onward for determination of levelized tariff for the Biomass based power projects to be commissioned in this control period.

Chapter 5: Technology specific parameters for Bagasse based Cogeneration Projects

As defined in the Electricity Act, 2003, the cogeneration means a process which simultaneously produces two or more forms of useful energy (including electricity). In bagasse-based cogeneration projects, the bagasse is burnt to produce steam. This steam is used in production of sugar as a primary process. Also, it is used to run the turbine generator to produce electricity as a secondary process. The sugar industry uses the electricity so produced for its own consumption and the surplus energy, if any, will be available for sale either to third party or to the grid.

In case DISCOM is willing to purchase such surplus power same shall be purchased as per the tariff determined by the Commission during the Control period.

38. Capital Cost:

Normative capital cost for the bagasse-based co-generation projects shall be Rs. 471 lakhs/MW for the first year of the Control Period, i.e. financial year 2024-25 and will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

39. Plant Load Factor:

The Plant Load Factor for the purpose of determination of Tariff shall be 53% for the determination of tariff.

40. Auxiliary Consumption:

The auxiliary power consumption factor shall be 8.5% of the gross generation for tariff determination purpose for the control period for the determination of tariff.

41. Station Heat Rate:

The Station Heat Rate for biomass power projects shall be 3600 kCal/ kWh.

42. Operation and Maintenance Expenses:

Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25, shall be fixed at 3% of Project Cost during first year of operation with an annual escalation at the rate of 5.89%..

43. Gross Calorific Value:

The Gross Calorific Value of the biomass fuel used (except Bagasse) for the purpose of determination of tariff shall be at 2250 kCal/kg.

44. Fuel Cost:

The price of bagasse for the first year of the Control Period, i.e. financial year 2024-25, shall be equal to the 50% of the administered price (FRP) of sugarcane declared for FY 2024-25

with an escalation rate of 3.45 % per annum from 2nd year onward for determination of levelized tariff for the bagasse-based power projects to be commissioned in this control period.

45. Specific Fuel Consumption

Specific fuel consumption of 1.6 kg/kWh shall be considered for tariff determination purpose in this control period

46. Use of Fossil Fuel:

The use of fossil fuels (coal) shall not be allowed

Chapter 6: Technology specific parameters for Biogas based Power Projects

47. Technology Aspect:

The norms for tariff determination specified hereunder are for grid connected biogas-based power projects that uses 100% Biogas fired engine, coupled with Biogas technology using 40% Cow dung/manure, and 60% agricultural crop residue.

48. Capital Cost:

The normative capital cost for such biogas-based power project shall be Rs. 1354 Lakh/MW for the first year of the Control Period, i.e. financial year 2024-25 and shall remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

49. Plant Load Factor:

50. Plant load factor shall be considered as 90% for determination of tariff.

51. Auxiliary Consumption:

The auxiliary power consumption factor shall be 10% for determination of tariff.

52. Operation and Maintenance Expenses:

Normative O&M expenses for the first year of the Control Period, i.e. financial year 2024-25 shall be fixed at 4% of capital cost and shall be escalated at the rate of 5.89% per annum for the Tariff Period.

53. Specific Fuel Consumption:

Normative specific fuel consumption shall be 2.61 kg/kWh for tariff determination purpose for control period considering the fuel mix considered for the state.

54. Fuel Cost:

Feedstock price during the first year of the Control Period, i.e. financial year 2024-25, shall be Rs. 1260 /MT and shall be escalated at the rate of 3.45% per annum from 2nd year onward for determination of tariff for the biogas -based power projects to be commissioned in this control period.

55. Income from Manure

The income from the manure / by product recovery shall be considered as 10% of the Feedstock cost. This income is set off against the Fuel Cost during the determination of Tariff.

Chapter 7: Technology specific parameters for Municipal Solid Waste Power Projects

56. Technology Aspects

The norms for tariff determination specified hereunder are for MSW based power projects using incineration technology and complying with the emission standards specified in Solid Waste Management Rules, 2016 shall be considered

57. Capital Cost:

The normative capital cost for the Municipal Solid Waste power projects shall be Rs.1871 Lakh/MW during the Control Period.

58. Plant Load Factor:

The Plant Load Factor for the purpose of determination of Tariff shall be:

- a) During the first year of operation: 65%
- b) From 2nd Year onwards : 75%

59. Auxiliary Consumption:

The auxiliary power consumption factor shall be 15% for the determination of tariff.

60. Operation and Maintenance Expenses:

Normative O&M expenses for the first year of operation during the Control period shall be fixed at 5% of the capital cost and shall be escalated at the rate of 5.89% per annum during the balance useful life of the project.

61. Other Costs:

The capital cost is inclusive of the cost towards i) plant and machinery (including pre-processing equipment), therefore fuel cost in such projects shall not be considered. Accordingly, related norm like Station Heat Rate, Fuel cost escalation, Gross Calorific Value etc. are not applicable.

Chapter 8: Technology specific parameters for Solar Photovoltaic Power Project

62. Technology Aspects:

Norms for Solar Photovoltaic (PV) power under these Regulations shall be applicable for grid connected PV systems that directly convert solar energy into electricity and are based on the technologies such as crystalline silicon or thin film etc. as may be approved by MNRE.

63. Capital Cost:

The Commission shall determine only project specific capital costs considering the prevailing market trends.

64. Capacity Utilisation Factor:

The Commission shall only approve capacity utilisation factors for project specific tariffs:

Provided that the minimum capacity utilization factor for solar PV power projects shall be 21%:

Provided also that the minimum capacity utilisation factor for floating solar projects shall be 19%

65. Operation and Maintenance Expenses:

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

66. Auxiliary Consumption:

The Commission shall only approve auxiliary consumption for project specific tariffs:

Provided that the maximum auxiliary consumption for solar PV power projects shall be 0.75%;

Provided also that the maximum auxiliary consumption for floating solar projects shall be 0.75%

Chapter 9: Technology specific parameters for Solar Thermal Power Project

67. Technology Aspects:

Norms for Solar thermal power under these Regulations shall be applicable for Concentrated solar power (CSP) technologies viz. line focusing, or point focusing, as may be approved by MNRE, and uses direct sunlight, concentrating it several times to reach higher energy densities and thus higher temperatures whereby the heat generated is used to operate a conventional power cycle to generate electricity.

68. Capital Cost:

The Commission shall determine only project specific capital costs considering the prevailing market trends.

69. Capacity Utilisation Factor (CUF):

The Commission shall only approve capacity utilization factors for project specific tariffs:

Provided that the minimum capacity utilization factor for solar thermal power projects shall be 23%:

70. Operation and Maintenance Expenses:

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

71. Auxiliary Consumption:

The Commission shall only approve auxiliary consumption for project specific tariffs:

Provided that the maximum auxiliary consumption for solar thermal power projects shall be 10%;

Chapter 10: Technology specific parameters for Wind Energy

72. Capital Cost:

- (1) The Commission shall determine only project specific capital cost considering the prevailing market trends. If required, the Commission shall take opinion of expert organization to ascertain financial prudence of the cost proposed by the petitioner.

73. Capacity Utilisation Factor (CUF):

- (1) CUF norms for this control period shall be as follows:

Annual Mean Wind Power Density (W/m ²)	CUF
Up to 220	22%
221-275	24%
276-330	28%
331-440	33%
> 440	35%

- (2) The annual mean wind power density specified in sub-regulation (1) above shall be measured at 100-meter hub-height.
- (3) Wind power projects shall be classified into particular wind zone site as per MNRE guidelines for wind measurement. Based on validation of wind mast by National Institute of Wind Energy, State Nodal Agency should certify zoning of the proposed wind farm complex.
- (4) The M.P. Power Management Co. Ltd. shall invariably provide monthly data of generation of units by the Wind Electric Generators projects to the Commission by 20th of each month following the month of generation.

74. Operation and Maintenance (O & M) Expenses:

The Commission shall determine project specific O&M expenses based on the prevailing market information only.

Chapter 11: Technology specific parameters for Biomass Gasifier based Power Project

75. Technology Aspects:

Norms for Biomass gasifier projects under these Regulations shall be applicable for the projects using 100% producer gas engine, coupled with gasifier technologies approved by MNRE.

76. Capital Cost:

The Commission shall determine only project specific capital costs considering the prevailing market trends.

77. Plant Load Factor (PLF):

The Commission shall only approve Plant Load factor for project specific tariffs:

Provided that the minimum Plant Load Factor for Biomass gasifier power projects shall be 85%:

78. Operation and Maintenance Expenses:

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

79. Auxiliary Consumption:

The Commission shall only approve auxiliary consumption for project specific tariffs:

Provided that the maximum auxiliary consumption for solar thermal power projects shall be 10%;

Chapter 12: Technology specific parameters for Wind – Solar Hybrid Energy Projects

80. Capital Cost

The capital cost shall be determined on a project specific basis considering the prevailing market trends.

81. Capacity Utilization Factor

The Commission shall determine only project specific capacity utilisation factor in respect of Wind-Solar Hybrid Power Projects taking into consideration the proportion of rated capacity of each renewable energy source, as the case may be and applicable capacity utilisation factor for such renewable energy source, as the case may be:

Provided that the minimum capacity utilization factor for Wind-Solar Hybrid Power Projects shall be 30% when measured at the inter-connection point, where the energy is injected into the grid.

82. O&M expenses

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

83. Tariff

The tariff for Wind-Solar Hybrid Power project shall be a composite levellised tariff for the project as a whole by factoring in the tariff components up to the minimum of the useful life of the RE technologies combined for such project:

Provided that, in case any of the RE technologies combined for RE hybrid project is left with further useful life, the levellised tariff for remaining useful life of such RE technology shall be determined separately, by factoring in the tariff components for the remaining useful life.

Chapter 13: Technology specific parameters for Renewable Energy with storage Projects

84. Capital Cost

The Commission shall determine only project specific capital costs for renewable energy with storage projects considering the prevailing market trends.

85. Storage Efficiency

(1) The Commission shall approve the storage efficiency only for project specific tariffs:

Provided that the minimum efficiency for storage based on the technology of solid – state batteries shall be 80%:

Provided further that the minimum efficiency for storage based on the technology of pumped storage shall be 75%:

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

86. Operation and Maintenance expenses

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

87. Tariff determination for Energy Storage

The tariff for renewable energy with storage project shall be a composite tariff or differential tariff based on the time of day, determined for energy supplied from the Project, including the energy supplied from the storage facility:

Provided that such tariff may be determined for the supply of power on round the clock basis or for time periods as agreed by the Project Developer and Beneficiary.

Chapter 14: Miscellaneous

88. Deviation from norms:

Tariff for sale of electricity generated from a generating station based on renewable energy sources, may also be agreed between a generating company and a licensee, in deviation from the norms specified in these Regulations subject to the conditions that the levellised tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levellised tariff calculated on the basis of the norms specified in these Regulations.

89. Saving of inherent power of the Commission

- (1) Nothing in these Regulations shall be deemed to limit or otherwise affect the inherent power of the Commission to make such orders as may be necessary for meeting the ends of justice or to prevent the abuse of the process of the Commission.
- (2) Nothing in these Regulations shall bar the Commission from adopting a procedure for dealing with the matters in conformity with the provisions of the Act, which is at variance with any of the provisions of these Regulations, if the Commission, for reasons to be recorded in writing, deems it necessary or expedient.
- (3) Nothing in these Regulations shall, expressly or impliedly, bar the Commission to deal with any matter or exercise any power under the Act for which no Regulations have been framed, and the Commission may deal with such matters, powers and functions in a manner it thinks fit.

90. Power to amend:

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected may amend any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

91. Power to Relax

The Commission may by general or special order, for reasons to be recorded in writing, and after giving an opportunity of hearing to the parties likely to be affected, relax any of the provisions of these regulations on its own motion or on an application made before it by an interested person.

92. Power to remove difficulty

If any difficulty arises in giving effect to the provisions of these Regulations, the Commission may, by general or specific order or standing directions in implementation of these regulations and matters incidental or ancillary thereto as may appear to be necessary for removing the difficulty.

93. Repeal and Saving

- (1) Save as otherwise provided in these Regulations, the Madhya Pradesh Electricity

Regulatory Commission (Terms and Conditions for Tariff determination of energy from Renewable Energy Sources) Regulations, 2017 along with its amendments is hereby repealed.

- (2) Notwithstanding such repeal, anything done or any action taken or proposed to have been done or taken including any code, notification, inspection or order or notice made or issued or any appointment, confirmation or declaration made or any license, permission, authorization, or exemption granted or any document or instrument executed or any direction given under the repealed regulations shall, in so far as it is not inconsistent with the provisions of the Regulation, be deemed to have been done or taken under corresponding provisions of the Regulations.

By Order of the Commission
Commission Secretary.

FORM 1.1 Form Template for (Solar PV , Solar thermal , Wind Power, Hybrid)

Sl No.	Assumption Head	Sub Head	Sub Head- 2	Unit	Assumption
					Upto 1 Mw
1	Power Generation	Capacity			
			Installed Power Generation Capacity	Mw	
			Capacity Utilization Factor	%	
			Auxiliary Consumption	%	
			Useful Life	Years	
2.	Project Cost	Capital Cost/ Mw	Power Plant Cost	₹ Lakhs / Mw	
3.	Period		Tariff Period	Years	
4.	Sources Of Fund	Debt: Equity			
			Debt	%	
			Equity	%	
			Total Debt Amount	₹ Lakhs	
			Total Equity Amount	₹ Lakhs	
		Debt Component			
			Loan Amount	₹ Lakhs	
			Moratorium Period	Years	
			Repayment Period (Include Moratorium)	Years	
			Interest Rate	%	
		Equity Component			
			Equity Amount	₹ Lakhs	
			Return On Equity For First Project Life	%Pa	
			Discount Rate		
5.	Financial Assumptions				
		Fiscal Assumption	Income Tax	%	
		Depreciation			
			Allowed Depreciation	%	
			Depreciation Rate For First 13 Years	%	
			Depreciation Rate 14th Year Onwards	%	
		Incentive	Generation Based Incentive If Any	₹ Lakhs	
			Period For Gbi	Years	
6.	Working Capital	For Fixed Charges			
		O&M Charges		Months	
		Maintenance Spare	(% Of O&M Expenses)		
		Receivables For Debtors		Months	
		Interest On Working Capital		%	
7.	Operation & Maintenance				
		O&M Expenses (17-18)		₹ Lakhs	
		Total O&M Expenses Escalation		%	
8.	Generation And Sale Of Energy			Hrs	
		Total No. Of Hours			

Form 1.2 Form Template for (Biomass gasifier Projects)

Sl No.	Assumption Head	Sub Head	Sub Head- 2	Unit	Assumption
					Upto 1 Mw
1	Power Generation	Capacity	Installed Power Generation Capacity	Mw	
			Auxiliary Consumption Factor	%	
			Plf(During Stabilisation For 6 Month)	%	
			Plf(During First Year After Stabilisation)	%	
			Plf(Second Year Onwards)	%	
			Commercial Operation Date	Mm/Yyyy	
			Useful Life	Years	
2.	Project Cost	Capital Cost/ Mw	Normative Capital Cost	₹ Lakhs/ Mw	
			Capital Cost	₹ Lakhs	
			Capital Subsidy, If Any,	₹ Lakhs	
			Net Capital Cost	₹ Lakhs	
3.	Sources Of Fund	Debt: Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
			Total Debt Amount	₹ Lakhs	
			Total Equity Amount	₹ Lakhs	
		Debt Component	Loan Amount	₹ Lakhs	
			Moratorium Period	Years	
			Repayment Period (Include Moratorium)	Years	
			Interest Rate	%	
		Equity Component	Equity Amount	₹ Lakhs	
			Return On Equity For First Project Life	%Pa	
			Discount Rate (Equivalent To Wacc)	%	
4.	Financial Assumptions	Fiscal Assumption	Income Tax	%	
		Depreciation	Depreciation Rate (Power Plant)		
			Depreciation Rate For First 13 Years	%	
		Incentive	Generation Based Incentive If Any	₹ Lakhs	
			Period For Gbi	Years	
5.	Working Capital	For Fixed Charges	(% Of O&M Expenses)		
		O&M Charges		Months	
		Maintenance Spare			
		Receivables For Debtors		Months	
		For Variable Charges			
		Interest On Working Capital		%	

6.	Operation & Maintenance	O&M Expenses		₹ Lakhs	
		O&M Expenses Escalation		%	
7.	Generation And Sale Of Energy	Total No. Of Hours		Hrs	
8.	Fuel Related Assumptions	Heat Rate	During Stabilisation Period	Kcal/Kwh	
			After Stabilisation Period	Kcal/Kwh	
		Fuel	GCV Of Biomass fuel	Kcal/Kg	
			Fuel Price /Yr-1	Rs/MT	
			Fuel Price Escalation Factor		

Form 2.1 Form Template for Levellised Tariff computation (Solar PV, Solar thermal, Wind, Hybrid)

RE Tariff (Small hydro project, solar PV, Wind Power)																																							
Units Generation	Unit	Year -->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35		
Installed Capacity	MW																																						
Gross Generation	MU																																						
Auxiliary Consumption	MU																																						
Net Generation	MU																																						
Fixed Cost	Unit																																						
O&M Expenses	₹ Lakh																																						
Depreciation	₹ Lakh																																						
Interest on Term Loan	₹ Lakh																																						
Interest on Working Capital	₹ Lakh																																						
Return on Equity	₹ Lakh																																						
Total Fixed Cost	₹ Lakh																																						
Per Unit Cost of Generation	Unit																																						
O&M expenses	₹/kWh																																						
Depreciation	₹ Lakh																																						
Int. on Term Loan	₹ Lakh																																						

Form 2.2 Form Template for Levellised Tariff computation (Biomass Gasifier)

RE Tariff Biomass Gasifier																											
Units Generation	Unit	Year->	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Installed Capacity	MW																										
Net Generation	MU																										
Tariff Component (Fixed Charge)	Unit																										
O&M Expenses	₹ Lakh																										
Depreciation	₹ Lakh																										
Interest on Term Loan	₹ Lakh																										
Interest on Working Capital	₹ Lakh																										
Return on Equity	₹ Lakh																										
Total Fixed Cost	₹ Lakh																										
Tariff Components (Variable charge)																											
Biomass Fuel Type-1	₹ Lakh																										
Biomass Fuel Type-2	₹ Lakh																										
Sub-total (Fuel Costs)	₹ Lakh																										
Fuel Cost Allocable to Power	%																										
Total Fuel Costs	₹ Lakh																										
Per Unit Tariff Components (Fixed)	Unit																										
PU O&M Expenses	₹/kWh																										
PU Depreciation	₹/kWh																										
PU Interest on Term Loan	₹/kWh																										

