



Bihar Electricity Regulatory Commission
VidyutBhawan-II, J.L.NehruMarg, Patna 800 021

Notice No. 11.....

Dated. 21.08.2020

PUBLIC NOTICE

Case No. SMP- 22/2020

Commission is empowered to make Regulations for the Terms and Conditions for the Determination of Tariff u/s 181 (2) (zd) of Electricity Act, 2003 read with sections 61, 66 and 86 (1)(e) , has initiated a Suo-Moto Proceedings No. **SMP- 22/2020** to bring a new Regulation namely BERC (Terms and conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 for the control period of FY 2020-21 to FY 2022-23.

The proposed draft of the Regulation along with consultative paper is available on commission's website www.berc.co.in. The copy of the draft Regulation and consultative paper are also available in the office of the Commission for perusal.

Notice is hereby given under sub-section 181 (3) of the Electricity Act, 2003 to general public and all stakeholders inviting suggestions / Objections/ comments on the draft regulation which may be sent to the office of the Secretary, BERC, Vidyut Bhawan-II, J. L. Nehru Marg, Patna-800021 latest by **25th of September, 2020**.

The Commission proposes to hear this matter in its Court Room on **06.10.2020 at 11.00 AM**.

R. Anwar
21/8/2020
Secretary

Consultative Paper on Draft BERC (Terms and Conditions for Tariff determination from Renewable Energy sources) Regulations, 2020.

1. The Commission is empowered to specify terms and conditions for the determination of tariff under section 61 of the Electricity Act, 2003. Section 61 (h) also provides for “the promotion of co-generation and generation of electricity from renewable source of energy.”

Section 62 (1) (a) stipulates that the appropriate Commission shall determine the tariff in accordance with the provisions of this Act for supply of electricity by a generating company to a distribution licensee.

The Commission has to determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the state under section 86 (1) (a) of the Electricity Act, 2003.

The Commission has also to promote co-generation and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also to specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee under section 86 (i) (e) of the Act.

Clause 6.4 of the Tariff Policy provides for preferential tariff to be determined by the Commission for new and renewable source of energy.

2. Commission had notified BERC (Terms and Conditions for Tariff Determination from Renewable Energy sources) Regulations, 2017 on 24.10.2017 and amended it from time to time for the control period of FY 2017-18 to FY 2019-20.
3. Recently, on 23.06.2020, CERC has notified CERC (Terms and Conditions for determination of Tariff from Renewable Energy Sources) Regulations, 2020.

In pursuance to the above, Commission has also decided to initiate a suo-motu proceedings to bring a new Regulation namely BERC (Terms and conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 for the control period of FY 2020-21 to FY 2022-23 by adopting the changes specified in the CERC (Terms and conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020 and repeal the BERC (Terms and Conditions for Tariff Determination from Renewable Energy sources) Regulations, 2017 and its amendments.

4. The enclosed draft regulation is being published in the news papers and also being uploaded in the commission's website www.berc.co.in inviting comments/suggestions/ objections from the general public and the stakeholders latest by 25.9.2020. The comments/objections/suggestion can be emailed to the Commission on its email bercpat@berc.co.in besides submitting the same through by post so as to reach the office of the Commission not later than 5 pm of 25.9.2020.

DRAFT

Draft Bihar Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020

In exercise of powers conferred under Sections 61,66,86(1)(e) read with Section 181 (2) (zd) of the Electricity Act, 2003 (36 of 2003), and all other powers enabling it in this behalf, the Bihar Electricity Regulatory Commission hereby makes the following regulations, namely:

1. Short title and commencement

- i) These Regulations may be called the Bihar Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2020.
- ii) These regulations shall come into force on the date of publication in the official Gazette, and unless reviewed earlier or extended by the Commission, shall remain in force for a period of 3 years from the date of commencement.
- iii) These Regulations shall extend to the whole of the State of Bihar.

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 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 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, 26, 27, 28, 29, 30 & 31;
- g) 'Commission'** means the Bihar Electricity Regulatory Commission referred to in sub-section (1) of section 82 of the Act;
- h) 'Conduct of Business Regulations'** means the Bihar Electricity Regulatory Commission (Conduct of Business) Regulations 2005, as amended time to time.
- 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 a structure of the project float on top of a body of water, such as artificial basin or lake, with the help of floater, anchoring and mooring system;
- k) 'Grid Code'** means the Central Electricity Regulatory Commission (Indian Electricity Grid Code) Regulations, 2010 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 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;
- m) 'Gross station heat rate' or 'Gross SHR'** means the heat energy input in kCal required to generate one kWh of electrical energy at generator terminals of a generating station;
- n) '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). In case of Solar PV power projects and Floating solar projects, Installed capacity

shall be sum of name plate capacities (Nominal AC power) of the inverters of the project;

- o) 'Inter-connection point'** shall mean interface point of renewable energy generating facility with the transmission system or distribution system, 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 outgoing feeder on HV side of 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) are 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 upto inter-connection point, as the case may be, and in case of a small hydro project 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;
- u) 'Pumped storage hydro project'** means a hydro power 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 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 renewable source of energy such as water, wind, sunlight, biomass, bagasse, municipal solid waste and other such sources as approved by the MNRE;
- z) **‘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;
- 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 hydro power project with a 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 or 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;
- ff) **‘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;

gg) 'Tariff period' for renewable energy projects will be same as their Useful Life and tariff period shall be considered from the date of commercial operation of such power projects.

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

S.No.	RE Projects	Useful Life (Years)
1	Wind energy power project	25
2	Bio mass power project with Rankine cycle technology	25
3	Non-fossil fuel cogeneration project	25
4	Small Hydro Plant	40
5	Municipal Solid Waste (MSW)/ and	25
6	Refuse Derived Fuel (RDF) based power project	25
7	Solar PV/Solar thermal power project	25
8	Biomass Gasifier based power project	25
9	Biogas based power project	25

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 Indian Electricity Grid Code or Bihar Electricity Grid code or the Central Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2019 shall have the meanings assigned to them respectively in the Act or the Indian Electricity Grid Code or Bihar Electricity Grid code or the Central Electricity Regulatory Commission (Terms and conditions of Tariff) Regulations, 2019.

3. Scope and extent of application

These regulations shall apply to cases where 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 86 of the Act:

Provided that in cases of Biomass power based on Rankine cycle, non-fossil fuel based cogeneration projects, Solar PV , Solar Thermal power projects, Biomass gasifier, Biogas power project, Municipal solid waste and Refuse derived fuel based power projects, these regulations shall apply

subject to the fulfillment 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 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 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 topping cycle mode of co-generation.

Topping cycle mode of co-generation – Any facility that uses non-fossil fuel input for the power generation and also utilizes the thermal energy generated for useful heat applications in other industrial activities simultaneously:

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 project installed with existing renewable energy project other than ground mounted Solar PV project shall be treated as renewable hybrid energy project.
- f) 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.
- g) Biomass gasifier based power project – The project uses new plant and machinery, and has a grid connected system that uses 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 100% 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.

Chapter 1: General Principles

5. Control Period

The Control Period or Review Period under these Regulations shall be of three (3) years, of which the first year shall be the financial year 2020-21.

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 next Control Period shall be undertaken six months 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

- a) The Tariff Period for Renewable Energy power projects will be same as their Useful Life as defined in Regulation 2 (z) (cc) of these Regulations.
- b) Tariff period under these Regulations shall be considered from the date of commercial operation of the renewable energy generating stations.
- c) Tariff determined as per these Regulations shall be applicable for Renewable Energy power projects, for the duration of the Tariff Period as stipulated under Clause (a) and (b).

7. Project Specific tariff

(a) Project specific tariff, on case to case basis, shall be determined by the Commission for the following types of projects:

- (i) Biogas based projects;
- (ii) Hybrid Solar Thermal Power Projects;

- (iii) Small Hydro Projects
- (iv) Other hybrid projects include renewable–renewable or renewable–conventional sources, for which renewable technology is approved by MNRE;
- (v) Any other new renewable energy technologies approved by MNRE.
- (vi) Wind Power projects.
- (vii) Solar Photo Voltaic (P.V.) Power Project including Solar Rooftop PV Project (5 MW and above)
- (viii) Solar Thermal Power Project (5 MW and above)

The distribution licensee shall endeavor to procure power from renewable energy sources through competitive bidding, except from the waste to energy plants. Procurement of power by Distribution Licensee from renewable energy sources from projects above the notified capacity shall be done through competitive bidding process, from the date to be notified by the Central Government.

- (b) 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 Regulations/ Orders of BERC/CERC.

Provided that the financial norms as specified under these Regulations, except for capital cost, shall be ceiling norms while determining the project specific tariff.

8. Petition and proceedings for determination of tariff

- (1) The Commission shall determine the generic tariff on the basis of suo-motu proceeding at the beginning of each year of the Control period for the following types of projects, for which norms have been specified under the Regulations:
 - (a) Solar PV including Rooftop Solar PV and Solar Thermal (having installed capacity less than 5 MW)
 - (b) Biomass Power Projects based on Rankine Cycle Technologies.
 - (c) Non-fossil fuel based cogeneration projects.
 - (d) Biomass gasifier projects.

(e) MSW/RDF project based on Rankine cycle.

- (2) A petition for determination of project specific tariff shall be accompanied by such fee as may be determined by Regulations and shall be accompanied by:
- a) Information in forms 1.1, 1.2, 2.1 and 2.2 as the case may be, and as appended in these regulations;
 - b) Detailed project report outlining technical and operational details, site specific aspects, premise for capital cost and financing plan etc.
 - c) A statement of all applicable terms and conditions and expected expenditure for the period for which tariff is to be determined.
 - d) 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. This statement shall also include the proposed tariff calculated without consideration of the subsidy and incentive.
 - e) Any other information that the Commission requires the petitioner to submit.

(3) The proceedings for determination of tariff shall be in accordance with the BERC (Conduct of Business) Regulations, 2005.

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, non-fossil fuel based co-generation projects and refuse derived fuel based power 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 levelized basis, considering the year of commissioning of the project, for the tariff period of the project:

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

- (2) For the purpose of levelized tariff computation, discount factor equivalent to post-tax weighted average cost of capital shall be considered.
- (3) The above principles shall also apply for project specific tariff.

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 75 percent of the tariff applicable for that year.

12. Dispatch principles for electricity generated from Renewable Energy Sources:

- (1) All renewable energy power plants except for biomass power plants with installed capacity of 10 MW and above, and non-fossil fuel based cogeneration plants shall be treated as 'MUST RUN' power plants and shall not be subjected to 'merit order dispatch' principles.
- (2) The biomass power generating station with an installed capacity of 10 MW and above and non-fossil fuel based co-generation projects shall be subjected to scheduling and despatch code as specified under Bihar Electricity Grid Code (BEGC) and BERC (Deviation Settlement Mechanism and Related Matters) Regulations including amendments thereto.

- (3) Scheduling of wind and solar energy shall be governed as per the aforesaid provisions of Bihar Electricity Grid Code (BEGC) and BERC (Deviation Settlement Mechanism and Related Matters) Regulations including amendments thereto.

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 inter-connection point.

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

13. Debt Equity Ratio

(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.

(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.

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 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.

(b) 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.

(c) 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.

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 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 remaining depreciation shall be evenly spread during 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 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 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.

17. Interest on Working Capital

- (1) The Working Capital requirement in respect of solar PV power projects, floating solar projects and solar thermal power 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; 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, non-fossil fuel based co-generation 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; however, in case of non-fossil fuel co-generation, fuel cost for one month will be considered.
 - 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.
- (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.
- (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.

18. 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.

19. Operation and Maintenance Expenses

- (1) 'Operation and Maintenance or O&M expenses' shall comprise repair and maintenance (R&M), establishment including employee expenses, and administrative and general expenses.
- (2) 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.

- (3) Normative O&M expenses allowed during first year of the Control Period i.e. financial year 2020-21 under these regulations shall be escalated at the rate of 3.84% 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 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 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 at the rate of 1.50% per month 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 Income Tax Act, 1961 as amended from time to time; and
 - ii) Capitalization of renewable energy projects during second half of the fiscal year.
 - iii) Per unit benefit shall be derived on levelized basis at discount factor equivalent to weighted average cost of capital.
- (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.
- (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, electricity duty on auxiliary consumption subject to maximum of normative auxiliary consumption.

24. Taxes and Duties—Tariff determined under these regulations shall be exclusive of taxes and duties as may be levied by the appropriate Government:

Provided that the taxes and duties levied by the appropriate Government shall be allowed as pass through on actual incurred basis.

Chapter 3: Parameters for biomass power projects based on Rankine cycle technology

25. Capital Cost

(1) The normative capital cost for first year of the Control Period i.e. financial year 2020-21 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	559
Project [other than rice straw and Juliflora(plantation) based project] with air-cooled condenser	600
For rice straw and juliflora (plantation) based project with water-cooled condenser	611
For rice straw and juliflora (plantation) based project with air-cooled condenser	652

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

26. Plant Load Factor

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

27. 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%

28. 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

29. Operation and Maintenance expenses

Normative O&M Expenses for the first year of the Control Period i.e. financial year 2020-21 shall be Rs.46.42 lakhs per MW and shall be escalated at the rate at the rate specified in Regulation 19 of these Regulations for the Tariff Period.

30. 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, use of fossil fuels to the extent of 15% in terms of gross calorific value on annual basis, shall be allowed for the Useful Life of the project from the date of commercial operation.

31. Gross Calorific Value

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

32. Fuel Cost

Biomass fuel price during first year of the Control Period i.e. financial year 2020-21 shall be Rs. 3557/ 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 reviewed earlier by Commission. For the purpose of determining levelized tariff, a normative escalation factor of 5% per annum shall be applicable on biomass fuel price.

Chapter 4: Parameters for non-fossil fuel based co-generation projects

33. Capital Cost

Normative capital cost for the non-fossil fuel based co-generation projects shall be Rs. 492 lakhs/MW for the first year of Control Period i.e. financial year 2020-21 and will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

34. Plant Load Factor

The plant load factor shall be considered as 53% for the computation of tariff.

35. Auxiliary Consumption

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

36. Station Heat Rate

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

37. 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.

38. Fuel Cost

(1) The price of bagasse for first year of the Control Period i.e. financial year 2020-21 shall consider as Rs. 2274/ 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 Commission. For the purpose of determining levelized tariff, a normative escalation factor of 5% per annum shall be applicable on bagasse prices.

(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.

39. Operation and Maintenance expenses

Normative O&M expenses during the first year of the Control Period, i.e. financial year 2020-21, shall be Rs. 24.52 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for Tariff Period.

Chapter 5: Parameters for solar PV power projects, (having installed capacity less than 5 MW)

40. Capital Cost

The normative capital cost shall be Rs 362.98 lakhs/MW based on prevailing market trends for Solar PV projects and also Rooftop solar PV projects.

The above capital cost shall remain valid during the control period unless reviewed earlier by the Commission.

41. Capacity Utilisation Factor

The Capacity utilization factor for Solar PV project shall be 19%. Provided that the Commission may deviate from above norm in case of project specific tariff determination in pursuance of Regulation 7 and 8.

42. Operation and Maintenance expenses

Normative O&M expenses for the first year of the Control period i.e. financial year 2020-21 shall be Rs 8.58 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for Tariff Period.

43. Auxiliary Consumption

The auxiliary consumption shall be 0.75% of gross generation.

Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 7 and Regulation 8.

Chapter 6: Parameters for solar thermal power projects, (having installed capacity less than 5 MW)

44. Capital Cost

The normative capital cost shall be Rs 1200 lakhs/MW.

The above capital cost shall remain valid during the control period unless reviewed earlier by the Commission

45. Capacity Utilisation Factor

The Capacity Utilisation Factor shall be 23%. Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 7 and Regulation 8.

46. Operation and Maintenance expenses

Normative O&M expenses for the first year of the Control period i.e. financial year 2020-21 shall be Rs 22.99 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for Tariff Period.

47. Auxiliary Consumption

The auxiliary consumption shall be 10%. Provided that the Commission may deviate from the above norm in case of project specific tariff determination in pursuance of Regulation 7 and Regulation 8.

Chapter 7: Parameters for biomass gasifier based power projects

48. Capital Cost

Normative capital cost for biomass gasifier based power projects shall be Rs.593 lakhs/MW during first year of Control Period i.e. financial year 2020-21 and will remain valid for the entire duration of the Control Period unless reviewed earlier by the Commission.

49. Plant Load Factor

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

50. Auxiliary consumption

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

51. Specific fuel consumption

Normative specific fuel consumption shall be 1.25 kg per kWh.

52. Operation and Maintenance expenses

Normative O&M expenses for the first year of the Control period i.e. financial year 2020-21 shall be Rs. 61.31 lakhs per MW and shall be escalated at the rate specified in Regulation 19 of these Regulations for Tariff Period.

53. Fuel Cost

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

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

54. Capital Cost

Capital Cost.—The capital cost for the power projects which use MSW based on Rankine Cycle Technology shall be Rs. 1500 Lakhs/MW and for refuse derived fuel based Power Plant shall be Rs. 900 Lakhs/MW

55. 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 stabilization period	65%	65%
b)	During the remaining period of the first year (after stabilization period)	65%	65%
c)	2 nd year onwards	75%	80%

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

56. Auxiliary Consumption

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

57. Station Heat Rate

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

58. Operation and Maintenance Expenses

Normative O&M expenses for the first year of the Control period i.e. financial year 2020-21 shall be Rs. 62.67 lakhs per MW for RDF and 104.45 lakhs per MW for MSW projects and shall be escalated at the rate specified in Regulation 19 of these Regulations for Tariff Period.

59. Gross Calorific Value

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

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

60. Fuel Cost

(1) Price of refuse derived fuel during financial year 2020-21 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 Commission. For the purpose of determining levelized tariff, a normative escalation factor of 5% per annum shall be applicable.

(2) 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 11: Miscellaneous

61. Deviation from norms

Tariff for electricity generated from a generating station based on renewable energy sources, may also be agreed 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.

62. Guidelines of Competent Authority.—Policy/guidelines issued by the Ministry of Power, Government of India, MNRE, State Government and any other competent authority in this regard from time to time shall prevail.

63. 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.

64. Power to remove difficulties—If any difficulty arises in giving effect to the provisions of these regulations, the commission may, by general or specific order, make such provisions not inconsistent with the provisions of the Act, as may appear to be necessary for removing the difficulty.

65. Power to Amend—The Commission may from time to time add, vary, alter, modify or amend any provisions of these regulations on its own motion or on any application made before it by an interested person.

66. Repeal and savings.— Save as otherwise provided in these regulations, Bihar Electricity Regulatory Commission (Terms and Conditions for Tariff Determination from Solar Energy Sources) Regulations, 2010 read with its amendments are hereby repealed.

By Order of the Commission,

Secretary.

Form-1.1: Form Template for Solar PV including Rooftop Solar PV/Solar Thermal

S. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity Capacity Utilization Factor Commercial Operation Date Useful Life	MW % mm/yyyy years	
2	Project Cost	Capital Cost/MW	Normative Capital Cost Capital Subsidy If any Net Capital Cost	Rs. Lakh/MW Rs. Lakh Rs. Lakh Rs. Lakh	
3	Financial Assumptions	Debt Equity Component	Tariff Period Debt Equity Total Debt Amount Total Equity Amount Loan Amount Moratorium Period Repayment Period (include Moratorium) Interest Rate Equity amount Return on Equity for first 10 years Return on Equity 11 th year	Years % % % Rs. Lakh Rs. Lacs Years Years % Rs. Lakh %p.a %p.a	

			onwards		
			Discount Rate	%	
		Depreciation	Depreciation Rate for 1 st 10 Yrs.	%	
			Depreciation Rate 11 th years onward	%	
		Incentives	Generation Based Incentives. If any	Rs. L p.a.	
			Period for GBI	Years	
4	Operation & Maintenance	Normative O&M expense		Rs. Lakh/MW	
		O&M expense per annum		Rs. Lakh	
		Escalation factor for O&M expense		%	
5	Working Capital	O&M expense		Month	
		Receivables		Month	
		Interest on Working Capital		%	
				p.a	

Form-1.2: Form Template for (Biomass Power, Municipal Solid Waste, Refuse Derived Fuel or Non-fossil fuel based Co gen)

S. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Parameter
1	Power Generation	Capacity	Installed Power Generation Capacity Auxiliary Consumption factor PLF (during stabilisation upto 6 months) PLF (during 1 st year stabilisation) PLF (2 nd year onwards) Commercial Operation Date Useful Life	MW % % % % mm/yyyy years	
2	Project Cost	Capital Cost/MW	Normative Capital Cost Capital Cost Capital Subsidy, If any Net Capital Cost	Rs.Lakh/ MW Rs. Lakh Rs. Lakh	
3	Financial Assumptions	Debt Equity Debt Component Equity Component	Tariff Period Debt Equity Total Debt Amount Total Equity Amount Loan Amount Moratorium Period Repayment Period (include Moratorium) Interest Rate Equity amount Return on Equity for first 10 years Return on Equity 11 th year onwards	Years % % % Rs. Lakh Rs. Lacs Years Years % Rs.Lakh %p.a %p.a	

		Depreciation	Discount Rate Depreciation Rate for 1 st 10 Yrs. Depreciation Rate 11 th years onward Generation Based Incentives. If any period for GBI	% % % Rs. L p.a. Years	
		Incentives			
4	Operation & Maintenance	Normative O&M expense O&M expanses per annum Escalation factor for O&M expense		Rs. Lakh/MW %	
5	Working Capital	O&M expense Receivables Interest on Working Capital		Rs.Lakh Month % p.a	
6	Fuel related assumptions	Station Heat Rate	During stabilisation post stabilisation Biomass fuel type-1	kCal/Kwh kCal/Kwh %	

S. No	Assumption Head	Sub-Head	Sub-Head(2)	Unit	Parameter
		Fuel Type & mix	Biomass fuel type-2	%	
			Municipal Solid Waste fuel	%	
			Refuse Derived Fuel	%	
			fossil fuel (coal)	%	
			GCV of Biomass fuel type-1	kCal/Kwh	
			GCV of Biomass fuel type-2	kCal/Kwh	
			GCV of Municipal Solid Waste fuel	kCal/Kwh	
			GCV of Refuse Derived Fuel	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	
			Municipal Solid Waste Price/yr-1	Rs/MT	
			Refuse Derived Fuel Price/yr-1	Rs/MT	
			fuel price escalation factor	%p.a	

