ARUNACHAL PRADESH STATE ELECTRCIITY REGULATORY COMMISSION
To be published in Extra-Ordinary Part III, Section 4
DRAFT NOTIFICATION

Itanagar, the_____2023

No. APSERCNOTIFICATION/ / …… In exercise of the powers conferred under Sections 61, 66 and 86 read with Section 181 of the Electricity Act, 2003 and all other powers enabling it in this behalf, and after previous publication, the Arunachal State Electricity Regulatory Commission hereby makes the following Regulations, namely:

Chapter 1

1. Short Title, Commencement and Extent

1.1. These Regulations shall be called the Arunachal Pradesh State Electricity **Regulatory Commission (Terms and Conditions for Determination of Renewable Energy Tariff) Regulations, 2024.**

1.2. These Regulations shall come into force from the date of their publication in the Official Gazette

Chapter 2

2. Definitions

2.1. In these Regulations, unless the context otherwise requires:

i. **"Act"** means the Electricity Act, 2003 (36 of 2003), including amendments thereto;

ii. **"Auxiliary Energy Consumption",** 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: Provided that it shall not include energy consumed for supply of power by the generating Station to its housing colony and other facilities, and for construction works at the generating Station;

iii. **"Average Power Purchase Cost"** or **"APPC"** means the weighted average price at which the Distribution Licensee has purchased or is expected to purchase electricity (excluding procurement from RE sources and liquid fuel sources), including the cost of self-generation, if any, as approved by the Commission in the relevant Tariff Order or any other general or specific Order;

iv. **"Biogas"** means a gas created when organic matters like crop residues, sewage and manure breaks down in an oxygen-free environment;

v. **"Capacity Utilisation Factor"** or **"CUF"** means the ratio of actual gross energy generated by the project to the equivalent energy output at its rated capacity over the year;

vi. **"CERC"** means the Central Electricity Regulatory Commission referred to in sub-section (1) of Section 76 of the Act;

vii. **"CERC RE Tariff Regulations"** means the applicable Regulations of the Central Commission governing Renewable Energy ('RE') Tariff determination;

viii. **"Commission"** means the Arunachal Pradesh State Electricity Regulatory Commission. ;

ix. **"Control Period"** or **"Review Period"** means the period during which the norms for determination of tariff specified in these Regulations shall remain in force and are subject to review after the Control Period (except Capital Cost and Statutory Changes);

x. **"Date of Commissioning"** means the date of commissioning declared by a Generating Company in relation to a Unit of its Generating Station:

Provided that date of commissioning shall be certified based on joint inspection by RE Generator and concerned Distribution Licensee or SLDC as may be applicable;

xi. "**Distribution Company/ Distribution Licensee (Discom in brief)**" means a person granted a Licence under Section 14 (b) of the Act authorizing him to operate and maintain a distribution system and supply electricity to the consumers in its area of supply;

xii. **"Eligible Project"** means any of the Renewable Energy Projects with or without Storage as per details given under Clause 4;

xiii. **"Existing Renewable Energy Plants",** means renewable generating stations, which have achieved COD prior to coming into force of these Regulations;

xiv. **"Gross Calorific Value" or 'Calorific** Value' in relation to a fuel used in generating station means the heat produced in kilocalories by complete combustion of one kilogram of solid fuel or one litre of liquid fuel or one standard cubic meter of gaseous fuel, as the case may be;

xv. **"Installed capacity" or 'IC'** means the summation of the name plate capacities of all the units of the generating station or the capacity of the generating station (reckoned at the generator terminals), approved by the Commission from time to time;

xvi. "Inter-connection Point" shall mean interface point of renewable energy generating facility with the transmission system or distribution system, as the case may be:
in relation to wind energy projects and solar photovoltaic projects, inter-connection point shall be line isolator on outgoing feeder on HV side of the pooling sub-station;
in relation to small hydro power, biomass power and solar thermal power projects, the inter-connection point shall be line isolator on outgoing feeder on HV side of generator transformer;

xvii. **"MNRE"** means the Ministry of New and Renewable Energy of the Government of India;

xviii. **"Municipal Solid Waste" or "MSW"** means and includes commercial and residential wastes generated in a municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes;

xix. **"Operation and Maintenance expenses" or 'O&M expenses'** means the expenditure incurred on operation and maintenance of the project, and includes the expenditure on manpower, repairs, spares, consumables, insurance and overheads;

xx. **"Plant Load Factor or (PLF**)" in relation to a generating station for a given period means the total sent out energy corresponding to scheduled generation during the period, expressed as a percentage of sent out energy corresponding to installed capacity in that period and shall be computed in accordance with the following formula:
PLF = 10000 x ΣSGi/ {N x IC x (l00-AUXn)} %,
Where,
IC = Installed Capacity of the generating station or unit in MW,
SGi = Scheduled Generation in MWh for the i^{th} time block of the period,
N = Number of time blocks during the period, and
AUXn = Normative Auxiliary Energy Consumption as a percentage of gross energy generation;

xxi. **"Project"** means a generating station or the evacuation system up to 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;

xxii. **"Renewable Energy Power Plants"** means the power plants other than the conventional power plants generating grid quality electricity from renewable energy sources;

xxiii. **"Renewable Energy Sources"** means renewable sources such as small hydro, wind, solar including its integration with combined cycle, biomass, bio fuel cogeneration, urban or municipal waste and other such sources as approved by the MNRE;

xxiv. **Renewable energy with storage project'** means a combination of renewable energy project with storage or a combination of renewable hybrid energy project with storage at the same inter-connection point;

xxv. 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

xxvi. **"Small Hydro"** means Hydro Power projects with a station capacity up to and including 25 MW;

xxvii. "Solar PV power" means the Solar Photo Voltaic power project that uses sunlight for direct conversion into electricity through Photo Voltaic;

xxviii. "Storage" means 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**;**

xxix. **"Station Heat Rate" or 'SHR'** means the heat energy input in kilocalories required to generate one kilowatt-hour (kWh) of electrical energy at generator terminals of a thermal generating station;

xxx. **"Tariff period"** means the period for which tariff is to be determined by the Commission on the basis of norms specified under these Regulations;

xxxi. **"Tariff Order"** in respect of a Licensee means the last order in force issued by the Commission for that Licensee indicating the tariff to be charged by the Licensee from various categories of consumers for supply of electricity;

xxxii. **"Useful Life"** in relation to a unit of a generating station including 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	Small Hydro Plant	35 years
c	Municipal Solid Waste (MSW)/and Refused Derived Fuel (RDF) based power project	25 years
d	Solar PV project	25 years
e	Biogas based power project	25 years
f	Renewable hybrid energy project (a) individual size of 5 MW and above at one site with minimum bid capacity of 25 MW for intra-state projects;	Minimum of the Useful Life of different RE technologies combined for Renewable Hybrid Energy Project for Composite Tariff as specified under Regulations ---

xxxiii. **"Year"** means financial year

2.2. 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 hereunder, but defined in the Act, or other Regulations issued by the Commission shall have the meanings assigned to them respectively in the Act or any other Regulations issued by the Commission.

3. Scope and Extent of Application

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

3.2 Provided that in cases of Wind, Small Hydro, Municipal Solid Waste, Solar PV, Renewable hybrid energy project and Biogas Power projects, these Regulations shall apply subject to the fulfilment of eligibility criteria specified in para 4 of these Regulations

4. Eligibility Criteria

Tariff for the following category of Renewable Energy Plant shall be determined by the Commission under Section 62 of the Act

4.1 **Wind power project** – using new wind turbine generators, located at the sites approved by State Nodal Agency/State Government with **capacity equal to 25 MW**;

4.2 **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;

4.3 **Solar PV Power Project** – Based on technologies approved by MNRE with capacity **equal to 5 MW**;

4.4 **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 agriculture residues, manure and any other biowaste as may be approved by MNRE;

4.5 **Municipal Solid Waste (MSW) based power projects** – The project shall qualify to be termed as a Municipal Solid Waste (MSW) based power project if it is using new plant and machinery based on incineration technology and using Municipal Solid Waste (MSW) as fuel sources;

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.

4.6 **Renewable hybrid energy project** – The rated capacity of generation from one renewable energy source is at least 25% of the rated capacity of generation from other renewable energy source(s), which operate at the same point of interconnection: Provided that energy is injected into grid at the same interconnection point and metering is done at such common interconnection point accordingly

4.7 Tariff for the following categories of project for which the Central Government has issued guidelines for tariff based competitive bidding shall be adopted by the Commission under Section 63 of the Act

- **a)** Wind power projects using new wind turbine generators with capacity more than 25 MW.
- **b)** Solar PV projects based on technologies approved by MNRE with capacity more than 5 MW.
- **c)** Wind Solar Hybrid projects having capacity more than 50 MW located at same or different location with new turbine generators/ solar modules approved by MNRE.

5. General Principles

5.1 Control Period

The Control Period or Review Period under these Regulations shall be of three (3) years starting from the date of the notification of these Regulations, of which the first year shall be the financial year 2024-25 and the last year shall be the financial year 2026-27.

Provided 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 Tariff Period as specified in Regulation 6 below:

Provided further that the revision in Regulations for the next Control Period shall be undertaken prior to the end of the first Control Period and 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 subject to adjustments as per revised Regulations.

6. Tariff Period

6.1 The Tariff Period for Renewable Energy power projects will be as per their Useful Life as defined in Regulation 2.1 (32).

6.2 Tariff Period under these Regulations shall be considered from the date of commercial operation of the respective Renewable Energy generating plants.

6.3 Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects for the entire duration of the Tariff Period as stipulated under Clause (6.1) and (6.2).

7. Generic Tariff

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

- **I.** Small hydro projects **up to 1 MW capacity**;
- **II.** Biogas based power projects;

Provided that the generic tariff determined for the year, in which an RE project is commissioned, shall be applicable for all similar RE projects and the tariff shall remain valid during the entire tariff period.
Provided that, in case of special circumstances, the Project Developer may approach the Commission for determination of Project Specific Tariff for above types of projects.

Provided further that the Generic Tariff determined by the Commission through a Generic Tariff Order shall be excluding the impact of Capital Subsidy:

Provided also that in case any Project under the above types of Projects avails Government Subsidy, the impact of subsidy shall be considered as per provisions given in this Regulations:

Provided also that Financial and Operational norms except Capital Cost, O&M Expenses and Capacity Utilisation Factor or Plant Load Factor (as applicable) as specified in these Regulations would be the ceiling norms while determining the Project Specific Tariff.

8. Project Specific Tariff

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

i. Small Hydro Projects above 1 MW capacity up to 25 MW capacity
ii. Wind Power Projects up to 25 MW capacity
iii. Solar PV projects up to 5 MW capacity
iv. Renewable Energy Hybrid Projects
v. Municipal Solid Waste based Power projects and Refuse derived fuel based power projects
vi. Renewable Energy with storage project
vii. Any other Renewable Energy technology as approved by MNRE.

8.2 Determination of Project specific tariff for generation of electricity from such Renewable Energy sources shall be in accordance with such terms and conditions as stipulated under relevant Orders of the Commission.
No annual generic tariff shall be determined for the technologies mentioned in Clause 8.1 of this Regulation:

8.3 Provided that the Financial and Operational norms as may be specified in these Regulations except for capital cost would be the ceiling norms, suitably adjusted for subsidy amount (if any), while determining the Project Specific Tariff.

9. Petition and proceedings for determination of tariff

9.1 The Commission shall determine the generic tariff at the beginning of each year of the Control Period for Renewable Energy technologies mentioned at Regulation 7 for projects to be commissioned in that year.

9.2 A Petition for determination of Project Specific Tariff shall be filed by the Project developer and shall be accompanied by:

i. Information as applicable, and as appended in these Regulations;
ii. Fees for filing the Petition, as applicable;
iii. Detailed project report outlining the following:

a. technical and operational details;
b. site specific aspects;
c. premise for capital cost and financing plan, etc.;
d. A statement of all applicable terms and conditions;
e. expected expenditure for the period for which tariff is to be determined;
f. A statement containing full details of calculation of any subsidy and incentive received, due or assumed to be due from the Central Government and/or State Government / Administration;
g. the proposed tariff calculated without consideration of the subsidy and incentive (with working in iterative excel format).
h. The consent from Distribution Licensee to procure power at tariff approved by the Commission in the form of initialled Energy Purchase Agreement (EPA), Memorandum of Understanding (MoU) or letter of willingness to purchase power from the Distribution Licensee of the area.
i. Any other information that the Commission requires from the Petitioner to submit.

j. The proceedings for determination of tariff shall be in accordance with the APSERC (Conduct of Business) Regulations, as amended from time to time.

10. Procurement of Power from Renewable Energy Projects

10.1 In case the Distribution Licensee opts to procure power from any Renewable Energy Project(s) set up within their licensed area at the Generic Tariff determined by the Commission, the Distribution Licensee shall file the Petition for prior approval of a standard Energy Purchase Agreement for procurement of power from Renewable Energy Project(s);

10.2 For Renewable Energy Projects, for which the Project Specific Tariff is determined by the Commission or tariff is adopted under Section 63 of the Act, the Distribution Licensee shall file the Petition for prior approval of **Energy Purchase Agreement** for procurement of power from such Renewable Energy Project(s):

10.3 All Renewable Energy power plants shall be treated as 'Must Run' power plants and procurement of power by Distribution Licensee from such power plants shall not be subjected to 'Merit Order Despatch' principles.

11. Tariff Structure

11.1 The tariff for Renewable Energy technologies shall be single-part tariff consisting of the following fixed cost components:

a. Operation and maintenance expenses;
b. Interest on loan capital;
c. Depreciation;
d. Interest on working capital;
e. Return on equity:

Provided that for Renewable Energy technologies like Municipal Solid Waste , biogas power projects having fuel cost component, single-part tariff with two components, fixed cost component and fuel cost component, shall be determined.

12. Tariff Design

12.1 The generic tariff shall be determined considering the year of commissioning of the project, on levelized basis for the Tariff Period:

Provided that for Renewable Energy technologies having **single-part tariff with two components**, tariff shall be determined on levelized basis considering the year of commissioning of the project for fixed cost component while the fuel cost component shall be determined on the basis of year of operation (i.e. financial year wise). The fuel cost for each financial year shall be applicable for all projects operational during the year, irrespective of its date of commissioning.

12.2 For the purpose of levelized tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered and Levelization shall be carried out for the 'useful life' of the Renewable Energy project.

12.3 The above principles shall also apply for project specific tariff.

13. 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 75 percent of the tariff applicable for that year

Chapter-3: Financial Principles

14. 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 inter-connection point.

15. Debt Equity Ratio

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

Provided that, for project specific tariff, where the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan;

Provided further that for project specific tariff where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff;

Provided also that the equity invested in foreign currency shall be designated in Indian rupees on the date of each investment;

Provided also that 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-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.

15.2 The project developer shall submit the resolution of the Board of the company or approval of the competent authority in other cases regarding 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.

16. Loan and Finance Charges

16.1 Loan Tenure

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

16.2 Interest on Loan

- **i.** The loans arrived at in the manner indicated in Regulation 12 shall be considered as gross normative loan for calculation for interest on loan. For project specific tariff, the normative loan outstanding as on 1st of April of every year shall be worked out by deducting the cumulative repayment up to 31st March of previous year from the gross normative loan.
- **ii.** For the purpose of computation of tariff, 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.**
- **iii.** Notwithstanding any moratorium period availed by project developer, 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.

17. Depreciation

17.1 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 maximum of 90% of the capital cost of the project:

17.2 Depreciation **rate of 4.67% per annum shall be considered for the first 15 years** and remaining depreciation shall be evenly spread during remaining Useful Life of the project.

17.3 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 pro-rata basis.

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

18. Return on Equity

18.1 The value base for equity shall be as determined under Regulation 12.

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

19. Interest on Working Capital

19.1 The Working Capital requirement in respect of wind power projects, small hydro projects, solar PV power projects, solar wind hybrid 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 sale of electricity calculated on 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

19.2 The Working Capital requirement in respect of biogas power projects, municipal solid waste based power projects and refuse derived fuel based power 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 expense for one month;

c) Receivables equivalent to 45 days of tariff for sale of electricity calculated on the plant load factor; and

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

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

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

20. Calculation of capacity utilization factor and plant load factor:

The number of hours in a year for calculation of capacity utilization factor and plant load factor, as the case may be, shall be considered as 8760.

21. Operation and Maintenance Expenses

21.1 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.

21.2 Normative O&M expenses allowed during first year of the Control Period under these regulations shall be escalated at the rate of 3.84% per annum for the Tariff Period.

22. Rebate

22.1 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 official holiday, the 5th day for the purpose of rebate shall be construed as the immediate succeeding working day.

22.2 Where payments are made on **any day after 5 days wit**hin a period of one month from date of presentation of bills by the generating company, a **rebate of 1% sh**all be allowed.

23. 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 at the rate of 1.50% per** month shall be levied by the generating company.

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

24.1 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 and deduct the same 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:

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

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

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

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

25. Statutory Charges

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

Chapter 4: Generic Tariff Determination - Small Hydro Project

26. Capital Cost

The normative capital cost for small hydro projects during first year of Control Period (FY2024-25) shall be as follows:

Region	Project Size	Capital Cost (Rs Lakh /MW)
Arunachal Pradesh	Below 500 KW	1400
	500 KW to 1 MW	1236

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

27. Capacity Utilisation Factor

CUF for the Small hydro projects shall be 45%.

Explanation: For the purpose of this Regulation, normative CUF is net of free power to the home state if any, and any quantum of free power if committed by the developer over and above the normative CUF shall not be factored into the tariff.

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

29. Operation and Maintenance Expenses

36.1. The normative O&M Expenses for the first year of the Control Period, shall be as given below

Region	Project Size	O&M expenses (Rs lakh /MW)
Arunachal Pradesh	Below 500 KW	41.78
	500 KW to 1 MW	31.34

36.2. Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 3.84% per annum for the Tariff Period for the purpose of determination of levellised tariff.

Chapter 5 : Generic Tariff Determination - Biogas based Power Projects

30. Capital Cost

Normative capital cost for biogas based power projects shall be Rs.1186 lakhs/MW for first year of the Control Period i.e. financial year FY 2024-25 and shall remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

31. Plant Load Factor

Normative PLF shall be considered as 90% for determination of tariff.

32. Auxiliary Consumption

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

33. Operation and Maintenance Expenses

41.1 The normative O&M Expenses for the first year of the Control Period, shall be Rs. 61.31 lakhs per MW.

41.2 Normative O&M expenses allowed under these Regulations shall be escalated at the rate of 3.84% per annum for the Tariff Period for the purpose of determination of levellised tariff.

34. Fuel Cost (Feed stock Price) and Specific Fuel Consumption

41.3 Feed stock price during first year of the Control Period i.e. financial year FY 2024-25 shall be Rs. 1422/MT and shall be escalated at the rate of 5% per annum to arrive at the base price for subsequent years of the Control Period, unless specifically reviewed by the Commission.

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

Chapter 6: Project Specific Tariff Determination - Wind Energy Projects

35. Capital Cost

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

36. Capacity Utilisation Factor

CUF norms for this control period shall be as follows

Annual Mean Wind Power Density (W/m2)	CUF
Up to 220	**22%**
221-275	**24%**
276-330	**28%**
331-440	**33%**
> 440	**35%**

1. The annual mean wind power density specified in sub-regulation (1) above shall be measured at 100-meter hub-height.

2. 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. **Operation and Maintenance Expenses**

3. The Commission shall determine only Project Specific O&M Expenses based on the prevailing market information.

Chapter 7: Project Specific Tariff Determination - Solar PV Projects

37. Technology Aspects

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

38. Capital Cost

The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for Solar PV projects

39. Capacity Utilisation Factor

The CUF for Solar PV project shall be 19%. Provided that the Commission may deviate from above norm in case of project specific tariff determination

40. Auxiliary Consumption

The auxiliary consumption factor shall be 0.25% of gross generation. Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 8 and Regulation 9.

41. Operation and Maintenance Expenses

The Commission shall determine only project specific O&M expenses based on prevailing market trends for Solar PV project.

Chapter 8: Project Specific Tariff Determination - Municipal Solid Waste/Refuse Derived Fuel based projects On Rankine Cycle Technology

42. Technology Aspect

The norms for tariff determination specified hereunder are for power projects which use municipal solid waste (MSW) and refuse derived fuel (RDF) and are based on Rankine cycle technology application, combustion or incineration, Bio-methanation, Pyrolysis and High-end gasifier technologies.

43. Capital Cost

The Commission shall determine only project specific capital cost and tariff based on prevailing market trends for MSW/ RDF projects.

44. Plant Load Factor

45. Plant load factor for determining tariff for municipal solid waste based power projects and refuse derived fuel based power projects shall be:

Plant Load Factor	**MSW**	**RDF**
During stabilisation period	65%	65%
During the remaining period of the first year (after stabilization period)	65%	65%
2nd year Onwards	75%	80%

The stabilization period shall not be more than 6 months from the date of commercial operation of the project.

46. Auxiliary Consumption

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

47. Operation and Maintenance Expenses

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

48. Station Heat Rate

The Station Heat Rate for determination of tariff shall be considered as 4200 kcal/kWh

49. Gross Calorific Value

The gross calorific value of RDF for the purpose of determination of tariff shall be at 2500 kcal/kg.

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

50. Fuel Cost

Price of refuse derived fuel during financial year shall be considered as Rs.2084 per MT and shall be escalated at the rate of 5% 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 5% per annum shall be applicable.

51. Fuel cost shall be considered as nil for municipal solid waste: Provided that the Commission may consider allowing transportation cost of such fuel while determining the project specific tariff.

Chapter 9: Project Specific Tariff Determination - Renewable Hybrid Energy Projects

52. Capital Cost

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

53. Capacity Utilization Factor

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 source, as the case may be:

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

54. O&M expenses

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

55. Tariff

The tariff for a renewable hybrid energy 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 RE hybrid 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 10: Project Specific Tariff Determination - Renewable Energy with Storage Projects

56. Capital Cost

The Commission shall determine only project specific capital cost for renewable energy with storage project considering the prevailing market trend

57. Storage Efficiency

57.1 The Commission shall approve the storage efficiency only for project specific tariff:

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

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

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

58. O&M expenses

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

59. Tariff

The tariff for renewable energy with storage project shall be a composite tariff or differential tariff based on 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 supply of power on round the clock basis or for time periods as agreed by Project Developer and Beneficiary

Chapter 11: Miscellaneous

60. Deviation from norms

Tariff for sale of electricity generated from a generating plant 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 levelized tariff over the useful life of the project on the basis of the norms in deviation does not exceed the levelized tariff calculated on the basis of the norms specified in these Regulations.

61. 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, may relax any of the provisions of these Regulations on its own motion or on an application made before it by an interested person.

62. Power to Remove Difficulties

In case of any difficulty arising while giving effect to the provisions of these Regulations, the Commission may either suo-motu or on a Petition, by an order, make such provisions not inconsistent with the provisions of the Act as may appear to be necessary for removing the difficulty.

63. Power to amend

The Commission may at any time add, vary, alter, suspend, modify, amend or repeal any of the provisions of these Regulations.

By Order of the Commission

Secretary

FORM 1.1 Form Template for (Small Hydro Project or Solar PV or Wind Power)

Sl No.	Assumption Head	Sub Head	Sub Head- 2	Unit	Arunachal Pradesh
					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 (Biogas / Municipal Solid Waste and RDF Power 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			
		Rdf Stock		Months	

		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	
		Rdf	Municipal Solid Waste Fuel	%	
			Rdf	%	
			GCV Of Municipal Solid Waste Fuel		
			GCV Of Rdf		
			Municipal Solid Waste Fuel Price /Yr-1	₹/Mt	
			Rdf Pricelyr-1	₹/Mt	
			Fuel Price Escalation Factor	% P.A.	

Form 2.1 Form Template for Levellised Tariff computation (Small Hydro Project Or Solar PV or Wind Power)

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																																				
Depreciati	₹ Lakh																																				

on																																						
Int. on Term Loan	₹ Lakh																																				
Int. on Working Capital	₹ Lakh																																				
RoE	₹ Lakh																																				
Total COG	₹ Lakh																																				
Discount Factor																																					
Discounted Tariff																																					
Levelized tariff	₹/kWh																																				

Form 2.2 Form Template for Levellised Tariff computation (Biogas, MSW/ RDF')

RE Tariff (MSW/RDF)																										
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																										
Fossil Fuel (Coal)	₹ Lakh																										
Municipal Solid Waste	₹ Lakh																										
Refuse Derived	₹																										

Fuel	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																										
PU Interest on Working Capital	₹/kWh																										
PU Return on Equity	₹/kWh																										
PU Tariff Components (Fixed)	₹/kWh																										
PU Tariff Components (Variable)	₹/kWh																										
PU Tariff Components (Total)	₹/kWh																										
Levellised Tariff	Unit																										
Discount Factors	₹/kWh																										
Discounted Tariff Components (Fixed)	₹/kWh																										

Discounted Tariff Components (Variable)	₹/kWh																										
Discounted Tariff Components (Total)	₹/kWh																										
Levellised Tariff (Fixed)	₹/kWh																										
Levellised Tariff (Variable)	₹/kWh																										
Levellised Tariff (Total)	₹/kWh																										