CENTRAL ELECTRICITY REGULATORY COMMISSION

NEW DELHI

Dated: 17.02.2024

DRAFT NOTIFICATION

No.: RA-14026(11)/1/2023-CERC: In exercise of powers conferred under Section 61 read with sub-clause (s) of Clause (2) of Section 178 of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, and after previous publication, the Central Electricity Regulatory Commission hereby makes the following regulations:

1. Short title and commencement

1) These regulations may be called the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2024.
2) These regulations shall come into force on 01.04.2024, and, unless reviewed earlier or extended by the Commission, shall remain in force up to 31.03.2027.

2. Definitions and Interpretation

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 the 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) '**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); wood produced in dedicated energy plantations or recovered from wild bushes or weeds; and the wood waste produced in some industrial operations;

d) **'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);

e) **'Biogas'** means a gas produced when organic matter like crop residues, sewage, and manure breaks down (ferments) in an oxygen-free environment;

f) **'Capital cost'** means the capital cost of a project as referred to in Regulations 12, 24, 27, 31, 39, 46, 50, 56, 62, 67, and 71;

g) **'Commission'** means the Central Electricity Regulatory Commission referred to in sub-section (1) of section 76 of the Act;

h) **'Conduct of Business Regulations'** means the Central Electricity Regulatory Commission (Conduct of Business) Regulations, 2023, or any subsequent re-enactment thereof;

i) **'Control Period'** means the period during which the norms for determination of tariff specified in these regulations shall remain valid;

j) **'Floating solar project'** or **'FPV'** 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;

k) **'Grid Code'** means the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2023, as amended from time to time or any subsequent re-enactment thereof;

l) **'Gross calorific value'** or **'GCV'** in relation to a fuel used in a generating station means the heat produced in kCal by the complete combustion of one kilogram of solid fuel, or one litre of liquid fuel or one standard cubic metre 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 the interface point of renewable energy generating facility with the transmission system or distribution system, where the energy is injected, as the case may be, and include:

   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; and

   ii. in relation to small hydro projects, biomass gasifier based power projects, non-fossil fuel based co-generation projects and solar thermal power projects, line isolator on the outgoing feeder on the HV side of the generator transformer.

p) **'MNRE'** means the Ministry of New and Renewable Energy of the 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) **'Non-fossil fuel based co-generation project'** means a generating station that uses the process in which more than one form of energy (such as steam and electricity) is produced in a sequential manner by use of biomass;

s) **'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;

t) '**Project'** means a generating station or an evacuation system up to an inter-connection point, as the case may be, and in the case of a small hydro project, includes all components of the generating facility such as a dam, intake water conductor system, power generating station and generating units of the scheme, as apportioned to power generation;

u) **'Pumped storage hydro project'** means a hydropower project which generates power through water stored as potential energy, pumped from a lower elevation reservoir to a higher elevation reservoir;

v) **'Refuse derived fuel'** or **'RDF'** means a segregated combustible fraction of solid waste other than chlorinated plastics in the form of pellets or fluff produced by drying, de-stoning, shredding, dehydrating, and compacting combustible components of solid waste that can be used as fuel;

w) **'Renewable energy'** or **'RE'** means the electricity generated from renewable energy sources;

x) **'Renewable energy project'** means a generating station that produces electricity from renewable energy sources;

y) **'Renewable energy source'** means and includes sources of renewable energy such as hydro, wind, and solar, including its integration with combined cycle, biomass, biofuel cogeneration, urban or municipal waste, and such other sources as recognised or approved by the Central Government ;

z) **'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;

aa) **'Renewable hybrid energy project'** means a renewable energy project that produces electricity from a combination of renewable energy sources connected at the same inter-connection point;

bb) **'Small hydro project'** means a hydropower project with an installed capacity up to and including 25 MW or, as defined by the Government of India, from time to time at a single location;

cc) **'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;

dd) **'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;

ee) **'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;

ff) **'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;

gg) **'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.

hh) **'Useful Life'** in relation to the project, including a dedicated evacuation system, from the date of commercial operation of such project, shall mean the following: -

i	Wind power project	25 years
ii	Biomass power project with Rankine cycle technology	25 years
iii	Non-fossil fuel based co-generation project	25 years
iv	Small hydro Project	40 years
v	Municipal solid waste based power project/Refuse derived fuel based power project	20 years
vi	Solar PV power project/ floating solar project/Solar thermal power project	25 years
vii	Biomass gasifier based power project	25 years

viii	Biogas based power project	25 years
ix	Renewable hybrid energy project	Minimum of the Useful Life of different RE technologies combined for Renewable Hybrid Energy Project for Composite Tariff as specified under Regulation 70.
x	Renewable energy with storage project	Same as the Useful Life of the project, assuming that there is no storage

ii) **'Year'** means a financial year.

2) Save as aforesaid and unless repugnant to the context or if the subject matter otherwise requires, words and expressions used in these regulations and not defined, but defined in the Act, or the Grid Code or the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019, as amended from time to time shall have the meanings assigned to them respectively in the Act, or the Grid Code or the Central Electricity Regulatory Commission (Terms and Conditions of Tariff) Regulations, 2019, as amended from time to time.

3. Scope and extent of application

These regulations shall apply to cases where the tariff, for a grid connected generating station or a unit thereof commissioned during the Control Period and based on renewable energy sources is to be determined by the Commission under Section 62 read with Section 79 of the Act:

Provided that in cases of wind power projects, small hydro projects, biomass power projects with Rankine cycle technology, non-fossil fuel based co-generation projects, solar PV power projects, floating solar projects, solar thermal power projects, renewable hybrid energy projects, renewable energy with storage projects, biomass gasifier based power projects, biogas based power projects, municipal solid waste based power projects, and refuse derived

fuel based power projects, these regulations shall apply subject to the fulfilment of eligibility criteria specified in Regulation 4 of these Regulations.

4. Eligibility Criteria

a) Wind power project – The project that uses new wind turbine generators and is located at sites, on-shore or off-shore, approved by the State Nodal Agency or Appropriate Government.

b) Small hydro project – The project that uses new plant and machinery and is located at sites approved by the State Nodal Agency or Appropriate Government.

c) Biomass power project with Rankine cycle technology – The project that uses new plant and machinery, is based on Rankine cycle technology and does not use any fossil fuel.

d) Non-fossil fuel based co-generation project – The project that uses new plant and machinery and is based on the topping cycle mode of co-generation.

Topping cycle mode of co-generation – Any facility that uses non-fossil fuel input for power generation and also utilizes the thermal energy generated for useful heat 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 the useful thermal output be greater than 45% of the facility's energy consumption during crushing season. Explanation- For the purposes of this clause,

(a) **'Useful power output'** is the gross electrical output from the generator. There will be an auxiliary consumption in the cogeneration plant itself (e.g. the boiler feed pump and the FD/ID fans). In order to compute the net power output, it would be necessary to subtract the auxiliary consumption from the gross output. For simplicity of calculation, the useful power output is defined as the gross electricity (kWh) output from the generator.

(b) **'Useful Thermal Output'** is the useful heat (steam) that is provided to the process by the cogeneration facility.

(c) **‘Energy Consumption’** of the facility is the useful energy input that is supplied by the fuel (normally bagasse or other such biomass).

(d) **'Topping Cycle'** means a co-generation process in which thermal energy produces electricity, followed by useful heat application.

e) Solar PV power project, floating solar project and solar thermal power project – The project is based on technologies approved by MNRE.

Provided that floating solar projects installed with existing renewable energy projects other than ground mounted Solar PV projects shall be treated as renewable hybrid energy projects.

f) Renewable hybrid energy project – The rated capacity of generation from one renewable energy source is at least 33% of the total installed capacity of the renewable hybrid energy project, which operates at the same point of interconnection: Provided that energy is injected into the grid at the same interconnection point and metering is done at such a common interconnection point accordingly.

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) Biogas based power project – The project uses new plant and machinery and has a grid connected system that uses a100% biogas fired engine, coupled with biogas technology for co-digesting agriculture residues, manure and other bio-waste as approved by MNRE.

i) Municipal solid waste based power projects – The project uses new plant and machinery based on Rankine cycle technology and uses municipal solid waste as fuel.

j) Refuse derived fuel based power projects – The project uses new plant and machinery based on Rankine cycle technology and uses refuse derived fuel as fuel.

k) 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.

Chapter 1: General Principles

5. Control Period

The Control Period under these Regulations shall be from 01.04.2024 to 31.03.2027:

Provided that the tariff determined as per these regulations for the RE projects commissioned during the Control Period shall remain valid for the tariff period;

Provided further that the tariff norms specified in these regulations shall continue to remain applicable until notification of the revised norms through subsequent re-enactment of these regulations.

6. Generic Tariff

The generic tariff shall be determined by the Commission on an 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
f) Municipal Solid Waste based power projects and Refuse Derived Fuel based power projects;

Provided that the generic tariff determined for the year in which an RE project is commissioned shall be applicable for such RE Project of the same type 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:

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

– if a project developer opts for project specific tariff;

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 the Central Government.

b) Financial and operational norms specified in 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) In case of renewable energy projects for which a generic tariff has to be determined as per these regulations, the Commission shall determine such generic tariff prior to the commencement of the year for each year of the Control Period:

Provided that for the first year of the Control Period, i.e., from 01.04.2024 to 31.03.2025, the generic tariff shall be determined upon issuance of these regulations.

(2) A petition for determination of project specific tariff shall be accompanied by such fee as may be specified in the Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012, as amended from time to time or any subsequent re-enactment thereof, and shall be accompanied by:

a) Information in forms 1.1, 1.2, 2.1, 2.2 and 2.3, 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) Following documents in case of a petition for determination of project specific tariff by renewable energy projects, where tariff from such renewable energy sources is generally determined through a 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.
g) Any other information directed by the Commission.

(3) The proceedings for determination of tariff shall be in accordance with the provisions of the Conduct of Business Regulations.

9. 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 for renewable energy projects having fuel cost component, like biomass power projects with rankine cycle technology, biomass gasifier based power projects, biogas based power projects and non-fossil fuel based co-generation projects, single part tariff with two components, fixed cost component and fuel cost component, shall be determined.

10. Tariff Design

(1) The generic tariff shall be determined, on a levelized basis, considering the year of commissioning of the project, for the tariff period of the project:

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

(2) For the purpose of levelized tariff computation, a discount factor equivalent to the post-tax weighted average cost of capital shall be considered.

(3) The above principles shall also apply for project specific tariffs.

11. 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 beneficiary. In case the concerned beneficiary purchases the excess energy, the tariff for such excess energy shall be equal to the tariff applicable for that year.

Chapter 2: Financial Principles

12. Capital Cost

Norms for capital cost, as specified in relevant chapters of these regulations, shall be inclusive of land cost, pre-development expenses, all capital work including plant & machinery, civil work, erection, commissioning, financing cost, interest during construction and evacuation infrastructure up to an inter-connection point.

13. Debt Equity Ratio

(1) For determination of generic tariff and project specific tariff, the debt-equity ratio shall be considered as 70:30:

Explanation I:- project specific tariffs, where the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as a normative loan;

Explanation II:- project specific tariffs where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff;

Explanation III:- the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment;

Explanation IV :- the debt-equity ratio shall be considered after deducting the amount of grant or capital subsidy received for the project for arriving at the amount of debt and equity.

Explanation V-The premium, if any, raised by the generating company while issuing share capital and investment of internal resources created out of its free reserve for the funding of the project shall be reckoned as paid-up capital for the purpose of computing return on equity only if such premium amount and internal resources are actually utilised for meeting the capital expenditure of the renewable energy project.

(2) The project developer shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding the infusion of funds from internal resources in support of the utilization made or proposed to be made to meet the capital expenditure of the renewable energy project.

14. Loan Tenure and Interest on Loan

(1) Loan Tenure

For determination of generic tariff and project specific tariff, loan tenure of 15 years shall be considered.

(2) Interest on Loan

(a) The loans arrived at in the manner indicated in Regulation 13 shall be considered as gross normative loans for the calculation of interest on loans. For project specific tariff, the normative loan outstanding as on the 1st of April of every year shall be worked out by deducting the cumulative repayment up to the 31st of March of the previous year from the gross normative loan.

(b) For the purpose of computation of tariff, the normative interest rate of two hundred (200) 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 shall be considered.

(c) Notwithstanding any moratorium period availed by the project developer, the repayment of the 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 project admitted by the Commission. The salvage value of the project shall be considered as 10%, and depreciation shall be allowed up to a maximum of 90% of the capital cost of the project:

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 equity shall be 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

(1) The Working Capital requirement in respect of wind power projects, small hydro projects, solar PV power projects, floating solar projects, solar thermal power projects, municipal solid waste based power projects and refuse derived fuel based power projects and renewable energy with storage projects shall be computed in accordance with the following:

a) Operation and Maintenance expenses for one month;

b) Receivables equivalent to 45 days of tariff for the sale of electricity calculated on the normative Capacity Utilisation Factor or Plant Load Factor, as the case may be; and

c) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.

(2) The Working Capital requirement in respect of biomass power projects with Rankine cycle technology, biogas power projects, biomass gasifier based power projects and non-fossil fuel based co-generation projects shall be computed in accordance with the following:

a) Fuel costs for four months equivalent to normative Plant Load Factor;
b) Operation and Maintenance expenses for one month;
c) Receivables equivalent to 45 days of tariff for the sale of electricity calculated on the plant load factor; and
d) Maintenance spares equivalent to 15% of Operation and Maintenance expenses.

(3) In the case of renewable hybrid energy 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.

(4) 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. Calculation of capacity utilization factor and plant load factor:

The number of hours in a year for calculation of the capacity utilization factor and plant load factor, as the case may be, shall be considered as 8766.

19. Operation and Maintenance Expenses

(1) Operation and Maintenance expenses shall be determined for the Tariff Period of the project based on normative O&M expenses specified in these regulations for the first year of the Control Period.

(2) 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.

20. Rebate

(1) For payment of bills of the generating company through revolving and valid letter of credit on presentation or through National Electronic Fund Transfer (NEFT) or Real Time Gross Settlement (RTGS) payment mode within a period of 5 days of presentation of bills, a rebate of 1.5% on bill amount shall be allowed.

Explanation: In case of computation of ’5 days’, the number of days shall be counted consecutively without considering any holiday. However, in case the last day or 5th day is an official holiday, the 5th day for the purpose of rebate shall be construed as the immediate succeeding working day.

(2) Where payments are made on any day after 5 days within a period of one month from the date of presentation of bills by the generating company, a rebate of 1% shall be allowed.

21. 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.

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

(1) 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 while determining the tariff under these regulations:

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:

i. Assessment of benefit shall be based on normative capital cost, accelerated depreciation rate and corporate income tax rate as per relevant provisions of the Income Tax Act, 1961, as amended from time to time; and

ii. Capitalization of renewable energy projects during the second half of the fiscal year.

iii. Per unit benefit shall be derived on a levelized basis at a discount factor equivalent to the weighted average cost of capital.

(2) Any grant, subsidy or incentive availed by renewable energy project, which is not considered at the time of determination of tariff, shall be deducted by the beneficiary in subsequent bills after receipt of such grant, subsidy or incentive in suitable instalments or within such period as may be stipulated by the Commission.

(3) 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.

23. 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, and electricity duty on auxiliary consumption, subject to the maximum of normative auxiliary consumption.

Chapter 3: Parameters for wind power projects

24. Capital Cost

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

25. Capacity Utilisation Factor

(1) Capacity utilization factor norms for this Control Period shall as follows:

Annual Mean Wind Power Density (W/m2)	Capacity Utilization Factor
Up to 220	22%

Annual Mean Wind Power Density (W/m2)	Capacity Utilization Factor
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 a 100-meter hub-height.

(3) Wind power projects shall be classified into particular wind zone sites as per MNRE guidelines for wind measurement. Based on the validation of the wind mast by the National Institute of Wind Energy, the State Nodal Agency should certify the zoning of the proposed wind farm complex.

26. Operation and Maintenance expenses

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

Chapter 4: Parameters for small hydro projects

27. 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:

Region	Project Size	Capital Cost (Rs. lakh/ MW)
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	1200
	5 MW to 25 MW	1200
Other States	Below 5 MW	890
	5 MW to 25 MW	1027

(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.

28. Capacity Utilisation Factor

The normative capacity utilization factor for the small hydro projects located in Himachal Pradesh, Uttarakhand, West Bengal, Jammu and Kashmir, Ladakh and North-Eastern States shall be 45%, and for other States, it shall be 30%:

Explanation: For the purpose of this Regulation, the normative capacity utilization factor is net of free power to the home State, if any.

29. Auxiliary Consumption

Normative auxiliary consumption for the small hydro projects shall be considered as 1.0%.

30. Operation and Maintenance expenses

(1) Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25 shall be as under:

Region	Project Size	O&M Expenses (Rs. lakh/ MW)
Himachal Pradesh, Uttarakhand, West Bengal, Union Territory of Jammu and Kashmir, Union Territory of Ladakh and North Eastern States	Below 5 MW	49.54
	5 MW to 25 MW	37.15
Other States	Below 5 MW	39.90
	5 MW to 25 MW	28.90

(2) 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 specified in Regulation 19 of these Regulations for the Tariff Period.

Chapter 5: Parameters for biomass power projects based on Rankine cycle technology

31. Capital Cost

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

Biomass power projects based on Rankine cycle technology	Capital Cost (Rs. lakhs/ MW)
Project [other than rice straw and juliflora (plantation) based project] with water-cooled condenser	638
Project [other than rice straw and Juliflora(plantation) based project] with air-cooled condenser	685
For rice straw and juliflora (plantation) based project with water-cooled condenser	697
For rice straw and juliflora (plantation) based project with air-cooled condenser	744

(2) The capital cost for biomass power projects based on Rankine cycle technology 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.

32. Plant Load Factor

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

33. 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%

34. Station Heat Rate

The Station Heat Rate shall be:

a) For projects using travelling grate boilers: 4200 kCal/kWh
b) For projects using AFBC boilers: 4125 kCal/kWh

35. Operation and Maintenance expenses

Normative O&M Expenses for the first year of the Control Period, i.e. financial year 2024-25, shall be Rs.55.03 lakhs per MW and shall be escalated at the rate at the rate specified in Regulation 19 of these Regulations for the Tariff Period.

36. Use of Fossil Fuel

The use of fossil fuels shall not be allowed:

Provided that for biomass power projects based on Rankine cycle technology commissioned on or before 31.03.2017, the use of fossil fuels to the extent of 15% in terms of gross calorific value on an annual basis shall be allowed for the Useful Life of the project from the date of commercial operation.

37. Gross Calorific Value

The gross calorific value of biomass fuel, for the purpose of determination of tariff, shall be at 3100 kCal/kg.

38. Fuel Cost

Biomass fuel price during the first year of the Control Period, i.e. financial year 2024-25 shall be as specified in the table below and shall be escalated at the rate of 3.45% per annum to arrive at the base price for subsequent years of the Control Period unless reviewed earlier by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 3.45% per annum shall be applicable on biomass fuel price.

State	**Biomass prices for FY 2024-25 (Rs./MT)**
Andhra Pradesh	3983

State	Biomass prices for FY 2024-25 (Rs./MT)
Haryana	4534
Maharashtra	4637
Punjab	4742
Rajasthan	3958
Tamil Nadu	3918
Telangana	3983
Uttar Pradesh	4053
Other States	4260

Chapter 6: Parameters for non-fossil fuel based co-generation projects

39. Capital Cost

Normative capital cost for the non-fossil fuel based co-generation projects shall be Rs. 562 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.

40. Plant Load Factor

The plant load factor for different States shall be as follows:

State	Plant Load Factor (%)
Uttar Pradesh and Andhra Pradesh	45%
Tamil Nadu and Maharashtra	60%
Other States	53%

41. Auxiliary Consumption

The auxiliary consumption shall be considered as 8.5% for the computation of the tariff.

42. Station Heat Rate

The Station Heat Rate of 3600 kCal/ kWh for the power generation component alone shall be considered for the computation of tariff for non-fossil fuel based co-generation projects.

43. Gross Calorific Value

The gross calorific value for bagasse shall be considered as 2250 kCal/kg. For the use of biomass fuels other than bagasse, gross calorific value as specified under Regulation 37 shall be applicable.

44. Fuel Cost

(1) The price of bagasse for the first year of the Control Period, i.e. financial year 2024-25, shall be as specified in the table below and shall be escalated at the rate of 3.45% per annum to arrive at the base price for subsequent years of the Control Period unless specifically reviewed by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 3.45% per annum shall be applicable on bagasse prices.

State	Bagasse Price for FY 2024-25 (Rs. /MT)
Andhra Pradesh	2249
Haryana	3199
Maharashtra	3152
Punjab	2815
Tamil Nadu	2423
Telangana	2248
Uttar Pradesh	2509
Other States	2723

(2) For use of biomass other than bagasse in non-fossil fuel based co-generation projects, the biomass prices as specified under Regulation 38 shall be applicable.

45. Operation and Maintenance expenses

Normative O&M expenses during the first year of the Control Period, i.e. financial year 2024-25, shall be Rs. 29.07lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for the Tariff Period.

Chapter 7: Parameters for solar PV power projects, solar thermal power projects and floating solar projects

46. Capital Cost

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

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

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

48. Operation and Maintenance expenses

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

49. 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 further that the maximum auxiliary consumption for solar thermal power projects shall be 10%;

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

Chapter 8: Parameters for biomass gasifier based power projects

50. Capital Cost

Normative capital cost for biomass gasifier based power projects shall be Rs.677 lakhs/MW during the first year of the Control Period, i.e. the financial year 2024-25, and will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

51. Plant Load Factor

The plant load factor for determination of tariff shall be considered as 85%.

52. Auxiliary consumption

The auxiliary consumption shall be considered as 10% for the determination of the tariff.

53. Specific fuel consumption

Normative specific fuel consumption shall be 1.25 kg per kWh.

54. Operation and Maintenance expenses

Normative O&M expenses for the first year of the Control period, i.e. financial year 2024-25, shall be Rs. 72.69 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for the Tariff Period.

55. Fuel Cost

Biomass fuel price for biomass gasifier-based power projects shall be the same as for biomass power projects based on Rankine cycle technology as mentioned in Regulation 38.

Chapter 9: Parameters for biogas based power projects

56. Capital Cost

Normative capital cost for biogas based power projects shall be Rs.1354 lakhs/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.

57. Plant Load Factor

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

58. Auxiliary Consumption

The auxiliary consumption shall be considered as 12% for the determination of the tariff.

59. Operation and Maintenance Expenses

Normative O&M expenses for the first year of the Control Period, i.e. financial year 2024-25 shall be Rs. 72.69 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for the Tariff Period.

60. Specific Fuel Consumption

Normative specific fuel consumption shall be 3 kg of substrate mix per kWh.

61. Fuel Cost (Feedstock Price)

Feedstock price during the first year of the Control Period, i.e. financial year 2024-25, shall be Rs. 1702/MT and shall be escalated at the rate of 3.45% per

annum to arrive at the base price for subsequent years of the Control Period unless specifically reviewed by the Commission. For the purpose of determining levelized tariff, a normative escalation factor of 3.45% per annum shall be applicable.

Chapter 10: Parameters for municipal solid waste based power projects and refuse derived fuel based power projects

62. Capital Cost

Normative Capital Costs for first year of the Control Period shall be as under:

Technology	Capital Cost (Rs. Lakhs/MW)
MSW	1800
RDF	2100

63. Plant Load Factor

(1) Plant load factor for determining tariff for municipal solid waste based power projects and refuse derived fuel based power projects shall be:

Sl. No.	Plant load factor	MSW	RDF
a)	During stabilisation period	65%	65%
b)	During the remaining period of the first year (after the stabilization period)	65%	65%
c)	2nd year onwards	75%	80%

(2) The stabilisation period shall not be more than 6 months from the date of commercial operation of the project.

64. Auxiliary Consumption

The auxiliary consumption for determination of tariff shall be considered as 15%.

65. Operation and Maintenance Expenses

Normative O&M expenses for the first year of the Control Period shall be as under:

Technology	O&M expenses (% of Capital Cost)
MSW	6.5%
RDF	8.5%

66. Fuel Cost

No Fuel Cost shall be considered for the determination of tariffs for MSW and RDF power projects.

Chapter 11: Parameters for Renewable Hybrid Energy Projects

67. Capital Cost

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

68. Capacity Utilisation Factor

(1) The Commission shall determine only project specific capacity utilisation factor in respect of renewable hybrid energy 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 sources, as the case may be:

Provided that the minimum capacity utilization factor for renewable hybrid energy projects shall be 30% when measured at the inter-connection point, where the energy is injected into the grid.

69. Operation and Maintenance expenses

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

70. Tariff

The tariff for a renewable hybrid energy project shall be a composite levelised 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 RE hybrid Project:

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

Chapter 12: Parameters for renewable energy with storage project

71. Capital Cost

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

72. 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.

73. Operation and Maintenance expenses

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

74. 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 13: Miscellaneous

75. Deviation from norms

Tariff for electricity generated from a generating station based on renewable energy sources may also be agreed upon between the generating company and beneficiary, in deviation from the norms specified in these regulations:

Provided that the levelized tariff of the project calculated on the basis of the norms specified in these regulations shall be the ceiling levelized tariff.

76. 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.

77. 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.

(Harpreet Singh Pruthi)

Secretary

APPENDIX

Form-1.1: Template for (Wind power projects/ Small hydro projects/ Solar PV power projects/ Solar thermal power projects/ Renewable energy hybrid power projects /Renewable energy with storage projects/MSW/RDF)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Capacity Utilization Factor (CUF)	%	
			Auxiliary Consumption	%	
			Commercial Operation Date (COD)	dd/mm/yyyy	
			Useful Life	Years	
2	Project Cost	Capital Cost	Normative Capital Cost	Rs. Crore/ MW	
			Capital Cost	Rs. Crore	
			Capital Subsidy, if any	Rs. Crore	
			Net Capital Cost	Rs. Crore	
3	Financial Assumption	Debt Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
		Debt Component	Total debt amount	Rs. Crore	
			Total equity amount	Rs. Crore	
			Loan Amount	Rs. Crore	
			Moratorium Period	Years	
			Repayment Period (incl moratorium)	Years	
			Interest Rate	%	
		Equity Component	Equity Amount	Rs. Crore	
			Return on Equity for First 20 years	% p.a.	
			Return on Equity after 20 years	% p.a.	
			Discount Rate	%	
		Depreciation	Dep Rate for 1st 15 years	%	
			Dep rate 16th year onwards	%	
		Incentives	GBI, if any	Rs. Crore	
			Period for GBI	Years	
4	O& M Expenses	Normative O&M Expense		Rs. Lakh/MW	
		O&M Expenses p.a.		Rs. Crore	
		Escalation Factor		%	
5	Working Capital	O&M Expenses		Month	
		Maintenance Spares	% of O&M Expenses	%	
		Receivables		Days	
		Interest on Woking Capital		% per annum	

Form-1.2: Template for (Biomass)

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity	MW	
			Aux Consumption	%	
			PLF (1st year)	%	
			PLF (2nd year onwards)	%	
			Commercial Operation Date	dd/mm/yyyy	
			Useful Life	Years	
2	Project Cost	Capital Cost/ MW	Normative Capital Cost	Rs. Crore /MW	
			Capital Cost	Rs. Crore	
			Capital Subsidy, if any	Rs. Crore	
			Net Capital Cost	Rs. Crore	
3	Financial Assumption	Debt Equity	Tariff Period	Years	
			Debt	%	
			Equity	%	
		Debt Component	Total debt amount	Rs. Crore	
			Total equity amount	Rs. Crore	
			Loan Amount	Rs. Crore	
			Moratorium Period	Years	
			Repayment Period (including moratorium)	Years	
			Interest Rate	%	
		Equity Component	Equity Amount	Rs. Crore	
			Return on Equity for First 20 years	% p.a.	
			Return on Equity after 20 years	% p. a.	
			Discount Rate	%	
		Depreciation	Dep Rate for 1st 15 years	%	
			Dep rate 16th year onwards	%	
		Incentives	GBI, if any	Rs. Crore	
			Period for GBI	Years	
4	O&M Expenses	Normative O&M Expenses		Rs. Lakh/MW	
		O&M Expenses p.a.		Rs. Crore	
		Escalation Factor		%	
5	Working Capital	O&M Expenses		Month	
		Maintenance Spares	% of O&M Expenses	%	
		Receivables		Days	

		Interest on WC		%	

Sl. No.	Assumption Head	Sub-head	Sub-head (2)	Unit	Parameter
6	Fuel Related assumptions	Station Heat Rate	During 1st year	kcal/kWh	
			2nd year onwards	kcal/kWh	
		Fuel Type and mix	Biomass Fuel Type-1	%	
			Biomass Fuel Type-2	%	
			Fossil Fuel (Coal)	%	
			GCV of Biomass Fuel Type-1	kcal/kWh	
			GCV of Biomass Fuel Type-2	kcal/kWh	
			GCV of Fossil Fuel (Coal)	kcal/kWh	
			Biomass Price (Fuel Type-1)/ Yr 1	Rs./MT	
			Biomass Price (Fuel Type-2)/ Yr 1	Rs./MT	
			Fossil Fuel (Coal) Price)/ Yr 1	Rs./MT	
			Fuel Price Escalation Factor	% p.a.	

Form-2.1: Template for (Wind power projects or Solar PV power projects /Solar thermal power projects/ MSW/ RDF): Determination of Tariff Components

Units Generation	Unit	Yr-1	Yr-2		Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Installed Capacity	MW													
Net Generation	MU													

Units Generation	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Installed Capacity	MW													
Net Generation	MU													

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
O&M Expenses	Rs Lakh												
Depreciation	Rs Lakh												
Interest on term loan	Rs Lakh												
Interest on working Capital	Rs Lakh												
Return on Equity	Rs Lakh												
Total Fixed Cost	Rs Lakh												

Tariff Components (Fixed charge)	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
O&M Expenses	Rs Lakh													
Depreciation	Rs Lakh													
Interest on term loan	Rs Lakh													
Interest on working Capital	Rs Lakh													
Return on Equity	Rs Lakh													
Total Fixed Cost	Rs Lakh													

Per Unit Tariff components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
PU O&M expenses	Rs/kWh												
PU Depreciation	Rs/kWh												
PU Interest on term loan	Rs/kWh												
PU Interest on working capital	Rs/kWh												
PU Return on Equity	Rs/kWh												
PU Tariff Components	Rs/kWh												

Per Unit Tariff components	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
PU O&M expenses	Rs/kWh													
PU Depreciation	Rs/kWh													
PU Interest on term loan	Rs/kWh													
PU Interest on working capital	Rs/kWh													
PU Return on Equity	Rs/kWh													
PU Tariff Components	Rs/kWh													

Levelized Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Discount Factors													
Discounted Tariff components	Rs/kWh												
Levelized Tariff	Rs/kWh												

Levelized Tariff	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Discount Factors														
Discounted Tariff components	Rs/kWh													
Levelized Tariff	Rs/kWh													

Form-2.2: Template for (Biomass power projects or non-fossil fuel based co-generation plants): Determination of Tariff Components

Units Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Installed Capacity	MW												
Net Generation	MU												

Units Generation	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Installed Capacity	MW													
Net Generation	MU													

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
O&M Expenses	Rs Lakh												
Depreciation	Rs Lakh												
Interest on term loan	Rs Lakh												
Interest on working Capital	Rs Lakh												
Return on Equity	Rs Lakh												
Total Fixed Cost	Rs Lakh												

Tariff Components (Fixed charge)	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
O&M Expenses	Rs Lakh													
Depreciation	Rs Lakh													
Interest on term loan	Rs Lakh													
Interest on working Capital	Rs Lakh													
Return on Equity	Rs Lakh													
Total Fixed Cost	Rs Lakh													

Tariff Components (Variable Charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Biomass Fuel Type-1	Rs Lakh												
Biomass Fuel Type-2	Rs Lakh												
Fossil Fuel (coal)	Rs Lakh												
Municipal Solid Waste	Rs Lakh												
Refuse Derived Fuel	Rs Lakh												
Sub-total (Fuel Costs)	Rs Lakh												
Fuel cost allocable to power	%												
Total Fuel Costs	Rs Lakh												

Tariff Components (Variable Charge)	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Biomass Fuel Type-1	Rs Lakh													
Biomass Fuel Type-2	Rs Lakh													
Fossil Fuel (coal)	Rs Lakh													
Municipal Solid Waste	Rs Lakh													
Refuse Derived Fuel	Rs Lakh													
Sub-total (Fuel Costs)	Rs Lakh													
Fuel cost allocable to power	%													
Total Fuel Costs	Rs Lakh													

Per Unit Tariff components (Fixed)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
PU O&M expenses	Rs/kWh												
PU Depreciation	Rs/kWh												
PU Interest on term loan	Rs/kWh												
PU Interest on working capital	Rs/kWh												
PU Return on Equity	Rs/kWh												
PU Tariff Components (Fixed)	Rs/kWh												
PU Tariff Components (Variable)	Rs/kWh												
PU Tariff Components (Total)	Rs/kWh												

Per Unit Tariff components (Fixed)	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
PU O&M expenses	Rs/kWh													
PU Depreciation	Rs/kWh													
PU Interest on term loan	Rs/kWh													
PU Interest on working capital	Rs/kWh													
PU Return on Equity	Rs/kWh													
PU Tariff Components (Fixed)	Rs/kWh													
PU Tariff Components (Variable)	Rs/kWh													
PU Tariff Components (Total)	Rs/kWh													

Levelized Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12
Discount Factors													
Discounted Tariff components (Fixed)	Rs/kWh												
Discounted Tariff components (Variable)	Rs/kWh												
Discounted Tariff components (Total)	Rs/kWh												
Levelized Tariff (Fixed)	Rs/kWh												
Levelized Tariff (Variable)	Rs/kWh												
Levelized Tariff (Total)	Rs/kWh												

Levelized Tariff	Unit	Yr-13	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25
Discount Factors														
Discounted Tariff components (Fixed)	Rs/kWh													
Discounted Tariff components (Variable)	Rs/kWh													
Discounted Tariff components (Total)	Rs/kWh													
Levelized Tariff (Fixed)	Rs/kWh													
Levelized Tariff (Variable)	Rs/kWh													
Levelized Tariff (Total)	Rs/kWh													

Form-2.3: Template for (Small Hydro projects): Determination of Tariff Components

Units Generation	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
Installed Capacity	MW													
Net Generation	MU													

Units Generation	Unit	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	Yr-26
Installed Capacity	MW													
Net Generation	MU													

Units Generation	Unit	Yr-27	Yr-28	Yr-29	Yr-30	Yr-31	Yr-32	Yr-33	Yr-34	Yr-35	Yr-36	Yr-37	Yr-38	Yr-39	Yr-40
Installed Capacity	MW														
Net Generation	MU														

Tariff Components (Fixed charge)	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
O&M Expenses	Rs Lakh													
Depreciation	Rs Lakh													
Interest on term loan	Rs Lakh													
Interest on working Capital	Rs Lakh													
Return on Equity	Rs Lakh													
Total Fixed Cost	Rs Lakh													

Tariff Components (Fixed charge)	Unit	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	Yr-26
O&M Expenses	Rs Lakh													
Depreciation	Rs Lakh													
Interest on term loan	Rs Lakh													
Interest on working Capital	Rs Lakh													
Return on Equity	Rs Lakh													
Total Fixed Cost	Rs Lakh													

Tariff Components (Fixed charge)	Unit	Yr-27	Yr-28	Yr-29	Yr-30	Yr-31	Yr-32	Yr-33	Yr-34	Yr-35	Yr-36	Yr-37	Yr-38	Yr-39	Yr-40
O&M Expenses	Rs Lakh														
Depreciation	Rs Lakh														
Interest on term loan	Rs Lakh														
Interest on working Capital	Rs Lakh														
Return on Equity	Rs Lakh														
Total Fixed Cost	Rs Lakh														

Per Unit Tariff components	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
PU O&M expenses	Rs/kWh													
PU Depreciation	Rs/kWh													
PU Interest on term loan	Rs/kWh													
PU Interest on working capital	Rs/kWh													
PU Return on Equity	Rs/kWh													
PU Tariff Components	Rs/kWh													

Per Unit Tariff components	Unit	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	Yr-26
PU O&M expenses	Rs/kWh													
PU Depreciation	Rs/kWh													
PU Interest on term loan	Rs/kWh													
PU Interest on working capital	Rs/kWh													
PU Return on Equity	Rs/kWh													
PU Tariff Components	Rs/kWh													

Per Unit Tariff components	Unit	Yr-27	Yr-28	Yr-29	Yr-30	Yr-31	Yr-32	Yr-33	Yr-34	Yr-35	Yr-36	Yr-37	Yr-38	Yr-39	Yr-40
PU O&M expenses	Rs/kWh														
PU Depreciation	Rs/kWh														
PU Interest on term loan	Rs/kWh														
PU Interest on working capital	Rs/kWh														
PU Return on Equity	Rs/kWh														
PU Tariff Components	Rs/kWh														

Levelized Tariff	Unit	Yr-1	Yr-2	Yr-3	Yr-4	Yr-5	Yr-6	Yr-7	Yr-8	Yr-9	Yr-10	Yr-11	Yr-12	Yr-13
Discount Factors														
Discounted Tariff components	Rs/kWh													
Levelized Tariff	Rs/kWh													

Levelized Tariff	Unit	Yr-14	Yr-15	Yr-16	Yr-17	Yr-18	Yr-19	Yr-20	Yr-21	Yr-22	Yr-23	Yr-24	Yr-25	Yr-26
Discount Factors														
Discounted Tariff components	Rs/kWh													
Levelized Tariff	Rs/kWh													

Levelized Tariff	Unit	Yr-27	Yr-28	Yr-29	Yr-30	Yr-31	Yr-32	Yr-33	Yr-34	Yr-35	Yr-36	Yr-37	Yr-38	Yr-39	Yr-40
Discount Factors															
Discounted Tariff components	Rs/kWh														
Levelized Tariff	Rs/kWh														